



# Update on External Innovations activities and opportunities

**IPS/FoF/IAA/CLASP**

**21CC**

**GCRF**

**Newton Fund**

**ISCF**

**SPF...**

Nuclear Physics Community Meeting

7 January 2019

Stephen Loader

External Innovation & 21<sup>st</sup> Century Challenges

# Innovation Schemes

**Innovation Partnership Scheme** - transfer technology and expertise developed through STFC funding to the marketplace in partnership with industry and other academic disciplines.

**Follow-on Fund** - provide financial support at the very early or pre-seed stage of turning research outputs into a commercial proposition

in 2019 IPS and FoF moving to **two closing dates (19 February and 26 July)**

**Challenge Led Applied Systems Call (CLASP)** - call closed 6 December 2018. 2019 call closing date **28 February 2019**. Both calls focus on UK and global strategic challenges including:

- i.Those faced by industry (challenge areas within the Industrial Strategy Challenge Fund);
- ii.Areas of Research Interest developed by UK government departments;
- iii.Global challenges outlined in the UN Sustainable Development Goals.



# Impact Acceleration Accounts

Objectives of IAAs:

- Strengthening user engagement
- Strengthening the exchange of knowledge through culture and capability development, including through the development of skills for KE activity
- Supporting knowledge exchange and commercialisation at early stages of progressing research outputs and outcomes to the point when they would be supported by other funding
- Supporting new, innovative and imaginative approaches to KE and Impact, including processes that enable “fast failure” and appropriate learning
- Supporting activities that enable impact to be achieved in an effective and timely manner, including secondments and people exchange

2019 - approx £70,000 per award available for the top 30 STFC funded research institutions.

**Short Business Plan must be submitted by 21 January 2019.** Possible mechanisms:

- proof-of-concept projects
- impact workshops
- industry days to gain industry support for STFC projects.



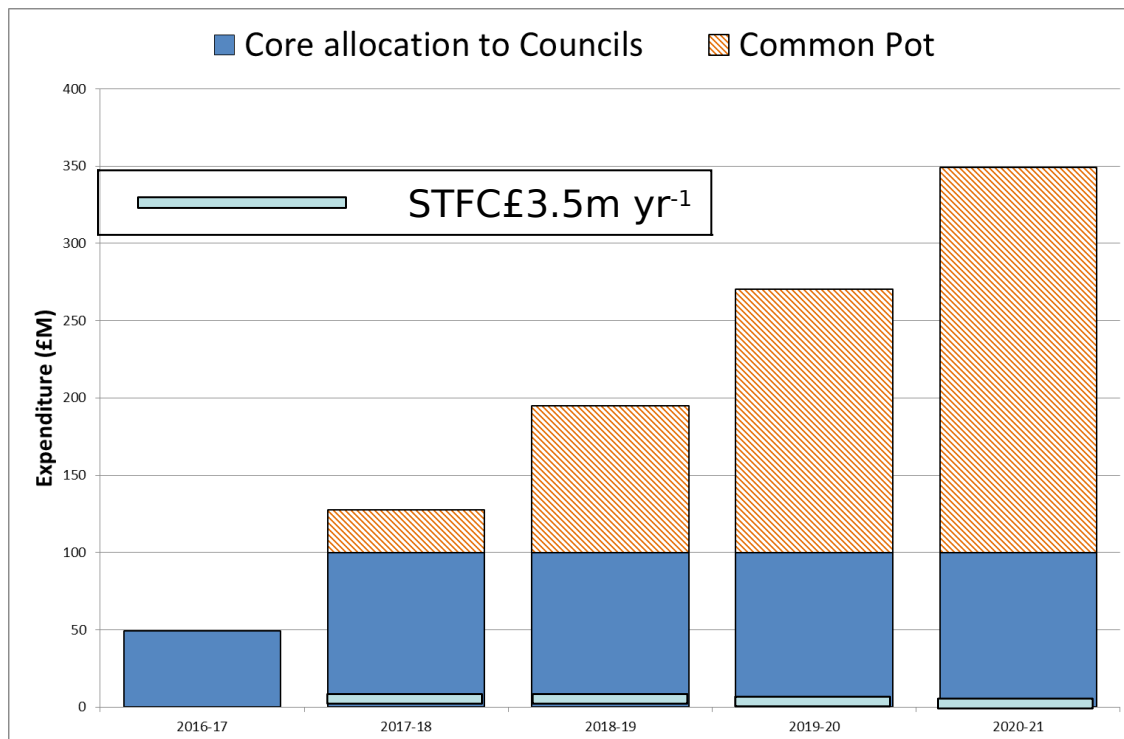
# 21<sup>st</sup> Century Challenges

- Networks already supported include NuSEC [www.nusec.uk/](http://www.nusec.uk/) and Nuclear Data [www.ukndn.ac.uk/](http://www.ukndn.ac.uk/)
- Extension to **STFC Food Network** being planned
- Panel meeting to assess new applications/renewals on 30 January 2019
- **Exploration Award** funding - support for challenge-led, small, exploratory projects (<£20k), eg stakeholder engagement, challenge-capability mapping and early stage scoping studies.
- Sandpits being planned:
  - advanced sensors and detectors for soil
  - advanced technology addressing challenges in water runoff from agricultural land
- Collaboration agreement between CRUK, EPSRC and STFC on sandpits for early detection of cancer. Sandpit (AI in clinical image analysis) 6-9 January 2019.
- **21CC strategic review**: independent panel has met and identified some early recommendations, second meeting to be held in March 2019.



