Industry Academia Partnership Programme (IAPP)

Request for Proposal
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1. Background
The Royal Academy of Engineering has been engaged as a Delivery Partner under the Newton-Al Farabi Partnership – an initiative of the Kazakhstan and UK Governments to enhance science, innovation and research cooperation between the two countries. As part of the Newton Fund the Academy has partnered with the National Agency for Technological Development to help enhance research and innovation capacity and improve engineering education within Kazakhstan universities through building bilateral industry-academia linkages.

2. Rationale and Objectives
The Industry Academia Partnership Programme aims to support Kazakhstan 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 Partner Country engineering higher education and research institutions to carry out research and knowledge-related activities through partnership with industry and UK stakeholders.

We will support proposals that fit with one or more of the IAPP’s identified outcome areas:

A. Strengthened collaboration in collaborative research and knowledge-sharing between Partner Country university and industry institutions and with counterparts in/ from the UK;
B. Enhanced industry input into engineering curricula and educational practice within Partner Country universities to improve uptake of practical engineering skills and enhance graduate employability;
C. Enhanced capacity of engineering educators within Partner Country universities to teach course content and use novel pedagogical methods to upskill graduates;
D. Building of working, mutually-beneficial models of cooperation between industry and academia for replication in Partner Countries; and
E. Improved capacity of Partner Country institutions to learn from their experiences in industry-academia linkages and to share lessons with others.

Please note, the Newton Fund is financed through the UK’s Overseas Development Assistance budget which precludes funding for sectors such as Nuclear, Space, Oil & Gas under this call.

3. Types of funding, budget, duration and timing of application
This call offers support for travel, subsistence and salary support costs related to visits and exchanges that support collaborative activities amongst industry and academic partners in Partner Countries and the UK.

The lead applicant will be an individual at the Partner Country University/ Academic Institution 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 Partner Countries. The impacts may encompass, among other things: influence on policy and/or practice of Partner Country institutions or communities in engineering education; workshops and events in Partner Country or UK; Partner Country engineering students and teachers trained; collaborative research projects between industry and academia; papers and presentations within the Partner Country or UK; course curriculum developed or changed; strengthening of relationships or partnerships between or among Partner Country 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 March and May 2016 and all projects, including submission of reports, must be completed by end of March, 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 AND THE LEVEL AND QUALITY OF MATCH WILL BE TAKEN INTO ACCOUNT IN THE SELECTION PROCESS.

Examples of potential match contribution can be found in the FAQ section.

NATD Innovative Grants

As part of the Newton Al-Farabi Partnership, the NATD have opened up a series of innovative grants to help Kazakhstan institutions access UK technical expertise and technologies. The grants for encouraging UK collaboration are as follows:

- professional development of technical engineering personnel, financing by up to 2 million tenge (no more than 10 employees), 40% of the total sum;
- attraction of foreign technical experts, by up to 9 million tenge, up to 40% of the total sum;
- outsourcing to consulting, project, engineering organizations, financing by up to 5 million and 30 million tenge, up to 30% and 40% of the total sum;
- implementation of management and production technologies, financing by up to 15 million tenge, up to 40% of the total sum;
- acquisition of technologies, financing by up to 400 million tenge, up to 95% of the total sum;
- commercialization of technologies, financing by up to 155 million tenge, up to 95% of the total sum.

We strongly encourage applicants to make use of these grants. Plans to apply for these grants will be looked upon favourably in your application to the IAPP programme.
4. Upscaling Impact and Sharing Lessons

The Academy is particularly interested in seeing the plans applicants have for sharing the lessons learnt and broadening the impact of the proposed programme of activities. We require that all applicants show concerted effort to this effect through workshops, conferences, trainings or otherwise and plans for doing so must be presented in the application form.

Hub and Spoke Model for Upscaling Impact and Sharing Lessons

One possible modality for sharing lessons is through a ‘Hub’ and ‘Spoke’ model whereby successful applicants become Hub institutions whom convene and potentially partner with other Spoke universities to share lessons from their industry-academia collaboration through workshops, training sessions and exchanges.

5. Submission process

- Applications must be submitted via the Academy’s online Grant Management System
- The deadline for this call has been extended. Applications must be submitted no later than 9:00AM (GMT), January 18th, 2016
- 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 Proposals will be evaluated in accordance with the process outlined herein.

6. Eligibility criteria

- Applications must be made by a lead Kazakhstan University and must include a letter of support from the relevant Head of Department or Rector from the lead university as well as a declaration.
- Applications must include Letters of Support from each of the proposed Partner organizations from Industry sector and the UK, signed by a suitably senior representative of the institution. For Universities this should be either the Head of Department or Vice Chancellor and for industry this should be a member of the senior management.
- Applicants must demonstrate some level of matched contribution to demonstrate their commitment to the programme. The matched contribution can be in-kind or financial (or a mixture of both) and can be from any of the partners being proposed. The level and quality of matched contribution will be a key factor in the assessment.
- At least 5% of total project costs (total costs = Academy finance + matched contribution) must be reserved for upscaling programme impact, capacity building and wider lesson sharing amongst other Kazakhstan engineering universities. Applicants must propose suitable activities to this end.
- 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.
The Academy is 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.

