

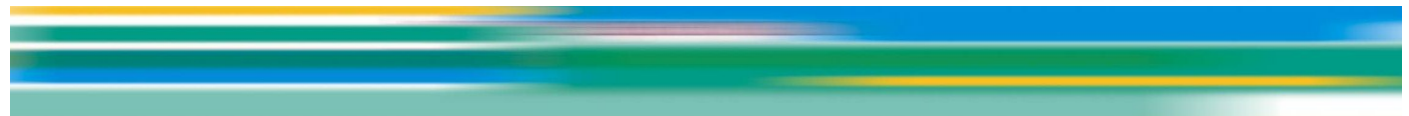
Engineering Grand Challenges

Information slides



Engineering Grand Challenges

- Build future sustainability
- Provide a focus
- Inspire community action
- Mobilize across disciplines
- Capture the imagination



Our Approach

- Engaged researchers, universities and business, advised by Strategic Advisory Teams
- Described opportunities, not solutions
- Stressed the importance of connecting excellence
- Areas aligned to EPSRC strategy, where engineering can lead
- Built potential inputs to the next Delivery Plan



Connecting Excellence

Capabilities	UK Ecosystem	International
Cross-EP SRC areas Centre of gravity in Engineering	Research – skills - innovation Connectivity and critical mass	Best with best Leverage expertise, access to facilities and influence

- Proposals must show how advantage will be created from the existing landscape

Why Grand Challenges?

- Challenges drive innovation and enable diverse people to tackle key questions together
- Engineering is central to solving global problems



- Engineering must evolve as a subject
 - new concepts
 - global changes
 - new models of working

Engineering Grand Challenges

Multidisciplinary Research Consortia

- 1 - Engineering solutions to sustainably provide water for all (with LWEC)
- 2 - Future Cities: engineering approaches that restore the balance between engineered and natural systems
- 3 - Engineering across length scales, from atoms to applications

Network Plus Proposals

- 4 - Identifying risk and building in resilience into engineered systems

Need to demonstrate how the research fits to the challenge(s) and the novel approach taken to address it.

Call live ~ Closing date 28 April



Challenge 1: Engineering solutions to sustainably provide water for all (with LWEC)

- Ensure sustainable clean water supply against an environmental change background
- Includes distribution, treatment, purification, re-use, sustainability and energy considerations amongst others.
- Response to societal issues and international development can be incorporated into proposals



Challenge 2: Future Cities: engineering approaches that restore the balance between engineered and natural systems

- Need to make cities more resilient and adaptive to future needs
- Research into physical and digital interventions which will allow the city to become more effective
- Consideration of natural and man-made ecosystems whilst taking an engineering approach
- The challenge takes a holistic view of cities and their systems including the dependencies between them and critical infrastructure



Challenge 3: Engineering across length scales, from atoms to applications

- Design across scales for both products and systems
- Approaches to bridge the meso-scale gap
- Develop multi-scale methodologies which are generic whilst adaptable to different engineering systems
- Consideration of sustainability and whole life cycle approaches.



Challenge 4: Identifying risk and building in resilience into engineered systems

- Challenge looks at the complex systems that exist within engineering
- Develop an understanding of how systems interact with each other and identification of the critical interdependencies.
- Looking at methods to mitigate the risk and make the systems resilient

Network Plus – Bring together the different relevant disciplines and define the challenge further



Multidisciplinary Research Consortia - £12M

- Consortia proposals should develop a research programme which addresses the challenge(s).
- These should also have a networking role and be inclusive of researchers in the community outside of the original consortium.
- Develop a five year programme

Network Plus - 2/3 networks - £1M total

- Aim to network relevant communities to further scope the challenge.
- Funding can be requested for feasibility studies, for initial research questions and ideas that evolve during the network. See full application for other costs
- Develop a 3 year network



Call Timeline

- **26 March 2015** - Compulsory Intent to Submit – Survey online
- **28 April 2015 (4pm)** – Closing date
- **Late July 2015** – Prioritisation panel
 - Networks fund decision at this stage
 - Decision to invite consortia to interview
- **8/9 September 2015** - Interview
 - Fund decision will be made shortly after

Grants must start within 3 months of the interview



Application process – Deadline 28 April

- Documents – same as for standard proposals
- Institutional letter of support from PVC-Research required from all participating universities highlighting strategic fit
- Engineering Grand Challenge Support statement – 2 page document
 - Challenge/s to be addressed
 - High Level Statement (Expressed as an aspirational question) – Clear Vision and Measurability
 - Fit to the Grand Challenge Area
 - Explicit and tangible targets/milestones – mechanisms to build communities around Grand Challenge areas
 - Evidence on how the proposal extends current capability and benefit to the UK in an international context.

Institutions can only lead one proposal per challenge area



Assessment Criteria (I)

- Research Quality
- **Fit to Grand Challenge Area**
- **Leadership Qualities of the Team**
- National Importance
- The Research Environment
- Impact
- Resources and Management



Assessment Criteria (II)

- Novelty and creativity of the research programme – new approaches in engineering research;
- Capability of the consortium team to tackle the research challenges, engage with users and to deliver impact, including different levels of collaborator engagement.
- Ability to engage on-going excellent research in the UK outside of the consortium to maximise added value,
- Demonstration of ability to be able to inspire future generations of engineers.



Other Considerations

- **Impact**

- Clear and well resourced impact statements are expected – the teams should articulate how the plan will complement the research from the start

- **Advocacy**

- Consortia and networks will be expected to act as advocates for EPS research in the relevant challenges and a strategy on how to develop should be embedded.

- **Public Engagement**

- These challenges should serve as a platform to inspire a next generation of engineers – we expect proposals to include activities which help promote engineering and attract new people to the field

