Higher Education Partnership-National Knowledge Functional Hub Models for India

Request for Expressions of Interest

Contents

1. Background

The Royal Academy of Engineering has been engaged as a Delivery Partner under the Newton-Bhabha Fund – an initiative of the Indian and UK Governments to enhance science, innovation and research cooperation between the two countries. As part of the Newton-Bhabha Fund the Academy has partnered with Federation of Indian Chambers of Commerce and Industry (FICCI) to help enhance research and innovation capacity and improve engineering education within universities in India through building industry-academia linkages. This partnership will draw upon FICCI's existing National Knowledge Functional Hub model.

On 12-13th May, 2015 a two-day workshop was held discussing the challenges and options for the advancing Indian innovation eco-system. The meeting brought together leading engineers, academics and business people from many branches of engineering – and beyond – to discuss issues and trends in engineering education and research in India and how best to engage industry and UK actors in their improvement. The conference heard presentations and contributions from academics, industrialists, policymakers and innovators from both India and the UK with a deliberate emphasis on forming models of cooperation which could have significant impact within a short timeframe.

The workshop findings stressed the urgency of the situation in India and the need for rapid upscaling of skilling and educational interventions, especially in the engineering sector.

2. Rationale and Objectives

The Higher Education Partnership Programme aims to support Indian universities in improving their engineering education and research output through strengthening industry linkages and leveraging UK expertise. The programme is based upon the premise that increased linkages between industry and higher education can improve quality and foster innovation within pedagogy and practice of engineering, in turn enhancing employability of graduates and encouraging technology transfer into industry.

Our overall objective for the Programme is to strengthen the capacity of Indian engineering higher education and research institutions to carry out research and knowledge-related activities through partnership with industry and UK stakeholders. **This call is aimed primarily at Tier 2 and 3 educational institutions in India**. Tier 1 institutions may apply but will need to demonstrate how they would directly work with lower tier institutions to help improve their engineering teaching and research capability.

We will support proposals that fit with one or more of the HEP's identified **outcome areas**:

A. Enhanced industry input into engineering curricula and educational practice within Indian universities to improve uptake of practical engineering skills and enhance graduate employability;
B. Enhanced capacity of engineering educators within Indian universities to teach course content and use novel pedagogical methods to upskill graduates;
C. Strengthened collaboration in collaborative research and knowledge-sharing between Indian university and industry institutions and with counterparts in/ from the UK;

D. Building of working, mutually-beneficial models of cooperation between industry and academia for replication in India; and
E. Improved capacity of Indian institutions to learn from their experiences and to share lessons with others.

3. Types of funding, budget, duration and timing of application

This call offers support for travel, subsistence and salary support costs related to conducting collaborative activities amongst industry and academic partners in India and the UK.

The lead applicant will be an Indian university which must propose a means of collaboration with an industry partner and UK institution which should address at least one of the above-identified Programme outcome areas. The industry partner may also be considered as the UK institution if it is headquartered in the UK. **Some examples of potential collaboration mechanisms have been given in Annexe 1**. Please note that these are listed for illustration only. Other ideas are very much welcome.

There is no sector focus within this call. We define engineering broadly and support projects within any field of engineering, although fields which are linked to helping meet economic development and climate sustainability objectives will be looked upon favourably. Applicants must provide a summary of the likely impact of activities within India. The impacts may encompass, among other things: influence on policy and/or practice of Indian institutions or communities in engineering education; workshops and events in India or UK; Indian engineering students and teachers trained; collaborative research projects between industry and academia; papers and presentations within India or UK; course curriculum developed or changed; strengthening of relationships or partnerships between or among Indian and UK academic and industry institutions; or articles in journals or media.

As a result of this call, a series of grants in the range of GBP £1,000 to GBP £50,000 will be issued. The project duration will not exceed 24 months, including all research activities and final reporting. The proposed start date for the project must be between December 2015 and February 2016 and all projects, including submission of reports, must be completed by end of February, 2018.

FOR ALL FUNDS BEING REQUESTED FROM THE ACADEMY, APPLICANTS MUST DEMONSTRATE A MATCHED CONTRIBUTION IS BEING INVESTED INTO THE PROJECT FROM THEIR OWN OR PARTNER'S RESOURCES. APPLICANT CONTRIBUTIONS MAY BE IN-KIND OR FINANCIAL BUT MUST BE EQUIVALENT TO AT LEAST 40% OF GRANT MONEY APPLIED FOR.