7. Selection Process
An Expert Committee of the Academy’s Fellows together with other nominated personnel will review eligible applications and create a shortlist using the evaluation criteria below. Partner Country institutions may also be included within the committee panel depending upon the bilateral agreement reached.

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

8. Format and Requirements
Applicants should answer all questions on the online application form within the word limits prescribed.

When appropriate, please attach CVs (max 4 pages) of the key named personnel involved.

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

From the lead applicant university, both a Declaration (text given in guidance notes) and a letter of support will need to be given by the Head of the Department (or higher) within which the cooperation is proposed to occur. From partnering institutions from Industry and the UK letters of support and commitment will also be required from suitably senior representatives within the organisation.

9. Evaluation Criteria
Applications will be reviewed and assessed by a selection panel comprising of Fellows of the Academy and Partner Country 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/ innovation
- 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
10. **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.

11. **Communication of results**  
March 1st, 2016: 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.

12. **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 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 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 the Partner Country, the UK and internationally. Consistent with these purposes, applicants should expect that information collected by RAEng may come to be used and disclosed in other activities supported by the 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 the Partner Country as a 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 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 of the in-country 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 Partner Country 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 Proposal and/or receive more than one grant in one call?**

We will accept one proposal per lead organisation in any one call.

NB: You may be a collaborating organisation on other proposals as well as submitting your own. An individual may be the project coordinator/leader on one proposal 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.

Some examples of matched contribution are below

<table>
<thead>
<tr>
<th>University partners</th>
<th>Industry partners</th>
<th>Government</th>
</tr>
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<tbody>
<tr>
<td>Co-Funding or additional financing toward programme activities;</td>
<td>Support salary costs of the industry personnel engaged in programme;</td>
<td>Provision of additional financial support towards the costs of the</td>
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</table>
- 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 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.

- Giving resources to enhance access to equipment and facilities.
- Sharing and disseminating the knowledge generated by the Partnerships.
- Supporting UK and The Partner Country's 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 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 Partner Agency or from the UK.

c) Carefully consider the “ripple effect” of your project or activity: tell us what will happen in Partner Agency 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 Partner Agency 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

Outline models have been developed to assist applicants in developing projects that would match the criteria and aims of the IAPP. 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 The Partner Country  
                               • Deliver training-of-trainers to engineering faculty in Hub and Spoke Universities 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 The Partner Country’s 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

<table>
<thead>
<tr>
<th>Problem Statement</th>
<th>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 The Partner Country.</th>
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<tr>
<td>Objective</td>
<td><strong>Deliver structured training in research methods from leading UK academics</strong></td>
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| 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 The Partner Country’s 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 The Partner Country  
• Allows connection to Engineering departments across The Partner Country for research collaboration and improved linkage to The Partner Country’s industry  
• Potential to develop collaborative research projects |

### Model 3: Collaborative Research Projects undertaken with Industry in partnership with both UK and The Partner Country’s universities

<table>
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<tr>
<th>Problem Statement</th>
<th>Collaborative research is the best way to engage the energy and resources of industry for university collaboration. A major issue hindering such links in The Partner Country 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.</th>
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<tbody>
<tr>
<td>Objective</td>
<td><strong>To engage The Partner Country’s industry in collaborative research projects with universities through harnessing UK expertise and building research capacity in The Partner Country’s universities</strong></td>
</tr>
</tbody>
</table>
| Concept and Activities | • Industry determines research needs within their organisation  
• UK university and The Partner Country’s university partner to deliver solution through research  
• Engage UK expertise and build capacity/ develop talent in The Partner Country’s research community for industrial research |
| Outputs and Outcomes | • Develop capacity of The Partner Country’s engineering researchers in the conduct of industry-oriented research  
• Engage UK research expertise in solving industry problems in The Partner Country and adding value to operations  
• Improved links between UK universities and The Partner Country’s industry and research communities |
| UK added value/Links | • Allows UK collaborative links with leading talent in the Partner Country  
• Allows UK connection to Engineering departments across the Partner Country for research collaboration and improved linkage to Partner Country’s 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 The Partner Country’s industry and UK academics |

