Accessing Research Expertise
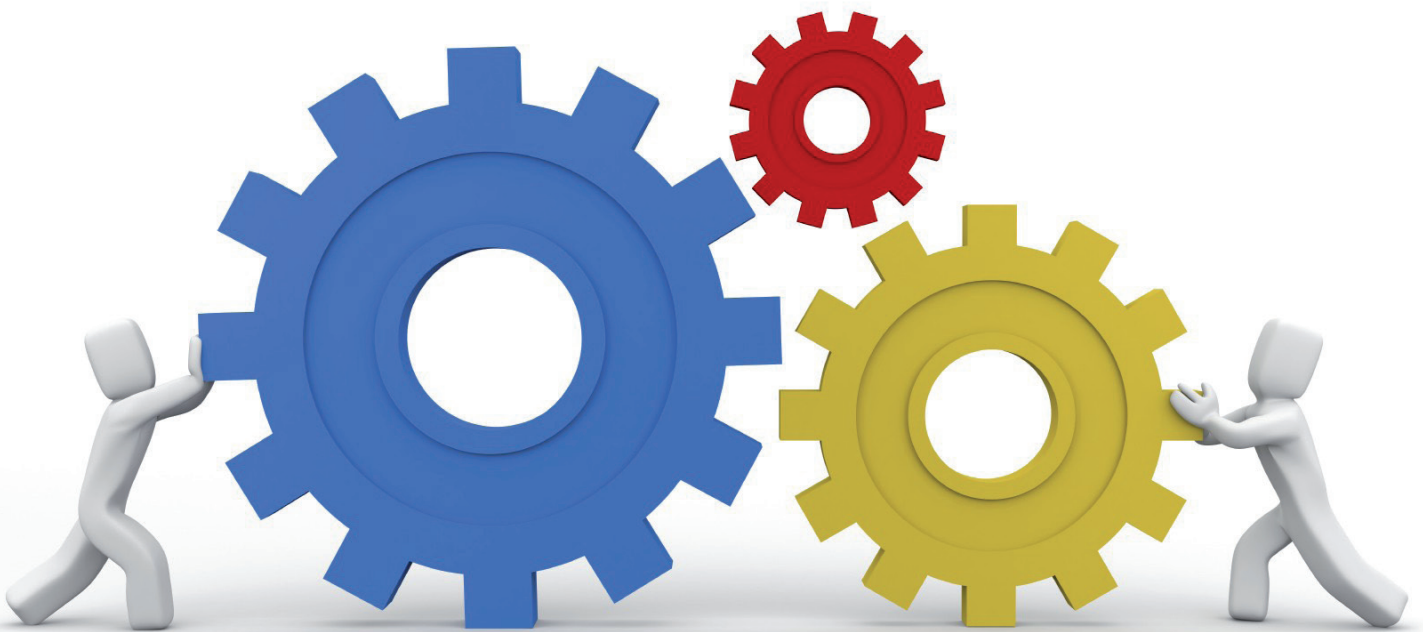
A resource library for SME engagement with the academic research sector

September 2013

Introduction

The purpose of this document

This document seeks to pull together existing sources of guidance and advice on how best to engage and work with the UK's academic research base. It is an output from a Low Carbon Vehicle Partnership (LowCVP) and Society of Motor Manufacturers and Traders (SMMT) project exploring the issues around Small and Medium sized Enterprise (SME) engagement with the research sector. This project identified, amongst other issues, complexity for firms in identifying suitable research expertise, in efficiently reaching research agreements and sometimes in the project process itself.

This resource library is built across the main steps of engagement; finding a partner, building an understanding, establishing an agreement, undertaking activities and maximising outcomes with some general sources of information also included. The aim is to shortcut the time it may take to identify and access current sources of advice and guidance. For each entry you will find a brief description, links to further information and a short summary of the benefits of the source.

This resource library will be maintained and expanded over time by LowCVP. Copies will be available on both LowCVP and SMMT websites. Feedback on its usefulness and suggestions for additional resources should be sent to the LowCVP Secretariat.

About LowCVP

LowCVP is a membership based organisation whose mission is:

"to accelerate a sustainable shift to low carbon vehicles and fuels in the UK and thereby stimulate opportunities for UK businesses".

Working across the whole range of stakeholders within industry and government the partnership carries out research and policy development to drive lower carbon (LC) mobility solutions in the UK road fleet. The work programme is developed annually to identify market barriers and opportunities for LC technology, create tools and policies to encourage LC technology uptake, and monitor and support the early markets for LC technology solutions.

LowCVP does this in three key ways:

- **Connect**: Keeping members up to date with what's going on in low carbon vehicle policy; giving them privileged access to information and intelligence;
- **Collaborate**: LowCVP members can benefit from many opportunities to work – and network - with key UK and EU government, industry, NGO and other stakeholders;
- **Influence**: Members can initiate proposals and help to shape future low carbon vehicle policy, programmes and regulations advice.

The Low Carbon Vehicle Partnership thus plays a vital role in helping Government deliver its low carbon transport strategy, a key objective of which is to ensure the UK takes a leading role in the global shift towards low carbon transport.

Acknowledgements

Thank you to the following organisations for their contribution in the development of this document:

- University of Birmingham
- Coventry University
- Imperial College London
- University of Liverpool
- Loughborough University
- University of Sheffield
- University of St Andrews
- University of Warwick
- Teeside University
- University of Wolverhampton
- Members of LowCVP

The importance of R&D

"innovative firms grow twice as fast, both in employment and sales, as firms that fail to innovate"

The Automotive Sector Strategy, published in July 2013, clearly identified the vital role for investment in innovation and technology in underpinning the medium to long-term future of the automotive industry. The agreement between Government and industry to invest £1bn over 10 years in a new Advanced Propulsion Centre, a commitment laid out within the Sector Strategy, underlines the importance in setting a technology strategy with the scale and scope to ensure that the UK continues to be seen to be a place to innovate.

This financial commitment is supported with a desire to improve co-ordination and collaboration with the academic sector. This initiative will bring greater alignment between fundamental and applied research agendas, whilst proactively finding ways to build upon and enhance the collaboration between industry and academia.

