

Knowledge exchange and commercialisation

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Knowledge exchange and commercialisation (KEC) is an umbrella term which describes a very broad range of activities to support collaborations between universities, businesses and the public sector. KEC professionals, with their specialist skillset, play an important role in enabling this. Their expertise in overcoming obstacles and finding creative solutions to practical problems delivers significant value to collaborative work between academia and industry.

Numerous studies¹ have shown how accessing university research can improve business productivity, sales, and performance in product, service and process innovation, across sectors as well as across geographies.

Universities have an important role in supporting and developing the new industries of the future, helping to drive economic growth, and keeping a competitive edge in global markets through research and innovation. The UK is particularly successful at this, and is ranked number 2 in the Global Innovation Index.

What is knowledge exchange and commercialisation (KEC)?

KEC is about the transfer of tangible and intellectual property, expertise, learning and skills between researchers and the non-academic community, most often businesses and non-research charities.

These activities are recognised by government and funders as having an important return on the UK's investment in research, one that provides a significant driving force for enhancing economic growth and societal wellbeing. For instance, recent research suggests that every pound invested through the Higher education innovation fund delivers £9.70

¹ UK-Innovation Research Centre (2014) *The economic significance of the UK science base, a report for the Campaign for Science and Engineering*; BIS (2014) *Estimating the effect of UK direct public support for Innovation*; Howells J, Ramlogan R, Cheng S (2012) 'Universities in an open innovation system: a UK perspective', *International Journal of Entrepreneurial Behaviour & Research*, Vol. 18 iss. 4, pp.440–456

in benefits for the economy and society.²

For researchers, KEC can be a way of gaining new perspectives on possible directions and approaches for research. This two-way exchange element of KEC is at the heart of successful and sustainable collaboration.

Discussion of KEC often focuses on the formation of spin-out businesses, or the licensing of intellectual property (IP), based on the outputs of university science and technology-related research (activities referred to as 'technology transfer' within the KEC spectrum). Although these are vitally important areas, KEC encompasses a much broader range of activities and is not limited to science and technology disciplines.

KEC activities

In terms of activities, KEC can be split into six types:

- 1. People:** The temporary placement of students and graduates in companies or in the public or voluntary sectors can be a more directed way of exchanging knowledge on a shorter-term basis. One of the longest standing schemes is Knowledge Transfer Partnerships.
- 2. Promotion and events:** Knowledge is disseminated through promotion of research outputs, and through events and networking.
- 3. Collaborative research:** This is a powerful tool for creating opportunities for innovative knowledge exchange. Collaborative research can combine university research, industry secondments, business acumen and manufacturing expertise to help those with exploitable concepts to achieve commercial success.
- 4. Consultancy:** The provision of expert advice and training to external clients by university staff can be a very effective KEC mechanism.

² HEFCE (2015) *Assessing the economic impacts of the Higher Education Innovation Fund: A mixed-method quantitative assessment*

It can provide a platform for the exchange of both explicit and more tacit knowledge, and a window on areas of possible collaboration.

5. Licensing: Licensing the right to use specific research outputs (IP such as patentable inventions) is an important KEC mechanism. Information on IP that is available for licensing is accessible through university and third party websites, but successful licensing arrangements are long-term relationships often leading to research collaborations and individual contacts.

6. New businesses: Bringing research outputs to market through the formation of a new business can be appropriate when the application represents a 'disruption' to the current market or sector, or where there isn't any obvious external partner to whom the idea could be licensed. New businesses based on research outputs often build their business models around collaboration with larger, established firms to access expertise, equipment and routes to market.

KEC's diversity enables collaboration and/or investment with one or more partners in the private and public sectors, in the UK and internationally.

A combination of activities can create a 'ladder of engagement' to engage externally, for example starting with consultancy before moving on to collaborative research and longer-term multi-faceted strategic partnerships.

Where a company initiates engagement will depend on its level of experience of working with universities; networking events can be an excellent opportunity to meet academics and start a dialogue. By using appropriate KEC tools within a strategic framework or infrastructure, individuals and institutions can build the trust which is fundamental to long-term, productive relationships.

Skills in KEC

KEC professionals sit between internal and external partners, to facilitate a path to achieve mutually agreed goals in a fair and responsible way, acting as specialist 'intermediaries'. The KEC profession is relatively young and, with the advent of initiatives such as the 2014 Research Excellence Framework in particular, the role and remit of the KEC professional is varied and changeable.