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# Global Challenges Research Fund (GCRF)



## STFC GCRF funds: £3.5m per year 2017/18 to 2020/21

**1.START – Synchrotron Techniques for African Research and Technology.** (£3.6m 2017/18 to 2020/21). Diamond Light Source-led project in novel energy materials (catalysts and photovoltaics); and protein structure determination. Working with South Africa, Lesotho, Ethiopia and Egypt.

**2.CERN Summer Studentships .** Sponsoring graduate level summer studentships from Africa, Asia and Latin America to experience CERN life, working on ATLAS and CMS. 40 students from 36 developing countries attended in 2018. will continue this in 2019.

**3.China-UK SKA Programme.** Joint training programme with the China Scholarship Council (CSC) to support China-UK SKA Programmes for PhDs and postdocs. Cambridge, Oxford and Manchester.

**4.STFC Foundation GCRF 2018 call.** Panel met 5-6 December 2018 to consider 42 applications requesting >£12m, 11 graded high, funding levels tbc.

**5.Innovative, robust and affordable medical linacs for challenging environments.** CERN, STFC labs and UK HEIs with health staff and medical physicists from developing countries to help address radiotherapy technology needs of developing countries. Workshop in Botswana 22-23 March 2019.

**6.ODA Institutional awards** Additional funds (£6k-£135k) to spend in 2018 for organisations that currently have STFC funded ODA compliant grants (GCRF or Newton Fund), supporting activities associated with these grants. Final reports submitted by 18 January 2019.



# UKRI GCRF Collective Programme

## **Calls in 2019 across six strategic GCRF Challenge portfolios.**

### **Cities and Sustainable Infrastructure**

- (Re)thinking the off-grid city; Sustainable energy and international development: beyond technology

### **Education**

- Education as a driver of sustainable development Network Plus; Education in conflict and crisis research; Education Interventions for Early Childhood Development

### **Food Systems**

- Cultures and histories of agriculture, food, and nutrition; A combined Food Systems approach to developing interventions to address the Double Burden of Malnutrition

### **Global Health**

- Health and Communities

### **Resilience to Environmental Shocks and Change**

- Equitable Resilience: ensuring resilience enhances the Sustainable Development Goals; Multiple and systemic Risks

### **Security Protracted Conflict, Refugee Crises and Forced Displacement**

- Development-based approaches to Protracted Displacement; Preventing Conflict, Building Sustainable and Inclusive Peace; Protection in Contexts of Conflict and Displacement

### **Calls that cut across the portfolios**

- Coherence Grants; Gender and Intersectionality Network Plus; Global Engagement Networks

<https://www.ukri.org/news/new-international-development-research-programme-announced-by-uk-research-and-innovation/>



# Newton Fund

- “Collaborative research for higher level STEM skills in Malaysia”. Panel meeting held May 18.
- BEIS looking to make allocations for FY19/20 and 20/21 in February 2019 for extension activities. eg Astronomy with Thailand, China Agritech. Possibility of central UKRI Newton Follow-on fund pot.
- BEIS currently developing new country strategies.

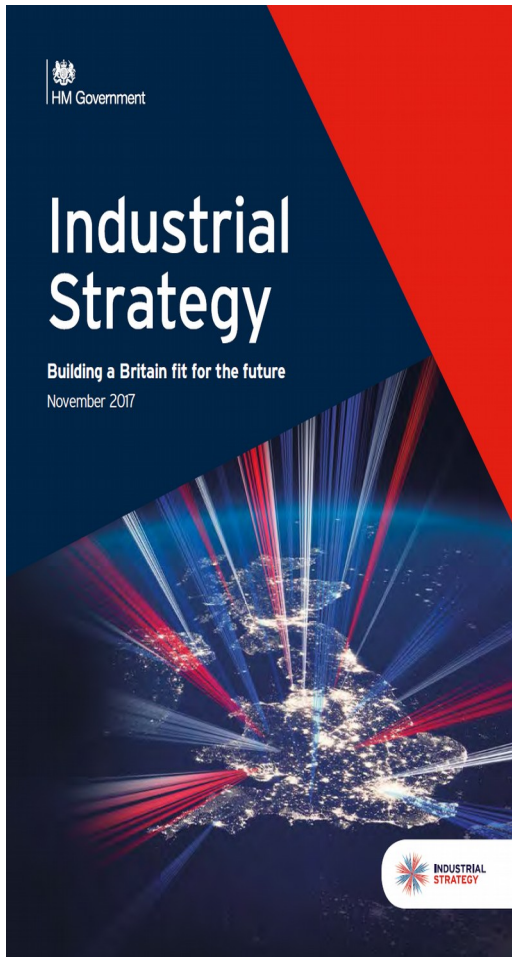
## Malaysia election: Opposition scores historic victory