Making it easier for the automotive industry to do business with the research sector is important. According to the 2009 NESTA report 'The Vital 6%', "innovative firms grow twice as fast, both in employment and sales, as firms that fail to innovate". Between 2002 and 2008, half of all new jobs were created by just 6% of companies in the UK. Whilst diverse in sector and geography they had one common trait, they invested in innovation. The study found that those companies who launched new products between 2002 and 2004 enjoyed average sales growth of 10% versus 5.8% for non-innovators. This finding is not an isolated result. The 2013 NESTA report 'The Impact of Direct Support to R&D and Innovation in Firms' concluded that increasing investment in R&D can directly lead to the development of new products, sales and employment opportunities.

Further studies highlight the role investment in R&D has on the growth in companies' productivity and output. There is a strong empirical evidence base that suggests the more a company invests in R&D, the more productive it is, as highlighted by the Measuring the

Returns to R&D paper (Hall, Mairesse, Mohnen 2009). The paper summarised findings from over 20 econometric studies, all of which estimated investment in R&D would result in a company's productivity increasing. Within the same study, estimates of rate of return from R&D investment were consistently positive with returns ranging between 28% and 125%, demonstrating the potential impact investment in R&D can have on a company's bottom line. Furthermore, the impact of research activities on companies' productivity in the high-tech segment, including such sectors as automotive and automotive parts, appears to be greater than in its low-tech counterpart[1].

Investment in innovation can also underpin competitive advantage. Findings from the HEFCE Business and Community Interaction Survey 2011-12 and other academic papers, such as those by Ortega-Argiles (2008) and Rincon and Vecchi (2003), all suggest that companies of any size gain competitive advantage from their association with universities.

The positive impact universities can have on economic growth was recognised by the interim findings of the Witty Review (2013). Universities were recognised as resources of economic advantage, able to provide a range of products and services to help the UK's local economies, with their research and innovation activities spearheading localised economic development.

The UK academic sector is a world leading resource for your business

Here in the UK, SMEs have a very real opportunity to engage with some of the best academic researchers in the world. The UK is home to seven universities within the global top 50, a proportion second only to the United States[2].

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[1] *Productivity Gains from R&D Investment: Are High-Tech Sectors Still Ahead?* Ortega-Argiles, Piva, Vivarelli (2011)
[2] *World University Rankings,* Times Higher Education, 2012-2013

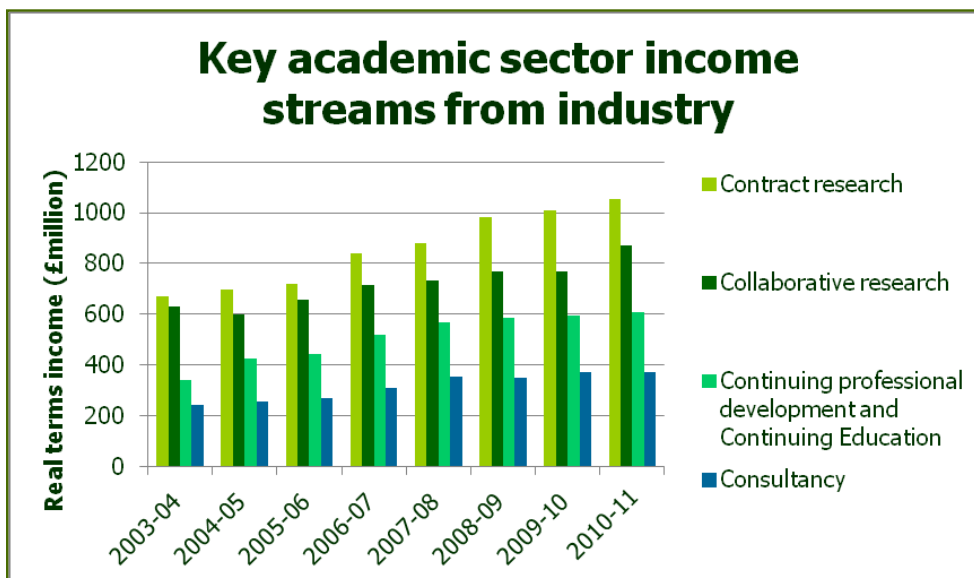# Key academic sector income streams from industry

Figure 1: Account of academic sector income across key streams from industry 2003-2011
Source: Higher Education-Business and Community Interaction Survey 2010-2011

The UK is also only second to the US in terms of the proportion of the world's top 1% highly cited research papers, a key indicator of a country's academic research expertise according to a report commissioned by the Department for Business, Innovation and Skills (BIS) in 2011[3]. The same report found UK academic researchers to be more efficient with resources than those in countries of the likes of Germany, China, Japan and the US, with more citations per unit spend of Gross Expenditure on Research and Development (GERD)[4].

The Dyson report, Ingenious Britain (2010), suggested that the draw of UK research based postgraduate courses in science and technology may also be an indicator of the UK's academic research expertise in this area. Some 70% of the UK's postgraduates studying in these areas are international students from outside of the EU.

The excellent academic research expertise of the UK, recognised the world round should be something UK industry acknowledges as a valuable resource.

## Industry is increasingly using UK academic research expertise

Results from the 2012 Higher Education-Business and Community Interaction Survey state that contract research rose from £669million to £1.053billion between 2003-2004 and 2010-2011, representing a 57% increase. This, during a period that includes the global economic recession, underpins the importance many companies place on investment in R&D as a driver of revenue.

As well as growth in contract research income, increases during this period were also seen in Continued Professional Development (CPD) and Continuing Education (CE), collaborative research and consultancy income streams. These mechanisms represent a range of engagement mechanisms, from training and work force skills development to project collaborations and ongoing advice and guidance. Between 2003 and 2011 CDP and CE rose by 77% to £606million, with collaborative research and consultancy rising by 39% and 52% respectively to a total of over £1billion[5].