APPLICANTS MUST ALSO DEMONSTRATE HOW GOVERNMENT FUNDING (CENTRAL OR STATE) IS BEING LEVERAGED OR SOUGHT IN ORDER TO IMPLEMENT THE PROJECT. Applications with significant government contribution will be looked upon favourably. Government funding may be a contributing factor within the 40% required matched fund.

4. Submission process

- Applications must be submitted to International@raeng.org.uk
- Applications must be submitted no later than **4:00PM (IST), August 31st, 2015**
- Applications must be submitted in English.

- Applications received after the deadline will not be considered.

Applications received before the deadline and deemed by the RAEng to be compliant with the requirements set out in this Request for Expressions of Interest will be evaluated in accordance with the process outlined herein.

5. Eligibility criteria

- Applications must be made by an Indian University classed as either "Deemed-to-be-University" or an “Autonomous Organization”/ “Autonomous Institute” (including IITs, NITs and IIITs) and must **include a letter of support from the relevant head of department / school**. Letters from proposed Partner organizations from Industry sector and the UK are **not** being requested at this stage however will be necessary should your application be advanced to the proposal stage.
- The institutions must be able to start their proposed Award activities between December, 2015 and February 2016
- Applicants must demonstrate matched contribution worth at least 40% of project funds. The matched contribution can be in-kind or financial (or a mixture of both) and can be from any of the partners being proposed but must also include support from government institutions.
- Any applications that are incomplete or do not adhere to the guidelines may be rejected
- Applications are welcome from any engineering discipline. Engineering is defined in its broadest sense, encompassing a wide range of diverse fields, including computer science, biotechnology and materials.

FICCI and The Academy are committed to diversity and welcome applications which actively foster engineering talents of women and other groups whom are currently underrepresented across the field of engineering.

6. Selection Process

There is a two-stage selection process:

1) A Committee of the Academy’s Fellows together with FICCI nominated personnel will review eligible applications and create a shortlist using the evaluation criteria below.
2) Applicant organizations whose concept notes are shortlisted will be asked to submit a full proposal, based on reviewers’ comments. Final funding decisions will be made by the same shortlist Committee.

We expect to approve between three and ten applications in any given round, but the exact number of grants awarded will be determined by the quality of applications received and the cost of each proposal.

7. Format and Requirements

Applicants should answer all questions on the application form within the word limits prescribed.

When appropriate, please attach one-page biographies of the proposed team members and not full academic CVs (at this stage).

Tentative budgets should include projected expenses per budget category (as per eligible expenses) – as outlined in the instructions provided.

8. Evaluation Criteria

Applications will be reviewed and assessed by a selection panel comprising of Fellows of the Academy and FICCI stakeholders. They will take into account a number of factors, including:

- the extent to which the application aligns with the aims of the scheme
- the proposed impact upon student learning and employability as well as research quality and application
- the strategic benefits to both the university and any external partners
- the plans to ensure long term sustainability of the outcomes and cooperation beyond the period of the Award
- the leveraging of existing industry linkages and government support mechanisms
- the perceived added value of the proposed UK linkages

9. RAEng standard grant conditions

Any selected proponents shall be required to sign RAEng's standard grant agreement, as amended by RAEng from time to time.

10. Communication of results

September 25th, 2015: Indicative date by which all candidates will be contacted; shortlisted applicants will receive comments and a request to submit a full proposal. Final approvals for those involved in this latter iterative stage will be done on a case-by-case basis.

Only shortlisted candidates will receive comments on their concept note.

11. Permission for use and disclosure of information

By way of submitting an application under this Call for competitive grants, the applicant consents to the disclosure of the documents submitted by the applicant to the reviewers involved in the selection process, both within the RAEng and FICCI and externally. The applicant further consents to the disclosure of the name of the applicant, the name of the institutional leads and the name of the proposed project, in any announcement of selected proposals.

All personal information collected by RAEng and FICCI about grant applicants is used to review applications, to administer and monitor awards, and to promote and support the broad objectives of the programme in India and internationally. Consistent with these purposes, applicants should expect that information collected by RAEng and FICCI may come to be used and disclosed in other activities supported by either FICCI or RAEng.

FREQUENTLY ASKED QUESTIONS (FAQS)

1) When will I hear whether or not my application has been successful?

Section 10 of the call document for the specific call to which you applied includes the date by which all applicants will be contacted.

2) Who is eligible to lead the application and what types of organisations are we required to partner with?

Only one lead organization can request the grant and that organization must be officially registered in India as a "deemed-to-be" or "autonomous organization" university (documents will be required if the grant is approved and before a contract will be issued). This organization will be responsible for the management of the funds, i.e. for sending final narrative and financial reports to the RAEng and FICCI at times set out in the contract.