**Model 5: Enlist UK Experts to conduct Masterclasses for Partner Country Engineering lecturers and industry personnel for complex subject matter**

| Problem Statement | There is often a need to focus on enhancing expertise of specific priority sectors which are critical to the partner country economy or cross-cutting engineering methods which have large impact across sectors. Training in these specialised areas is crucial to enhancing the quality of engineering output and allows best practices to be identified and upscaled. |
| Objective | Deliver Masterclasses in the teaching, adoption and adaptation of specialised, high-priority engineering subjects to enhance the quality of university education, industrial application and improve engineering outcomes |
| Concept and Activities | • Deliver Master Classes to Partner Country engineering lecturers and industry personnel in the teaching and application of highly technical subjects and Research-led teaching methods from eminent/innovative UK Engineers from industry or academia |
| Outputs and Outcomes | • Enhance the teaching of complex engineering subject matter  
• Enhance the application of complex engineering subject matter into industry  
• Discussion of research-led teaching could help inform future career development of staff in research and build linkages |
| UK Added Value/Links | • UK to provide speakers for the master classes  
• Potential use of UK teacher training models.  
• UK participants could also be included and help connect with their peers in the Partner Country  
• Potential route to build relationships for future joint research funding bids |
### Model 6: Send established and future research leaders to UK universities for a six month/1 year industry-led research programme

<table>
<thead>
<tr>
<th>Problem Statement</th>
<th>Current programmes for industry-oriented research are limited in number and uptake within them is poor. 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 Partner Countries.</th>
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<tbody>
<tr>
<td>Objective</td>
<td><strong>Build capacity in established and future Partner Country research leaders and by providing experience in leading edge industry-oriented research programmes, and creating links with UK academia and industry</strong></td>
</tr>
</tbody>
</table>
| Concept and Activities | - Place leading young Partner Country researcher in UK industry-oriented research groups/universities to learn modes of linking academia and industry.  
- Place established Partner Country engineering researchers in industry-oriented research groups/universities within UK over a sabbatical period to learn programming methods and implement similar schemes upon return. |
| Outputs and Outcomes | - Enhanced capacity of young engineering researchers in Partner Country in research methods and in the conduct of industrially-relevant research.  
- Develop capacity of established Partner Country engineering educators in the conduct and programming of industry-oriented research. |
| UK added value/links | - Allows UK collaborative links with leading talent in the Partner Country.  
- Allows connection to Engineering departments across Partner Country for research collaboration and improved linkage to Partner Country industry.  
- Potential to develop collaborative research projects. |

### Model 7: Industry 'chairs' brought into Partner Country Universities and 'Buddy' with UK Universities in building Industry-Academia linkages

<table>
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<tr>
<th>Problem Statement</th>
<th>Universities often have willingness to cooperate with local industry actors however sometimes lack the relevant contact points and networks needed to establish functional mechanisms of collaboration. Often an institutional bridging mechanism thus needs to be created by the universities in order to address the supply side issue and help create working, beneficial linkages to industry actors whom have an interest in engineering education outcomes of the university.</th>
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<tr>
<td>Objective</td>
<td><strong>Enhance quality and industrial relevance of technical education and research activities at Partner Country Universities through bringing senior industry people into engineering departments.</strong></td>
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</table>
| Concept and Activities | - Industry ‘chairs’ given consultant-like remit with focus on education and research to include issues like staff training & research project identification.  
- Potential buddying arrangement between ‘Industry Chair’ and the Academy’s Visiting professors at UK institutions to share learnings and guidance.  
- At end of exchange, Partner Country and ‘buddy’ UK institution could jointly bid into small pool for further funding for bilateral activities that would help meet development objectives set by industry ‘chair’. |
| Outcomes and Goals | - Improved linkages of universities to local industry.  
- Collaborative university-industry programmes developed and implemented.  
- Enhance Throughput of universities through bolstering teaching capacity. |
| UK value added/links | - Link to Academy’s UK Visiting Professor scheme and wider UK University Alliance network to help mentor Chairs and build industry and academia ties across UK and Partner Countries. |
**Model 8: Bilateral Exchanges between Industry and Academic organisations to design/develop research agenda and curricula in Emerging Technologies**

<table>
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<tr>
<th>Problem Statement</th>
<th>The global technological landscape is changing constantly however Partner Countries often lack educational content to properly skill students in the development and application of advances. In order to do so new course content needs to be developed in synch with local industry whom can help determine local needs and ensure productive research-led teaching takes place.</th>
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<tbody>
<tr>
<td>Objective</td>
<td><strong>Design research agenda and applied course content in fields of emerging technologies which leverage UK expertise and meet demands of local industry partners through bilateral knowledge exchanges.</strong></td>
</tr>
</tbody>
</table>
| Concept and Activities | • Knowledge exchange visits which take UK industry and academic personnel into Partner Countries to help develop research agenda and course content in areas of emerging technology.  
  • Partner Country institutions visit UK universities and industry organisations collaborating in research and teaching in fields of emerging technologies to develop linkages and learn from working relationships. |
| Outcomes and Goals | • Co-developed research agenda in development and application of Emerging Technologies  
  • Teaching courses and modules designed for Partner Country Universities in emerging technology fields  
  • Domestic avenues of industry-academic cooperation built in fields of direct research and innovation relevance to domestic priorities  
  • Ongoing bilateral relationships built in innovation, leading-edge research and teaching content |
| UK value added/links | • Linkages built with research and innovation communities in partner countries on development and application of leading-edge technology fields |