[3/4] *International comparative performance of the UK research base 2011,* Department of Business, Innovation and Skills, 2011

5 *Higher Education-Business and Community Interaction Survey,* Higher Education Funding Council for England, 2012

Issues with industry-academia R&D engagement
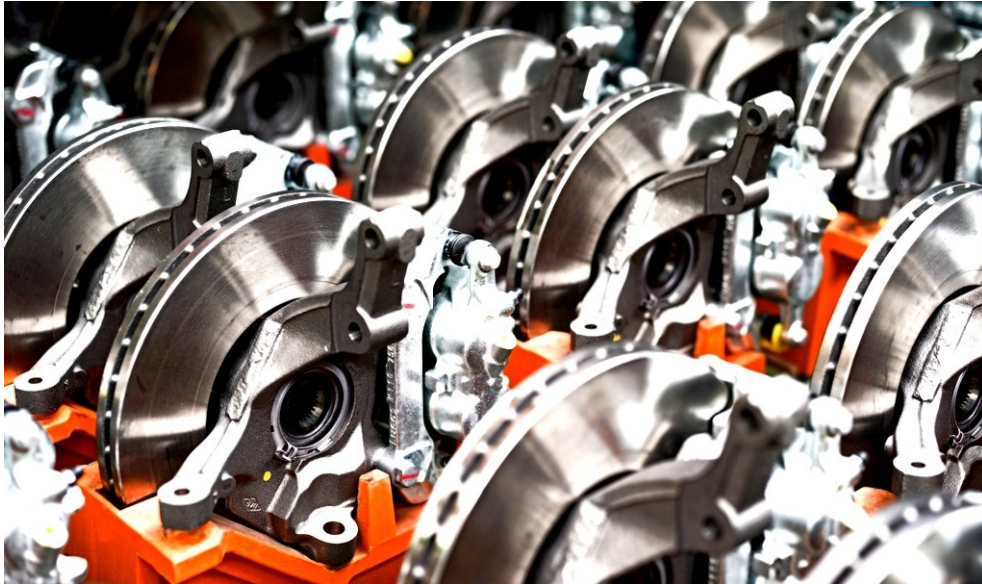
R&D and innovation investment has been shown to have the potential significantly to support business performance, and growth in university income from such activities reflects the industry's recognition of the role that research engagement can have. However, there are opportunities for development and improvements in how industry and academic research expertise engages, develops and delivers innovation.

An initiative instigated by LowCVP and SMMT has explored the underlying issues facing industry-academia engagement with a view to finding mechanisms that overcome perceived and real obstacles to the effective use of UK university research resource.

Project methodology

A combination of qualitative, quantitative and desk research was utilised to investigate the two key target audiences, academia and industry, and to gain insight from previous research reports and publications. In-depth interviews were conducted with universities and SME members of LowCVP completed an on-line survey.

The survey approach was centred on a broad five step process defining the research engagement lifecycle:

1. **Finding the right partner**
2. **Building an understanding**
3. **Establishing an agreement**
4. **Undertaking activities**
5. **Maximising outcomes**

Project findings

The range of issues identified during the research process were many and varied but with significant commonality amongst respondents' feedback. The following resource library section considers key obstacles and existing useful tools against each process step.

All the SMEs surveyed had worked with academic partners at some point within the last five years. They identified several benefits of such engagement, particularly "access to expertise", "means to identify and recruit future staff" and "access to information in a specific field".

Throughout the research, however, three key

themes were repeatedly raised as obstacles that cut across many of the process steps; individualism, preconceptions and communication.

Individualism

It was recognised that the academic sector is strongly characterised by silos at departmental and individual researcher levels. This individualistic nature of the academic sector is challenging as it can complicate finding partners and prevents the opportunity for developing a 'one size fits all' approach. As a result, companies must constantly adapt and learn when working with new academic partners. Individualism can prevent the opportunity to build in standardisation, which may be further complicated by the differences between universities. Without standardisation, best practice may be difficult to identify and apply, making project **success highly dependent upon the approach and capability of the individuals involved.** Respondents also highlighted the issue of misaligned individual goals; academics tend to focus on fundamental questions of scientific discovery within extendable timeframes, while SMEs want optimised product solutions in very fixed timeframes.

Preconceptions

Preconceptions and misconceptions were raised by both sectors as limiting factors. The stereotypes: firstly one of academic aloofness and an 'Ivory Tower' approach, undermined industry's confidence in real world delivery that could add to bottom line benefits; the other, that industry is overly demanding and constantly changing objectives and deliverables may make academia reticent to participate. **These preconceptions may act as a constraint on the total volume of activity in the UK.** The negativity of stereotypes may also make initial dialogue and agreement between partners more difficult.

Communication

Terminology is different between industry and academia; it is also different across areas of research expertise. **Mismatches between industry colloquialism and academic vernacular** can delay project success, stress project relationships and even inhibit project delivery. The skills and attention to detail required to overcome such barriers are not always prevalent in either the industry or research partner and can take both a financial and time investment to address. Clearly and regularly communicating project requirements and progress are also key to providing assurance to SMEs that their objectives can and will be met.

Finding the right partner

The main obstacles to success identified in the survey

The research landscape is diverse

There are over 130 universities and colleges of higher education in the UK[7], and according to the Higher Education Statistics Agency (HESA) over 180,000 academic staff[8].   This sector is strongly characterised by an individualistic approach, be that at university, department or researcher level. This, combined with the sector size can make it difficult for industry to identify quickly the right research skills, particularly if new to working with academia. The problem is compounded by a lack of a well recognised, relevant and standardised system for industry to gauge effectively researcher capability.

Reputation is deemed the only reliable indicator of expertise

Given the landscape, it is understandable that for industry, reputation can be a key factor when looking for a university to partner with. Whilst a proven track record is often desired, the power of reputation can lead to an inundation of research requests for a few universities, leaving less well known but equally capable institutions with an excess of capacity. This imbalance may be limiting the total amount of engagements undertaken. A stronger referral process between universities was identified as a potential solution to this issue.

University marketing doesn't always meet industry's information needs

As with all sectors, the effectiveness and impact of an organisation's marketing and communication activity is varied across universities. Of particular relevance here is the holistic and general approach universities may take to their communications, versus the technology specific requirements of industry. There can be a mismatch in what a university pays to say about itself and the information required by a company looking for R&D expertise.