We require that you collaborate with one industry partner and one partner from the UK. UK partners can include either UK universities or UK companies, either within the UK itself or if the Indian offices of UK-headquartered companies. We expect collaborating organizations to be involved in the design and execution of the project as appropriate. Grant monies do not need to stay with the administering organization, but may be disbursed to other partners (as per the detailed budget required at proposal stage).

We do not require, but highly encourage, collaboration also with other Indian universities and events and mechanisms by which your project may otherwise seek to share lessons and make wider impact amongst the education and innovation community.

3) Can my organization submit more than one Expression of Interest and/or receive more than one grant in in one call?

We will accept one concept note per lead organisation in any one call.

NB: You may be a collaborating organisation on other Expressions of Interest as well as submitting your own. An individual may be the project coordinator/leader on one Expression of Interest and collaborate on others.

4) What is matched contribution and what sources of match resources would be considered eligible?

As a requirement of the grant, it is necessary for applicants to demonstrate commitment of their own resources toward programme activities. These will be considered on an application basis so can include partner organisation contributions as well (i.e. contributions from industry and the UK partners). Contributions may be financial or in-kind (use of facilities, cost-share and staff time), though must be demonstrated in equivalent financial terms.

As this is funded through a bilateral initiative it is also a requirement that some degree of Indian government funding must be sourced or leveraged as a contribution to the programme. This funding may be sourced from State or Central government agencies or any other Indian public sector agency.

Some examples of matched contribution are below

University partners	Industry partners	Government
• **Co-Funding or additional financing toward programme activities;** • **Administrative and hosting costs for arranging placements, workshops and other activities;** • **Support expert visits to/ from UK to exchange knowledge relevant to the aims of the programme.**	• Support salary costs of the industry personnel engaged in programme; • Support travel/ subsistence costs associated with project; • Time spent designing and organising student projects; • Additional time spent co-supervising or conducting collaborative research projects; • Co-funding Masters/ PhD projects; • Support student placements/ internships into company; • access to equipment/ facilities.	• Provision of additional financial support towards the costs of the programme; • Giving resources to enhance access to equipment and facilities. • Sharing and disseminating the knowledge generated by the Partnerships. • Supporting UK and Indian exchanges and scholarships.

5) Why was my application rejected?

We cannot provide individual comments on rejected applications but the following points may be of interest to all future applicants:

a) Through this call, the Academy can only fund projects which propose to work collaboratively either with Industry or with UK partners. We will not support "pure" research projects. We are interested in supporting projects that may involve "pure" research but these must be applied to industrial settings. Similarly in terms of improving curricula and pedagogy of taught courses, industry engagement must be present. You should, when possible, include plans for dissemination of results that actively encourage the uptake of results and learning.

b) We are not interested in "solo" institution efforts. We require collaboration among institutions, and particularly across types of institutions (e.g. university and industry). Being funded by the Newton-Bhabha Fund, we require collaboration with the UK. This means there must be at least one UK organization involved in any project. You may have as many other partnering organizations as you like, whether Indian or from the UK.

c) Carefully consider the "ripple effect" of your project or activity: tell us what will happen in India or the UK as a result of your work (within the collaborating organizations and beyond).

d) We are very interested in the evaluation and monitoring components of projects and by this we do not mean a simple ex-post list of the numbers of people attending meetings or the numbers of articles produced, presented, etc. (although these are important facts to capture). We challenge proponents to consider creative ways to self-monitor throughout the life of a project and we encourage evaluation activities that consider issues such as use and practice.

e) Our outcome areas are also concerned with learning and we encourage proponents to reflect on learning arising from your project. This does not relate to research findings but to your lived experience of the project: we encourage reflective thinking on how your own, and your partners' experience from this project and others related to it will be monitored and reviewed to possibly improve directions or operations of your program, your unit, or your organization as a whole.

   Consider: Any self-evaluations to identify critical organisational learning from this project? Any use of lessons for modifying directions and operations? Any challenges and opportunities in doing so? Any lessons to be shared with larger communities in India and/or UK?

   You may want to reflect and assess the quality of aspects such as:

   - how partners were identified
   - how the research or teaching agenda was developed
   - how expectations of the various partners were agreed upon
   - how associates actually contributed to the project
   - how roles and responsibilities were assigned and carried out
   - how resources were used and activities implemented
   - how results were validated, disseminated and taken up
   - The goal is to learn from experience and signal possible adjustments to your approach in the future, as a result of these lessons.

f) The competition for these grants will be quite high and you should ensure that your application is as robust as possible. This also means ensuring that partnerships or collaborations are already established and identified and that event programs/agendas are as complete as possible.

If you still have questions, please write to International@raeng.org.uk.