KEC practitioners typically combine experience of:

1. a research background, often to PhD level, with a deep understanding of public sector research establishments or universities
2. an industry background, bringing an understanding of commercial requirements

For technology transfer in particular, a 'hard' skill-set is required, including the following:

- ability to identify and set a commercialisation strategy, including market analysis etc
- knowledge of how and when to secure patents - and how to take that patent forward
- licence negotiation: identifying appropriate licences and understanding legal differences between, for example, sole and exclusive licence
- contract negotiation: securing contracts which meet the needs of both partners
- ability to identify and form strategic partnerships with external sponsors/industry contacts/other research institutes
- knowledge of when and how to form spin-out companies and new ventures

'Soft' skills required by KEC professionals can include:

- project management skills, eg managing consultancy and CPD contracts
- communication skills with a wide range of audiences, both technical and non-technical
- emotional intelligence: ability to recognise, appreciate and manage cultural differences
- relationship management: ability to identify and manage expectations for realistic project timescales
- strategic approach: ability to build long-term strategic relationships at all levels
- analytical mindset: ability to identify and take opportunities forward
- creative approach: ability to find new solutions that meet stakeholders' needs

Typical day-to-day activity can involve:

- meeting with academics to discuss new or existing research outcomes
- analysing new inventions (including market analysis and prior art searching)
- working with university colleagues to manage internal administration
- working with patent attorneys on new patent filings
- managing existing patent portfolios
- project management, eg options for translational funding
- marketing innovative services and technologies to potential licensees
- managing post-deal relationships

Case studies of careers in KEC can be found on the PraxisUnico website, www.praxisunico.org.uk/careers

The job titles of these professionals can vary as there are several different roles involved in the KEC remit. Depending on the university's structure and strategic goals, job titles may include technology innovation officer, business development manager, technology transfer manager, and IP manager.

PraxisUnico provides training and recognition of professional skills in KEC to support achievement of Registered Technology Transfer Practitioner status through the global Alliance of Technology Transfer Professionals (ATTP).

KEC in higher education institutions

There is no standard approach to knowledge exchange and research commercialisation as each situation must be assessed on its own merits. However, professionals in the university sector have developed standard contracts and agreements to simplify processes and which external partners can choose to use, such as the Brunswick templates and the Lambert Toolkit and model agreements. The Easy Access IP initiative was also designed to help reduce barriers to accessing university IP.

Although the university sector as a whole is subject to similar pressures (funding, function, impact), individual institutions develop strategy and deploy resources according to their individual strengths. This produces a diverse but effective research ecosystem.

Examples of knowledge exchange and commercialisation structures

Oxford

Wholly owned commercialisation and consultancy subsidiary, Isis Innovation. A central Research Services unit provides support to researchers across the research lifecycle, from research grant to knowledge exchange and commercialisation. Many KE activities are held at faculty level for subject specialisation.

isis-innovation.com

Sheffield

Combined Research and Innovation Services, with the same team taking a commercial idea through from initial stages, to entering the Commercial Assessment System (CAS). The Commercialisation of IP Team has a long-term strategic partnership with Fusion IP, now part of the IP Group.

www.sheffield.ac.uk/ris/commercialising/process

Lincoln

Research Office comprises central roles that support bid writing, funding opportunities, enterprise, ethics and intellectual property with 'college' business development roles supporting different subject areas locally.

www.lincoln.ac.uk/home/research/researchsupport

Further reading

Intellectual Property Office model agreements for collaborative research
www.gov.uk/government/publications/intellectual-property-for-universities
(includes the Lambert Toolkit)

HEFCE, Higher Education and Business Interaction Survey
www.hefce.ac.uk/kess/hebci

EasyAccess IP: A Preliminary Assessment of the Initiative, March 2015
www.ncub.co.uk/reports/easyaccessip.html

Knowledge Transfer Partnerships
<https://connect.innovateuk.org/web/ktp>

KEC professional representatives

PraxisUnico www.praxisunico.org.uk

AURIL www.auril.org.uk

ARMA www.arma.ac.uk

ATTP/ASTP-Proton (EU) www.astp-proton.eu

AUTM (USA) <http://autmvisitors.net>

Academic research links

Centre for Innovation Management, Birkbeck University of London
www.bbk.ac.uk/innovation

Centre for Science, Technology and Innovation Management, University of Cambridge
www.ifm.eng.cam.ac.uk/research/csti

UK Innovation Research Centre (UK-IRC), Centre for Business Research University of Cambridge, Imperial College Business School
www.ukirc.ac.uk/research/university-and-business-links

Science Policy Research Unit, Sussex University
www.sussex.ac.uk/spru

This is the fourth in a series of [factsheets on innovation and growth](#). We welcome suggestions of other topics.

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