Capital for Great Technologies

Advanced Materials, Robotics and Autonomous Systems and Grid-scale Energy Storage

Call type: Invitation for proposals
Closing Date: 16:00 on 16 May 2013

Summary
The Chancellor of the Exchequer announced additional capital funding for the eight great technologies in the prebudget statement. The Engineering and Physical Sciences Research Council (EPSRC) is now planning to invest the funding it received to strengthen research capability by supporting requests for capital equipment.

This call announces £85 million for science capital bids to increase the strength and productivity of the research base within three great technologies: Advanced Materials (£30m), Grid-scale Energy Storage (£30m) and Robotics & Autonomous Systems (£25m). The focus of the proposal should be to enhance existing research capabilities by improving the research equipment base.

EPSRC does not wish to stimulate new centres but to build on previous investment in the UK, so will only accept applications from institutions or collaborations that have successfully attracted £10m of research funding from any source over the past 5 years (April 2008 - March 2013) within the relevant technology area. Within this we require evidence of some significant support from EPSRC. Institutions will also have to show evidence of a substantial financial contribution to the equipment procurement and to the potential for sustainability (on-going support).

A maximum of six applications per institution will be permitted, two per technology area covered by this call (one bid as either an individual application or as lead in a collaborative bid; and the other as a partner in a collaborative bid). For collaborative bids:

- each institution may individually meet the eligibility criterion; or
- a lead institution collaborates with smaller HEIs who wouldn’t meet the criterion on their own; or
- a group of universities who would not meet the eligibility requirements join together to form a consortium which does meet the requirements.

Individual awards are expected to be in the region of £3m for the Research Council contribution. Larger bids are encouraged if a strong case justifies the benefit of this level of investment, if the institution contribution is significant or if a joint bid is being made by a group of institutions.

Strategic Context
This call aims to invest in science capital for three of the technology areas outlined in David Willets’ report ‘Eight Great Technologies’.
Within its Industrial Strategy, the government has also identified a number of sectors as being particularly important to the UK economy, including: aerospace, automotive, life sciences, professional/business services, the information economy, higher and further education, energy and construction. In some of these sectors, more detailed research priorities have been identified which may also benefit from capital investment in the areas covered by the call. EPSRC encourages applicants, where appropriate, to consider the relevance of the proposed equipment to the sectors and priorities identified in the Industrial Strategy so that any synergies can be maximised.

EPSRC is seeking to create a national infrastructure in the chosen areas. Institutions are encouraged to work together in preparing bids to achieve efficiency and synergy that realises a national vision for providing capabilities as part of the broad strategic context.

Applications should therefore build on EPSRC’s previous strategic investments and show evidence of substantial levels of relevant research funding. Applications should also demonstrate broad support of EPSRC’s Delivery Plan objectives and articulate the contribution the investment will make to strategies, priorities and national importance as detailed on the EPSRC website.

Scope of the call
For this call, applications for capital equipment to support the following three technology areas will be considered:

- Advanced Materials
- Grid-scale Energy Storage
- Robotics & Autonomous Systems.

Advanced Materials (£30m)

Advanced materials are instrumental in the generation of long-term economic growth and jobs for the UK and reducing the time required to bring discoveries to the market has been recognised by global competitors in being a key driving force behind a more competitive manufacturing sector and economic growth.

Focus should be on materials designed for targeted properties and on seeking to address the aims of this initiative, i.e. reducing lead times, tackling sustainability of materials and discovering new materials types.

The pervasive nature of materials and their application into countless different sectors presents simultaneously both an opportunity and a challenge. Whilst all material areas are included here, we can identify a small number of materials candidates as particular priorities offering the greatest potential to lead to new market opportunities or underpin the competitiveness of high value existing sectors. These include Advanced Composites, Low Energy Electronics (including metamaterials), Materials for Energy, High Performance Alloys, and Nanomaterials for Health.