Annexe 1: Potential Models of Collaboration

Stemming from the Workshop discussions, outline models have been developed to address some of the needs identified in a manner which would address India's needs and also engage both UK and Indian actors, as required by the Newton-Bhabha Fund. **These models have been given only as suggestions of the types of proposals we may consider and are NOT exclusive.** Other ideas are very much welcome under this call.

Model 1: Deliver a training programme for Engineering educators on modern teaching methods incorporating novel techniques and ICTs

Problem Statement	There is a critical need to update the way engineering subjects are taught and change the role of the educator from instructor to facilitator of learning. With the growing availability of digital learning material and content, better use of class time could be made if teachers were able to create an environment of more immersive learning and project-oriented teaching. Leveraging ICT learning platforms and other applications can help make such teaching more effective and more salient amongst students also.
Objective	**Deliver training to Engineering faculty on new teaching methods learning from Best Practice UK examples**
Concept and Activities	• Transfer lessons from novel project-oriented and ICT-enabled teaching methods being implemented in the UK to India • Deliver training-of-trainers to engineering faculty in Hub and Spokes and monitor implementation and success • Engage industry partners in provision of projects and facilities necessary to operationalise the approach
Outputs and Outcomes	• Improved capacity of teachers to deliver learner-centric teaching • Enhanced student learning outcomes through more effective engagement • Stronger industrial linkage improving employability of graduates
Matched Funding	• Matched funding in terms of facilities and human resources from Indian side from universities and industry
UK Added Value/ Links	• UK value added in terms of knowledge transfer

Model 2: Deliver training in research methods for industry-oriented projects

Problem Statement	Current programmes for industry-oriented research are very limited in number. Whilst some existing successful models exist for collaborative research, the need to increase linkages between research and industry communities is pressing in order to engage the energy and resources of industry for university collaboration and help universities focus on finding solutions for practical issues faced in India.
Objective	**Deliver structured training in research methods from leading UK academics**
Concept and Activities	• 2 week residential training programmes for leading young researchers in engineering research methods delivered by UK lecturers • Enhance the quality of industrial research within universities • Engage UK and Indian faculty in advising on industry research projects
Outputs and Outcomes	• Enhance the capacity to undertake collaborative research projects with industry • Discussion of research-led teaching could help inform future career development of staff in research
UK Added Value/ Links	• Potential route to build relationships for future joint research funding bids and Post-graduate study • Allows UK collaborative links with leading talent in India • Allows connection to Engineering departments across India for research collaboration and improved linkage to Indian industry • Potential to develop collaborative research projects

Model 3: Collaborative Research Projects undertaken with Industry in partnership with both UK and Indian universities

Problem Statement	Collaborative research is the best way to engage the energy and resources of industry for university collaboration. A major issue hindering such links in India however is the perceived lack of research capability within universities which diminishes trust and forces industry to look elsewhere either to private companies or foreign universities for solutions.
Objective	**To engage Indian industry in collaborative research projects with universities through harnessing UK expertise and building research capacity in Indian universities**
Concept and Activities	• Industry determines research needs within their organisation • UK university and Indian university partner to deliver solution through research • Engage UK expertise and build capacity/ develop talent in Indian research community for industrial research
Outputs and Outcomes	• Develop capacity of Indian engineering researchers in the conduct of industry-oriented research • Engage UK research expertise in solving industry problems in India and adding value to operations • Improved links between UK universities and Indian industry and research communities
UK added value/ links	• Allows UK collaborative links with leading talent in India • Allows UK connection to Engineering departments across India for research collaboration and improved linkage to Indian industry • Engages leading-edge expertise of UK and novel application of technology

Model 4: Student competitions for solving industry-related problems

Problem Statement	A lack of engagement with education and research institutions leads often to recruitment challenges for industry partners, with high turnover rates in engineering staff. Moreover, students are given very little opportunity for internships and to gain practical experience and apply their technical skills.
Objective	**Launch a series of prestigious industry-sponsored student prizes which help focus student talents on solving industry problems, improving industry visibility of talent and increasing buy-in for university engagement.**
Concept and Activities	• Establish Industry-sponsored student projects/ prizes led by one of the industry partners in each of the regional Hubs. Allow students across Hub and Spokes to enter. • Engage students in industrial research and reward the best student group • Allows closer engagement between industry and universities, allows talent-spotting and problem-solving
Outcomes and Goals	• Improved linkages of universities to local industry • Encourage students to undertake industry-oriented research and gain/ apply practical skills • Enhanced employability of students
UK value added/ links	• UK can help supervise research projects • Builds links between Indian industry and UK academics