[7] Universities UK, 2013
[8] *Higher Education statistics for the UK 2009/2010*, HESA, 2011

Chance is surprisingly important

When academia proactively looks for industry partners, both the individualistic nature of the sector and a generalised marketing approach can lead to what was recognised, by both industry and academia in the survey, as a process driven by chance, with academics looking to events and conference networking as a major source of new industry partner contacts.

Overcoming these issues could lead to an environment where more R&D is undertaken, where more universities are fully engaged with industry partners and where industry, no matter what the size of company, feels confident in reaching out and securing world leading research expertise.

Resources

rae
2008

Research Assessment Exercise (RAE) 2008

Ideal for:
- **Providing a metric of academic research excellence to allow for comparison between potential academic partners.**

Key benefits:
- Provides companies with a metric to find research expertise in academic disciplines allowing users to identify expertise in specific areas.
- Allows companies to check potential academic partners' research excellence on an institution and individual academic level.

RAE is a periodic assessment of university research quality last conducted in 2008 by the Higher Education Councils of England, Wales, Scotland and Northern Ireland. Each university submitted research papers by academic discipline or "unit of assessment". Results show

the distribution of a university's scores across the range.

Results can be seen by unit of assessment allowing for comparison between universities, or by university allowing users to see which areas are strengths. An individual academic's number of submissions and their titles can also be seen.

To view the results, please click here.

www.rae.ac.uk/

UCAS
University and college map

Ideal for:
- **Finding academic institutions in a specific geographical area.**

Key benefits:
- Having a comprehensive list of UK universities and colleges could help save companies time when searching for partners on a local level.

This is a list of over 350 universities and college locations across the UK. It is a list geared towards undergraduate applicants so contact information is for admissions departments as opposed to a university's business facing arm. However, with time a tight commodity for many companies, this tool can help companies very quickly identify the universities closest to them.

Please click here to view the map.

www.ucas.me/map-of-universities

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hefce
HIGHER EDUCATION FUNDING COUNCIL FOR ENGLAND

Knowledge exchange strategies

Ideal for:
- **Providing additional background information on a specific university.**

Key benefits:

- Each of the 99 university knowledge exchange strategies provides in depth the university's position and aims, allowing companies to understand quickly if they are appropriate.
- Provides contact information for key innovation related personnel making it convenient for companies to get in touch quickly.

99 universities were asked by HEFCE to submit knowledge exchange strategies for 2011-2015 for the purpose of assigned funding. Topics covered include how the university performs knowledge exchange, where its funding goes and spending plans for the period up to 2015. Each strategy is available online for review.

These will be of use for companies with a particular university in mind that they would like to work with but would like to understand their background more.

Alternatively, if a company has an idea of the type of strategy or approach to knowledge exchange they would like to work with, these strategies may also be of use.

Please click here to access the strategies.

www.hefce.ac.uk/whatwedo/kes/heif/

Technology Strategy Board
Driving Innovation

_connect

Ideal for:
- **Accessing a number of academic partners with specific technology interests.**

Key benefits:
- Provides access to a wide range of academic contacts in one central system, helping companies save time if searching for suitable academic partners.
- The networks' format categorises contacts by interest, which companies can use to identify partners with mutual interest.

_ connect is an online forum for those within the

UK innovation sphere. The forum is broken down into a number of topic based networks that users can search through for partners such as Competitions, Enterprise Europe or Transport. Within each are sub categories (discussion boards, event listings, network member information etc.). Through this, companies can find academics with mutual interests and, most importantly, can contact them directly.

Alternatively, users can access individual university profiles if they have a particular one in mind, such as one that is local or that is reputable, and contact academics from those organisations directly.

To access _connect, please click here.

connect.innovateuk.org/

RESEARCH COUNCILS UK

Gateway to Research

Ideal for:
- **Giving an indication of the amount of public funding provided to universities for research projects in recent years.**

Key benefits:
- Allows industry to find university Research Council funded projects history, highlighting research disciplines they are active in.

The Gateway to Research works by searching through the seven UK research council funded project histories. The database allows for searches by topic as well as institution, allowing industry to find universities active in specific research areas or topics, as well as individual universities' research council histories.

The Gateway is in beta testing, scheduled for final launch at the end of 2013.

To access the Gateway to Research, please click here.

gtr.rcuk.ac.uk/

The EPSRC Grants of the Web portal, which the

Gateway pulls data from, offers greater levels of breakdown but only covers research in the fields of engineering and the physical sciences.

To access the EPSRC Grants on the Web database, please click here.

gow.epsrc.ac.uk/NGBODefault.aspx

SMMT
DRIVING THE MOTOR INDUSTRY

Strategic technology documents

Ideal for:
- **Indicating which institutions are active in research in the Automotive Council's five strategic technologies.**

Key benefits:
- Highlights which universities are active by technology area, potentially saving companies time if searching for expertise by technology.

For each of the Automotive Council's five strategic technologies, SMMT has created a document that comprises information on key research centres operating in that area. Each centre entry includes a brief description, contact details and signposting to additional information. Each document has an appendix of a list of publically funded research projects identified as falling within the technology area.

For the technology areas covered, the documents can help companies identify potential academic partners by highlighting active centres of research, most of which are based at universities. The appendix, research project lists, can also provide an indication of recent research activity levels that may be of use in identifying a suitable academic partner.

To view, please click here.

www.smmt.co.uk/products-services/ technology-and-innovation/

Engineering Council

Accredited degree search

Ideal for:
- **Indicating which universities may be active in engineering disciplines.**

Key benefits:
- Allows companies to identify academic teaching excellence in the field of engineering, an indicator that could suggest where research expertise lies.

This is a search engine and comprehensive listing of Engineering Council accredited degrees, designed to help undergraduates ensure their course is up to a certain quality standard.

While this only provides accreditation of the quality of degrees taught, it may give an indication of the disciplines an institution has a research interest in.

To access the list, please click here.