The main objectives of the call are to:

- Invest in the development and provision of scale-up facilities, including innovative production technologies in advanced manufacturing such as advanced metrology, flow production, laser processing systems, resource efficient technologies and multifunctional additive layer manufacturing including modelling
- Invest in characterisation of materials at the nanoscale (e.g. Atomic Force Microscopy, Scanning Electron Microscopy).

Grid-scale Energy Storage (£30m)

Accelerating the development of national scale electricity storage promises massive benefits – in terms of savings on UK energy spend; environmental benefits because it will enable greater stable
penetration of renewable generation technologies; economic growth; energy security; and enabling UK business to exploit these technologies internationally, while reducing this country’s Carbon footprint to a level that would set international standards.

Focus should be on projects that ultimately lead to an advance to demonstrator of new grid scale energy storage technologies and that enable increased access to grid scale facilities for the R&D community. The facilities will enable the creation of new academic-industrial collaboration partnerships and an objective will be to increase the number of these collaborations. Hydrogen storage is outside the scope of this call.

The main objectives of the call are to:

- Invest in the development and understanding of low cost and durable materials, devices and systems for a range of advanced grid scale energy storage solutions
- Invest in the development of advanced manufacturing of UK developed grid scale energy storage materials and technologies
- Invest in dedicated test beds which reflect the requirements for both high (e.g. 11 kV) and low voltage (e.g. frequency/voltage variation and phase balancing) testing for trialling new grid scale energy storage technologies; control; and integration into smart energy systems
- Invest in a UK Centre for Grid Scale Storage to integrate all the research and development and ensure that the correct whole system analysis is undertaken and that research is translated into innovative products and services for the economic benefit of the UK.

Robotics & Autonomous Systems (£25m)

As an enabling technology, robotics and autonomous systems will have a direct impact across multiple sectors. Already in use, examples can be found in the manufacturing, life sciences and defence sectors. There is also the potential for significant new applications in transport, energy and the environment. There is a critical need to ensure that the UK maintains its world leading capability across the science, engineering and ICT aspects that underpin robotics and autonomous systems.

Focus should be in the emerging area of service robotics & autonomous systems, and span some of the following EPSRC research areas:

- Robotics  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/robotics.aspx)
- Image and Vision Computing  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/imagecomp.aspx)
- Human Computer Interaction  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/hci.aspx)
- Sensors and Instrumentation  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/instrumentation.aspx)
- Artificial Intelligence Technologies  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/ait.aspx)
- Control engineering, learning and modelling  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/controlengineering.aspx)
- Natural Language Processing  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/natlangproc.aspx)
- Real time communications and networking  
  (http://www.epsrc.ac.uk/research/ourportfolio/researchareas/Pages/ictnetworks.aspx).

The main objectives of the call are:

- Strategically grow the research base in this area for the UK’s benefit, focussed on areas of strength or areas where the UK has the potential to lead
- Deliver advanced technology with the potential for translation and take-up
Enable talented people access to state of the art equipment.

**General considerations**

Institutions should base their case on the procurement of equipment that will primarily support cutting edge and ground breaking research. Evidence should be provided of attracting substantial research funding relevant to the technology area.

Only resources for capital equipment can be requested from EPSRC as awards will be made through the institution’s Equipment Account. However, successful applicants may be invited to bid for additional resource at a later date to further enhance industrial collaboration and academic sharing.

Multidisciplinary applications should carefully consider whether the balance of the subject area falls within the three technology areas identified in the scope of the call. If the major subject area falls outside the scope, the application will be rejected.

A maximum of six applications per institution will be permitted, two per technology area covered by this call (one bid as either an individual application or as lead in a collaborative bid; the other as a partner in a collaborative bid). For collaborative bids:

- each institution may individually meet the eligibility criterion; or
- a lead institution collaborates with smaller HEIs who wouldn’t meet the criterion on their own; or
- a group of universities who would not meet the eligibility requirements join together to form a consortium which does meet the requirements.