© 10 May 2018





# Industrial Strategy



## Our five foundations



### Ideas

the world's most innovative economy



### People

good jobs and greater earning power for all



### Infrastructure

a major upgrade to the UK's infrastructure



### Business Environment

the best place to start and grow a business



### Places

prosperous communities across the UK



### AI & Data Economy

We will put the UK at the forefront of the artificial intelligence and data revolution



### Future of Mobility

We will become a world leader in the way people, goods and services move



### Clean Growth

We will maximise the advantages for UK industry from the global shift to clean growth



### Ageing Society

We will harness the power of innovation to help meet the needs of an ageing society



Science & Technology  
Facilities Council



# Investing in science, research and innovation

*We must become a more innovative economy and do more to commercialise our world leading science base to drive growth across the UK*

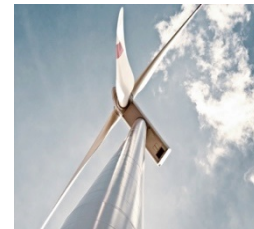
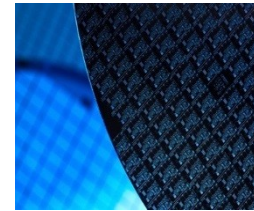
## **Industrial Strategy Challenge Fund**

- Industry-led and powered by multi-disciplinary research and business academic collaboration
- Develop UK industries that are fit for the future, driving progress in technologies where the UK can become a world-leader in research and commercialisation



# Not business as usual....

- Focused on **improving productivity and economic benefit** across the UK
- Learning from the DARPA approach
- Clear **measurable** challenges are needed
- Needs clear **industry buy-in** to be successful and should be **ambitious**



# Wave 2 challenges



Transforming construction



Data to early diagnosis & precision medicine



Transforming food production



Next generation services



Energy revolution



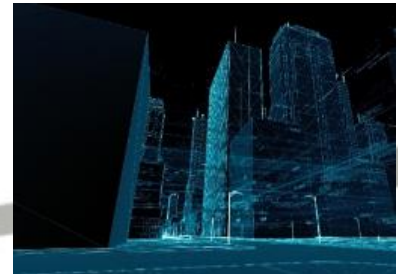
Healthy ageing



Audience of the future



Quantum technology



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# Successful Wave 3 (so far)

- £60 million of public funding for the **Smart Sustainable Plastic Packaging** challenge
- Up to £121 million for **Made Smarter** to support the transformation of cross-sector manufacturing with digital technologies, such as the Internet of Things and immersive technologies.
- Up to £78m for the **Stephenson Challenge** to support innovation in electric motor technology, making vehicles lighter and more efficient.
- up to £125 million to develop **future flight Challenge**
- **Vaccines Manufacturing Innovation Centre** / £1.3 billion Life Sciences Sector Deal
- **Energy Intensive Industrial Process Challenge (EIIP)** £tbc



# UKRI Strategic Priorities Fund

SPF builds on the vision of a 'common fund' set out in the Nurse Review.

Support high quality R&D priorities which would otherwise be missed – multidisciplinary and interdisciplinary programmes identified by researchers and businesses at the cutting edge of research and innovation.

STFC bids submitted in December 2018

- Quantum Sensors for Fundamental Physics (QSFP) - transform the approach to understanding the universe and its evolution by exploiting quantum sensors to investigate dark matter, gravity and performing ultra-sensitive measurements of quantum properties of elementary particles.
  - Sensors for Science and Society (3S) – drive a significant step change in the next generation of scientific detector and sensor technologies.
  - Space Weather instrumentation
  - Instrumentation for ISIS Neutron Source
- Outcomes known by early February 2019



# UKRI December 2018 - AI and Data Science for Engineering, Health, Science and Govt - £39m

Four high-priority areas, with the aim to transform:

- **Engineering and urban planning**, through the development of 'digital twins', digital replicas of physical systems
- **Health**, through applying machine learning to assist in the detection and diagnosis of illness, and the planning and personalisation of medical treatment
- **Physical and life sciences**, through applying AI to the vast amounts of data generated by scientific research
- **Criminal justice** - developing the technical tools/ethical foundations to prevent crime, identify and rehabilitate offenders, and improve the operation of the criminal justice system.

Led by EPSRC in collaboration with The Alan Turing Institute, BBSRC, MRC, NERC and STFC. It includes policy support from the Home Office, the Ministry of Justice and Department of Health and Social Care.



**Thank you**

**Questions?**

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