**www.engc.org.uk/education--skills/
accreditation/accredited-course-search**

LowCVP
Low Carbon Vehicle Partnership

Low Carbon Automotive Directory

Ideal for:
- **Indicating the range of universities active in the field of low carbon automotive technology.**

Key benefits:
- Universities listed in this tool have declared an interest in low carbon vehicle technology, providing a useful first port of call for companies seeking universities in this field.
- Some university entries include research interests, experience or expertise in low carbon technology sub topics to help companies with more specific needs identify partners.
- Provides contact information for individuals at the academic institutions so companies can easily make direct contact.

The Directory is an online database managed by LowCVP (with support from government agency UKTI and department, BIS), which provides a convenient list of UK organisations' capabilities in the low carbon automotive sector.

It includes a search function that allows users to identify universities with an interest and expertise in low carbon automotive technology and direct contact information as well.

To view the directory, please click here.

lowcdirectory.lowcvp.org.uk

Transport iNet
east midlands innovation

Transport iNet

Ideal for:
- **Engaging with academia in the East Midlands.**

Key benefits:
- Can link business and universities with common R&D interests together, streamlining the process of finding a partner.
- Its services are fully or part funded by the EU Commission which can help reduce the financial impact of working with academia.

Transport iNet is an East Midlands centric innovation agency that brings together businesses, sector organisations and universities with a common interest in transport innovation.

It provides support, advice and guidance to companies looking to engage with academia for transport related research and innovation. Services include funds to support companies looking to access academic expertise and free advice and guidance on both the innovation process and how to find relevant academic expertise.

To find out more, please click here.

www.transport-inet.org.uk/

EPSRC

Centre for Doctoral Training (CDT)

Ideal for:
- **Indicating academic expertise in highly specialised engineering disciplines.**

Key benefits:
- Indicates academic expertise in highly specific technology areas to help companies save time searching for partners.

Centres for Doctoral Training are four year EPSRC funded programmes that bring together expertise to train engineers and scientists in highly specialised areas. Examples of some of the Centres' topics include hydrogen fuel cells and composites manufacture. The centres provide funded skills training for engineers and scientists for four years and nearly all engage with industry.

While a company may not need a doctoral centre for its research needs, it may use its existence as something of an accreditation for a university's expertise in that area.

For more information on the CDTs, please click here.

www.epsrc.ac.uk/skills/students/centres/current/Pages/centres.aspx

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Building an understanding

The main obstacles to success identified in the survey

Communicating effectively

All of the key issues in this process step are underpinned by an aspect of communication and, whilst common understandings can be often difficult to reach, no structural impedance within the sectors was highlighted by respondents which would prevent improvement in this process stage. To some degree, each participant has the power to make this a more efficient and effective process.

Preconceptions

As with many aspects of society, the cultural differences between industry and academia can be shortcuts to stereotypes, and these preconceptions can extend into initial dialogues between partners and hinder the development of trust. Preconceptions go beyond personality profiles and can influence expectations around project content, timing and output.

Different culture and drivers within academia and industry

There are, perhaps, differing priorities between sectors with industry looking for growth in revenues and universities looking for growth in knowledge. It is recognised that investment in R&D can and does deliver against both goals, but that tension may arise from the differing approach this can sometimes imply. Respondents to the LowCVP/SMMT survey used 'thoughtful' to describe academia and 'forceful' when describing industry. Clarity of expectation, objectives and planning were all deemed vital for effective projects, supported by strong project management.

Language differences

The differences in language use, terminology, acronyms and implied meaning are seen to impact at individual, departmental, university and sector levels. Clarity of expression is key to effective communications, with time investment, sense checking and common dictionaries all proposed as useful tools.

Resources

EPSRC

Quick Guide to Business

Ideal for:

- **A brief introduction for industry to working with academia.**

Key benefits:

- Provides guidance to companies on a number of key issues in one place which can help save time.
- The website also provides guidance to academia which may give companies insight as to how academia may approach them.
- Provides template agreements for collaboration which can help save companies time.
- Provides up to date research call information which can help companies keep up with funding opportunities.

The EPSRC is the research council for engineering and the physical sciences in the UK. It is the channel for much of the publically funded academic research in this discipline area. Its Quick Guide to Business is a basic online guide that provides useful information for businesses looking to access academic research expertise.

This may be of particular interest to those new to working with academia. The content introduces in a plain and simple way many of the issue areas including funding, IP and confidentiality.

The Guide also has links to other useful websites such as the Technology Strategy Board (TSB) and the comprehensive EPSRC Grants on the Web portal, which accesses a database of academic research projects that have received funding from the EPSRC.

To access the website, click here.

www.epsrc.ac.uk/quickguide/Pages/business.aspx

CBI
THE VOICE OF BUSINESS

Business-university collaboration for research and innovation

Ideal for:

- **Providing an introduction to working with academia.**

Key benefits:

- The content is very accessible and the document quite short which may help companies quickly understand if there are any opportunities for engagement.
- Includes a SWOT analysis of engagement which may help companies to see both the issues and opportunities in industry-academia engagement.

The guide is designed to help companies interested in engaging with academia for research purposes. It clearly and simply sets out some general principles, best practice tips and details of specific schemes and initiatives that companies may find useful if looking to engage with academia.

To read in full , click here.

www.cbi.org.uk/media-centre/ publications/2010/07/business-university -collaboration-for-research-and- innovation/

PACEC CBR

Understanding the knowledge exchange infrastructure in the English Higher Education (HE) Sector

Ideal for:

- **Those looking for a summary of the structure of English HE organisations.**

Key benefits:

- Provides a comprehensive account of university drivers, processes and industry engagement methods that can give companies an understanding of the wider academic picture.

If you are new to working with academia but want a quick way of getting up to speed with how it typically works, read this.

One of a series of papers looking to establish how knowledge exchange takes place, this report looks to establish and benchmark the English Higher Education Sector. This report will be of particular interest to those new to working with academia, who do not have an understanding of the structure, drivers and knowledge exchange process of today's universities.