For consortia, applications need to provide evidence of:

- added value and addition of strengths, with the partners bringing additional expertise to the partnership, and with genuine collaboration and sharing;
- a coherent programme, rather than a disparate set of activities;
- how equipment will be efficiently managed and run across a consortium.

Multiple applications per key research area will be rejected.

**Submitting your proposal**

Applications are to be submitted by the Research Office or equivalent, using an indexed single pdf file incorporating all the documents listed below in the specified order (using standard Je-S font and margins). This should be no longer than the stipulated page limits. You should prepare and submit your proposal by email to EPSRCcapitalcall@epsrc.ac.uk by 16:00 on 16th May 2013.

Applications must include the following documentation:

- Business Case (6 sides)
- Pathways to Impact (2 sides)
- Justification for Resources (2 sides)
- Project Plan (1 side)
- Evidence of Eligibility (no page limit)
- Institutional Statement of Support (2 sides)
- Industrial Statement(s) of Support (only to be included from organisations contributing financially to the proposal)
- Equipment quotations (only to be included for equipment over the OJEU limit).

If institutions wish to submit a collaborative bid, then the Business Case, Pathways to Impact, Justification of Resources and Project Plan must all be combined into a single integrated document.
and submitted by the lead institution’s Research Office. The page limit allowance can be multiplied by the number of institutions involved. However, all duplication must be removed and documents kept to a minimum number of pages wherever possible. Each institution involved in the collaboration must then include Evidence of Eligibility and Institutional Statements of Support.

**Business Case**

Please include the following information:

- *overview* of the equipment requested
- *scientific excellence*: details of the research capability that will be enabled by this equipment. In particular, explain how the equipment will underpin the portfolio of eligible research, and will help towards the building of critical mass.
- *national importance and strategic context* of the application: how the equipment fits within the broader UK context e.g. the strategy of the institution, existing investments in the UK research base by EPSRC, TSB, government departments, industry, drawing where it is appropriate to do so on the government’s Industrial Strategy.
- *ensuring maximum value*: how access to the requested equipment will be managed to maximise its usage and where appropriate shared
- *sustainability*: how the equipment will be supported, maintained and updated during and beyond the duration of this funding
- *financial summary*: overview of the costs of the equipment requested, and an itemisation of contributions from the institution and industrial partners.

**Pathways to Impact**

Describe the kinds of impact envisaged, how the requested equipment will be managed to engage users and beneficiaries and increase the likelihood of impacts.

**Justification for Resources**

Only resources for capital equipment can be requested. All other costs such as running costs, maintenance, launch events, service contracts etc. must be met by the institution or industrial partner. The following FEC rules apply:

- Items of equipment under £10k are not allowed as they are not considered capital equipment
- Any equipment over £10k will be funded at up to 100%.

**Project Plan**

The procurement, installation and usage of the equipment should be illustrated with a simple diagrammatic work plan, for example, a PERT or Gantt chart.

**Evidence of Eligibility**

Please provide a list of funding as evidence of eligibility. Include Project Title, Funding Body and Award Value. For each technology area applied for, institutions should have attracted a minimum of £10m over the past 5 years (April 2008 – March 2013). Funding need not be exclusively from EPSRC and may include awards from other funding bodies and contributions from industrial partners. For multi-institutional awards, please only include the value attributed to your institution. Double accounting will result in your application being rejected.

**Institutional Statements of Support**

A statement from the PVC Research or equivalent, outlining the institution’s own investment towards the development of the infrastructure and sustainability of the equipment that compliments the EPSRC funding.

**Industrial Statements of Support**
Statements should only be included from industrial organisations who are contributing financially to the proposal, whether it be direct or in kind.

**Equipment Quotations**

Three written equipment quotations must be submitted for all items of equipment requested over the OJEU limit. If there are not three suppliers, as many quotes as possible should be supplied.