Read the full report here.

www.pacec.co.uk/index.php/ publications/easytablerecord/5- publications/200

European Commission

The State of European University-Business Cooperation

Ideal for:

- **Providing insight into the academic mindset with regard to European funding.**

Key benefits:

- Research findings are pan-European so companies could apply findings to any of their European university partners.

This is a report summarising results from a European-wide census of over 6,000 academics to benchmark what they considered the benefits and barriers to collaborating with industry were.

Along with putting forward the academic viewpoint, the report also makes a number of recommendations for effective industry academia engagement and provides over 30 best practice case studies.

It is a comprehensive document that covers many of the key issues in depth, ideal for companies that have some experience working with academia.

Read the full report here.

ec.europa.eu/education/higher- education/doc/studies/munster_en.pdf

CIHE
LEADERSHIP FOR BUSINESS AND HIGHER EDUCATION

Key attributes for successful Knowledge Transfer Partnerships (KTPs)

Ideal for:

- **Giving insight into how a KTP could work for a company.**

Key benefits:

- Provides an in depth look at the KTP programme which can give companies real insight as to what they can expect from the programme.
- Includes a number of successful KTP case studies which can show companies how to get the most out of a KTP.

This is a comprehensive report, commissioned by the TSB, that aims to clarify how the various players, mechanisms, underpinning systems and processes within the Knowledge KTP programme, contribute to the success of individual KTP partnerships and projects.

The teachings are not only applicable to KTPs. Those planning to work with academia in other ways in the future will likely be able to take something away from it as well.

Read the full report here.

www.cihe.co.uk/category/knowledge/publications/

Establishing an agreement

The main obstacles to success identified in the survey

Communicating effectively

Finalising the detail can put differences of understanding under the spotlight, heightening the sense of communication conflict. This impact can be limited through effective dialogue in the earlier process stages.

The cost of research

With project clarity comes budget certainty, and the cost of conducting research, often fully realised whilst establishing an agreement, can prove prohibitive, particularly for the SME community.

Finding the budget

Budgetary uncertainty can prevent SMEs exploring the opportunity of working with researchers. Awareness of likely project costs and of available supporting funding mechanisms were both raised as useful tools to overcome this issue.

Managing Intellectual Property (IP)

Results from the survey would indicate that IP's reputation is far worse than the reality of finding an agreed solution to ownership between partners. In fact, several of the universities surveyed saw limited value in IP ownership for themselves with priorities set about publication rights to support reputational development, rather than rights supporting commercial exploitation.

Where IP rights need to be negotiated, the variety of approach, sometimes at a departmental level can negatively impact on negotiation time and costs as best practice standardised approaches may not be utilised. Whilst impactful this never completely prohibits a projects progress.

Resources

WIPO
WORLD
INTELLECTUAL PROPERTY
ORGANIZATION

SME Guide for Business

Ideal for:
- **Those new to working with academia or those looking to market innovations internationally.**

Key benefits:
- Allows companies to access introductory explanations of a wide range of issues relating to IP, all in one place.
- Content is in various media formats which may help companies effectively engage with the content.

This online Guide for Business is provided by the World Intellectual Property Organisation (WIPO), the UN's agency for IP. It provides guidance and information specifically designed for SMEs. Topics covered include marketing, commercialisation and valuation of IP, and come in the form of best practice guidance, case studies and interactive learning. Much of the latter is at an introductory level but even the experienced will find some of the content of interest.

To access the guide, please click here.

www.wipo.int/sme/en/

INTELLECTUAL PROPERTY OFFICE

Lambert Toolkit

Ideal for:
- **Setting up a research agreement with a university.**

Key benefits:
- Collaborative agreement templates for a range of engagement types are provided in one single place.
- Templates provided are recognised by both industry and academia so provide a proven, fair basis on which partners can build their own collaborative agreement.

The Lambert Toolkit is for universities and companies that wish to undertake collaborative research projects. There are five one to one and four consortium model agreements as well as guidance information and documents to help companies understand both the agreements and the wider issues around collaboration and IP.

The agreements are focussed on supporting innovation, not commercial returns so may not be suitable for all.

To access the toolkit, please click here.

www.ipo.gov.uk/whyuse/research/ lambert/lambert-guide.htm

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INTELLECTUAL PROPERTY OFFICE

Intellectual asset management for universities

Ideal for:
- **Providing insight into the academic approach to IP.**

Key benefits:
- Provides insight into the academic viewpoint on IP and IP policy which may be of use to companies negotiating with academic partners.

This is a report written for senior university staff to advise on policy and direction around IP.

Companies looking to work with academia may find value in being able to understand the academic viewpoint, particularly if they haven't collaborated with academia before and need an idea of what to expect.

To view the report, please click here.

www.ipo.gov.uk/ipasset-management.pdf

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PACEC CBR

The Intellectual Property Regime and its Implications for Knowledge Exchange

Ideal for:
- **Understanding the academic perspective of IP in depth.**

Key benefits:
- Provides a comprehensive account of academia's view and understanding of IP which companies may find useful when approaching negotiations with academic partners.

This report forms part of a series published by PACEC and the CBR. Its aim is to explore the exploitation of IP and its role in knowledge exchange activities of English universities. The report captures and quantifies the views of both academia and industry on perceived constraints around IP as well as suggestions for how to overcome them. Its results suggest universities have done a lot to support the nurturing of IP but could maybe be more entrepreneurial when it comes to exploitation.

To read the report in full, please click here.

www.pacec.co.uk/publications/ The_Intellectual_Property_Regime_and_it s_Implications_for_Knowledge_Exchange. pdf

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Undertaking activities

The main obstacles to success identified in the survey

The burden of administration

Not all universities or individual researchers are adept at project management and the administrative requirements placed on academics can be a source of tension. Project updates and reporting, often seen as vital by industry, can be seen as a distracting burden for researchers. Administrative issues are seen to increase when working with multiple partners, particularly in publically funded European projects

Changing project priorities and parameters

University researchers are often used to support projects at early technology readiness levels – fundamental research. By their nature these projects, no matter how well planned, can take unexpected routes leading to changes in timelines, project costs and sometimes project deliverables. SME priorities can also change midway through a project, often through external factors such as funding availability, changes of company ownership or management, or key investor requirements. There is flexibility required to manage effectively any deviation from initial task focus and this can cause tensions between partners.

Resources

MITSloan
Management Review

Best practices for industry-university collaboration

Ideal for:
- **Giving a quick indication what works and what doesn't in industry academia engagement.**

Key benefits:
- Best practice is simply and clearly laid out and explained, which can help companies quickly access and understand how it can work effectively with academia.
- Best practice is based on the experiences of a number of multinationals, which companies may find adds credibility to the suggestions.

This is a best practice guide that specifically looks at the process of industry and academia working together once an agreement is in place. It is based on evidence from a survey of over 100 projects at 25 multinational companies that regularly collaborate with universities. The main body of the document explains seven key recommended practices, along with five myths that do not affect collaboration.

The report also includes some additional background information that may be of interest. For example, from the projects surveyed 50% of collaborative projects resulted in significant research output but only 40% of these were exploited to any great impact.

To access the guide, please click here.

osp.mit.edu/sites/osp/files/u8/ bestpractices.pdf

Making industry-university partnerships work

Ideal for:
- **Highlighting how engagement can work for your company.**

Key benefits:
- The report includes 14 in depth case studies so that companies can find one they can relate to and learn from.
- The range of case studies also demonstrates the different types of engagement mechanisms and types of partnerships which may be of interest to companies looking for new ways to engage with academia.

This report was commissioned by the Science Business Innovation Board, a Belgian not-for-profit scientific association that conducts policy research. The report aims to address the challenge of bridging the industry-university divide by highlighting successful collaborations and sharing lessons learnt in them.

It highlights what some companies consider makes universities attractive as collaborative partners, what structures make for strong partnerships and what approaches can be taken to make the engagement as smooth an activity as possible.

To view the report in full, please click here.

www.sciencebusiness.net/ Assets/94fe6d15-5432-4cf9-a656-633248e63541.pdf

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Maximising outcomes

The main obstacles to success identified in the survey

Differences in appetite for results publication

Academia's desire to publish the outcome of research can put pressure on a relationship with industry due to perceived conflicts in confidentiality. Publication is often seen by universities as a way of building reputation, awareness and securing future funding. Within industry there can be concern about undermining commercial gain through providing too much sensitive data. Where publication and project results are communicated there is a question as to whether this is as impactful as it could be.

Moving from research resource to research partner

While not necessarily an issue, there can be times when industry and academic partners can look to progress their relationship in different ways. For academia, building long term partnerships is often seen as an aim in a successful engagement, helping secure additional future revenue. Industry may be more driven to find specific and short term expertise for particular developments, taking more of a portfolio approach to engagement with academic research.

Resources

Use Diffuse

Ideal for:

- **Providing SMEs with an indication of what working collaboratively on research across Europe is like.**

Key benefits:

- Addresses issues in a plain and simple way which may be of benefit to those new to working with academia.

- Provides best practice based on anecdotal evidence to support recommendations on how to use and diffuse research results which again may make the content more accessible.

This Guide is intended to provide SMEs with practical, useful and easy to follow advice on how to maximise the impact of Research and Development projects by ensuring that the results are effectively used and disseminated. Input for the manual has been based on an analysis carried out in 2008 of R&D projects.

The guide includes case studies, best practice and a number of recommendations for how SMEs can effectively collaborate with academia, with a focus on what to do with the research results.

To access the report, please click here.

ec.europa.eu/research/sme-techweb/pdf/ use_diffuse.pdf

REF2014

A brief guide for research users

Ideal for:
- **Explaining how the excellence and impact of academia's research will be assessed.**

Key benefits:
- Summarises and explains one of the key economic drivers for academia to work with industry, which may help businesses understand what to expect from their partners.

The Research Excellence Framework is the system that will periodically assess UK universities with assessment results, determining in part a university's future funding.

Part of the exercise assesses submissions from industry that verify the impact of a university's research on them. This is one of the ways academia may look to maximise the outcome of a project.

This guide provides the background to REF and explains how it works. It also provides guidance on how industry can support its academic partners through submitting evidence. This is a useful and, importantly, brief summary for anyone looking to understand one of the key drivers for universities to engage with academia.

To read the guide to REF, click here.

www.ref.ac.uk/media/ref/content/ researchusers/REF%20guide.pdf

For additional information and background on the REF 2014 process, there is an in depth guidance document for universities submitting to the process. Pages 26-28 on research impact may be of interest. Click here to access the document.

www.ref.ac.uk/media/ref/content/pub/ assessmentframeworkandguidanceonsub missions/GOS%20including% 20addendum.pdf

SMMT DRIVING THE MOTOR INDUSTRY

R&D Newsletter

Ideal for:
- **Circulating publically funded research results with SMMT membership.**

Key benefits:
- Circulation includes over 600 industry contacts within SMMT membership which can help raise the profile of a project.

The SMMT publishes a quarterly R&D newsletter that is circulated within its membership and hosted online. It comprises articles written typically by academics but there are opportunities to include articles on research results from SMEs if publically funded. The aim of the newsletter is to disseminate results of research in areas of interest to the automotive industry.

To view past newsletters, please click here.

www.smmt.co.uk/category/news-events/ newsletter/r-and-d-newsletter

General information

This chapter covers topics that fall outside of the five key steps of industry-academic engagement. Topics covered range from a history of industry-academia engagement through to UK policy around education, innovation and the economy. Reports on peripheral items such as comparisons with the US knowledge exchange system and guides for how to access funding and finance to support activity in this area are also included here.

Resources

Department for Business Innovation & Skills

A Review of University-Business Collaboration

Ideal for:
- **Companies looking to gain an understanding of the current industry-academia landscape and the role government plays in supporting activities in this area.**

Key benefits:
- Puts forward a set of recommendations for industry, academia and government, which may help companies identify potential issues they were unaware of.
- Provides an up to date (2012) snapshot of the state of industry-academia engagement that may help companies familiarise themselves with what working with academia is like.