**Assessment process and criteria**

Applications to this call will be judged directly by one of three strategic expert peer review panels and decisions to fund made on the following criteria:

- Scientific excellence and quality of the research programmes enabled from the increased capability for new and cutting-edge research
- National Importance of the bid in a national and/or global context.
- Strategic fit to the objectives of the call. Evidence that sufficient critical mass exists in the proposed location(s) to support this investment together with evidence of the added value of the investment in the context of the UK’s current capability.
- Appropriate pathways to impact and facilitation of increased academic and industrial collaboration
- Innovative use of funds to achieve most value from the equipment and suitable arrangements for financial sustainability including the level of additional resource (leverage) that will be obtained
- Strong and effective planning and management to ensure delivery within the timescale.

As this call will operate a single stage peer review process with no postal refereeing stage, there will be no opportunity for applicants to respond to the decisions made at the Panel meeting. Feedback will only be provided where the Panel feel it appropriate.

**Key Dates**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
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<tbody>
<tr>
<td>Launch event</td>
<td>21st March 2013</td>
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<tr>
<td>Call announced on web</td>
<td>1st April 2013</td>
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<tr>
<td>Closing date for applications</td>
<td>16:00 16th May 2013</td>
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<tr>
<td>Assessment Panels</td>
<td>Mid June 2013</td>
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<tr>
<td>Applicants informed of outcome</td>
<td>By 1st July 2013</td>
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<td>Announcements</td>
<td>July 2013</td>
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**Important information**

**Please read carefully**

**Additional Grant Conditions:** Successful awards will be made through the institution’s Equipment Account and the institution will be required to abide by the fixed end date and complete spending of the award by 31 March 2015. No extensions will be given to these awards.

**Eligibility:** Applications will only be accepted from institutions or consortia that have attracted £10m of research funding within the technology area in the past 5 years. Institutions must provide evidence of this funding in their application.

**Number of applications:** A maximum of six applications per institution will be permitted, two per technology area covered by this call (one bid as either an individual application or as lead in a
collaborative bid; and the other as a partner in a collaborative bid). The Principal Investigator does not have to be a senior officer of the university.

**Submission:** By email to EPSRCcapitalcall@epsrc.ac.uk by 16:00 on 16th May 2013. Please note the Panel volume will be created from these emails. If your proposal is not sent to this email address, it will not be considered by the Panel. Applicants will receive a confirmation receipt by e-mail.

**Grant Award:** The EPSRC contribution to the award may be subject to negotiation based on feedback from the expert panel to ensure a balanced portfolio of infrastructure is supported.

**Expenditure:** Expected expenditure profiles between award date and 31 March 2015 will be stipulated for each successful award. Institutions must ensure that their internal procurement policies are followed and that they would certify that expenditure has been incurred by these stipulated dates if requested by EPSRC.

**Repeatedly Unsuccessful Applicants Policy:** This call will not count towards the submission record of applicants.

**Reviewer Information:** You do not need to provide reviewers.

**Applicant’s Response:** Due to the unusually short timescales for this call, there will be no opportunity for applicants to respond in the peer review process.

**Further Guidance**
A copy of David Willetts’ report ‘Eight Great Technologies’ can be found here:

http://www.policyexchange.org.uk/publications/category/item/eight-great-technologies

For information on the eligibility of organisations and individuals to receive EPSRC funding, and guidance on the types of support that may be sought and advice on the completion of the research proposal forms, please see the EPSRC Funding Guide:

http://www.epsrc.ac.uk/SiteCollectionDocuments/FundingGuide.pdf

Your University Research Office will be able to offer advice on submitting proposals to EPSRC.

**Contact information**
If you have any general questions regarding this call, please contact EPSRC by e-mail: EPSRCUniversityInterface@epsrc.ac.uk

For queries relating to a specific technology area, please contact:

**Advanced Materials**
Simon Crook  Telephone: 01793 444 343  E-mail: Simon.Crook@epsrc.ac.uk

**Grid-scale Energy Storage**
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**Robotics & Autonomous Systems**
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