This is an independent review conducted by Professor Sir Tim Wilson into industry-academia collaboration, published in February 2012. In particular it looked at how they could help ensure graduate skills and employability meet the needs of business, maximise the university sector's capabilities in business-led research and innovation and realise the benefits of the strong

role universities can play in development of its local economy.

Chapter 2 provides a history of government policy in this area, chapter 3 lays out the landscape of industry-academia engagement and chapter 5 on industry-academia research may be of particular interest to companies working with academia.

To view the report in full, please click here.

www.gov.uk/government/uploads/
system/uploads/attachment_data/
file/32383/12-610-wilson-review-
business-university-collaboration.pdf

NCUB National Centre for Universities and Business

National Centre for Universities and Businesses

Ideal for:
- **Providing easily accessed news and online content on industry-academia engagement in the UK.**

Key benefits:
- Provides a convenient central hub for the latest information and news on industry-academia engagement.
- Content is provided across a range of media platforms which may make accessing the information easier and more engaging than in other places.
- The Centre's blog can help keep companies up to date with the latest news and opinion articles in this area.

The National Centre for Universities and Business (NCUB) develops, promotes and supports world-class collaboration between universities and business across the UK. This is a new venture that came out of recommendations made in the Wilson Review (2012).

The aim of the Centre is to find practical ways of harnessing the talent of the UK's universities, and groundbreaking research and development, for the benefit of UK plc.

The Centre itself is in the process of being developed but a beta website has been launched that provides some useful content for companies looking to work with academia. The website includes guides for SMEs, case studies of successful engagement and blog posts. These are all across different media platforms, providing a different way of engaging with the content in this area.

To access the beta website, please click here.

www.ncub.co.uk/

I994 group>
Established to promote excellence
in university research and teaching

Enterprising Universities

Ideal for:
- **Learning about the current challenges and issues SMEs may face when working with academia.**

Key benefits:
- A wide range of key issues including IP, Quality Related Funding (QRF) and Full Economic Costing (FEC) are introduced and explained in a single document.
- Includes practical recommendations for how industry can effectively work with academia, which may be of use to those about to engage with universities.

This is a 2010 policy report from the 1994 Group of Universities, a group of 11 research intensive UK universities. It explores many of the issues that crop up when industry and academia work together, including IP and commercialisation of research but also provides the context and argument for why collaboration is important. It also puts forward best practice for both industry and academia to help maximise opportunities, supported by case studies.

Read the full report here.

www.1994group.co.uk/publications/ Enterprising%20Universities%20Policy% 20Report%20Sept%202010.pdf

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CIHE
LEADERSHIP FOR BUSINESS AND HIGHER EDUCATION

Collaboration and research publications

Ideal for:
- **Building on an established understanding of industry-academia engagement.**

Key benefits:
- There are a number of reports from the CIHE that speak to a range of areas, making it convenient for industry to access all in one area.
- The newer reports have excellent summaries that companies may find save them time.

The CIHE is a strategic leadership network of blue-chip companies working with vice chancellors and universities to develop the UK's knowledge-based economy. It publishes a number of reports that will be of interest to any companies engaging with academia for collaborative research purposes.

Some of the reports in this library have been referenced earlier on in this document. However, there are a number of additional publications that may be of interest to those looking for further reading in this area.

To access the bank of publications, please click here.

www.cihe.co.uk/category/themes/key/ collaboration/

PACEC

PACEC report library

Ideal for:
- **Exploring the wider context of**

industry-academia engagement.

Key benefits:
- Pulls together all PACEC reports in this subject area in one place for the convenience of users.
- Executive summaries are published separately, allowing for easy access to key points and information.

Public and Corporate Economic Consultants (PACEC) is a consultancy that has experience in the area of industry-academia engagement. Notably, it has recently published a series of papers alongside the University of Cambridge Centre for Business Research that focussed on knowledge exchange practices in English Universities which have been referenced in this document already.

The PACEC library includes a number of reports on industry-academia engagement, some of which are referenced earlier in this toolkit. Examples of some of these which are more peripheral include comparisons with knowledge exchange in the USA and the impact of knowledge exchange in the wider community, which some companies may find of interest.

To access the library, please click here.

www.pacec.co.uk/index.php/publications

The economic impact of research conducted by the Russell Group of universities

Ideal for:
- **Understanding the potential impact working with a Russell Group university will have.**

Key benefits:
- Typical engagement mechanisms between industry and academia are explored and economic cases supported by case studies, demonstrating to companies the viability of each.

The Russell Group of universities consists of 20 of the UK's top universities. This report aims to promote universities' ability to provide for businesses research needs.

Chapter 1 demonstrates both the mechanisms for engagement between industry and academia and the success stories from their universities in each. Chapter 2 explores the methodology behind the successful exploitation of collaborative research, again supported with case studies and success stories throughout.

SME specific activity is briefly covered. The report highlights that the majority of Russell Group universities have dedicated points of contact for SMEs and have the capacity to help them.

To view the report, please click here.

www.russellgroup.ac.uk/uploads/ RG_ImpactOfResearch2.pdf

SMMT list of funding finance and support schemes

Ideal for:
- **Giving an indication of the range of support mechanisms (financial or other) to help industry engage with academia.**

Key benefits:
- Includes details of a number of schemes that speak to this area including KTPs, the Lambert Toolkit and FP7, all in one place for convenience.

This is a document containing details of over 70 wide ranging mechanisms that can support industry in a number of areas. Mechanisms are broadly split into three categories: grant funding, loans or finance and other forms of support such as business advice. Alongside these, there are a further five categories that help highlight schemes that may be of interest.

There are academic related schemes included in the guide but these are not specifically marked out.

Each scheme's entry provides a relatively brief introduction, description and signposting for further information. This allows users to understand quickly whether the scheme is of interest and if so, how to find out more information.

To access the list, please click here.

www.smmt.co.uk/category/reports-publications/funding-support/

Document additions

This resource library is a working document and will be maintained and expanded by LowCVP over time as more resources come to light. If you have any suggestions for additional information to be included in this library, please send these to the LowCVP secretariat (secretariat@lowcvp.org.uk) with details of:

- Information/Resource Name
- Publishing Organisation
- Web Address