

# University of Sheffield

## Lambert Review of Business-University Collaboration

### Formal Response

#### 1. Introduction

The University of Sheffield has an excellent track record in terms of interaction and collaboration with business and industry within the UK and globally. This response identifies a series of examples of good practice and highlights the challenges that the University faces in developing and enhancing these activities.

#### 2. Excellence in Business-University Collaboration

##### *Structure and managerial arrangements for effective relationship building*

We believe strongly that the basis for successful business-university collaboration is matching University capabilities and business needs in a **mutually beneficial** way, which means building effective relationships that **allow business to exploit the fundamental strengths of individual knowledge-based institutions** whilst enabling those institutions to benefit from activities that **complement their core competences**. Our strengths emanate from excellence in research and teaching (35 of our subject areas were grade 5 or 5\* in the last RAE, 80% of staff work in these top rated areas, and 29 departments were rated excellent for their teaching) and the transfer and exploitation of this knowledge is central to the core mission.

It is only by understanding their individual strengths and core competences, that universities can hope to build relationships and deliver these without the risk of disappointing potential partners. Relationships with business have been a fundamental part of the University's activity for many years, but the recent focus on the role of universities in economic growth has allowed the University to secure resources to review and bolster the arrangements that it has in place to enhance further these interactions.

**The University has set innovation and enterprise as a key strategic aim.** The Corporate Plan stresses our objective "to increase competitiveness amongst existing manufacturing and other firms and increase efficiency and effectiveness amongst other organisations where the University has the relevant knowledge and capabilities; and to assist them to achieve growth through technical innovation." The Vice-Chancellor, Professor RF Boucher, has cited enterprise as a top priority; he has introduced a Pro-Vice-Chancellor (External Affairs) to champion these activities, and facilitated the reorganisation of the support offices for business interaction. There is a strong personal commitment from members of the senior management team to working with external bodies, and the priorities and strategies for these activities are shared and developed at senior University committees, including the Strategic Planning Committee and the University Council, both of which involve external representatives.

The offices that support business interactions focus on helping academic staff to realise commercial opportunities and to build relationships, contractual or otherwise, with external organisations. They recognise that it is the academic staff, and the knowledge that they create, that are central to effective knowledge transfer. Whilst support services and technology translators have a critical role in business-liaison, in facilitating activities and removing potential barriers, it is necessary to recognise that **the relationship is ultimately about the ability of the academic community to work effectively with contacts in business** to address their needs in a mutually beneficial way.

### **Playing to your strengths: Advanced Manufacturing and Boeing**

The University's long relationship with the Boeing Company provides a recent flagship example of public private partnerships. The University's leading edge researchers in the field of advanced manufacturing, working in collaboration with Technicut (an aerospace cutting tool specialist) successfully secured investment from Boeing to be a partner in the establishment of a £15m public-private sector funded Advanced Manufacturing Research Centre.

The Centre will provide a world-class community where research, design, manufacture and study interact to put technology into practice. It will provide a focus for the Advanced Manufacturing Park in South Yorkshire, helping to secure inward investment and to attract, build and assist a community of related SMEs around the site allowing smaller high tech companies access to 'big' company R&D.

This is an outstanding example of how an international research institution, in collaboration with a private company can secure investment from a major global partner and make a significant contribution to the regional economy.

### ***Enabling Staff***

One of the crucial components of successful business-university relationships is mutual **understanding and appreciation of the priorities and drivers of the partner organisation**. Academic staff can have limited experience of business liaison and need support in understanding the differing cultures in commercial organisations. Similarly, universities can appear complex organisations to those on the outside, presenting entry barriers to collaborative opportunities. The University is helping to break down these barriers through a series of mechanisms, including:

- The establishment of the Office of Corporate Partnerships to provide a first point of contact for external organisations approaching the University and to assist academic staff in managing their relationships with external bodies.
- Personnel exchanges, including the Knowledge Exchange described below
- Staff training and development opportunities.
- The funding of Innovation Fellows, to act as academic champions to assist academic staff in taking the first steps to exploiting commercial opportunities.

### **The Knowledge Exchange**

The Knowledge Exchange is a joint £1m HEIF-funded project between the University of Sheffield and Sheffield Hallam University, which provides funding for placement and secondment opportunities that enable academic staff to spend time working with business. It also draws on outside business expertise and skills enabling staff from business and industry to spend time working within the University.

An example of the types of placement funded is the secondment of an expert in 3D computer visualisation into the University to act as a trainer and commercial collaborator to assist academic staff based in Forensic Pathology in developing commercially competitive methods in 3D computer visualisation for application in craniofacial modelling. 60 placements/secondments of this nature will have been funded across the two universities by the end of the project.

### *Licensing and Spin Out Activity*

The University has been particularly successful in spinning out companies, having a healthy portfolio of around 40 companies. The University is a partner in “**Knowledge Starts,**” a **£5.8m, Objective 1 funded project** in collaboration with Sheffield City Council and Sheffield Hallam University. The collaboration focuses on the exploitation of the universities’ intellectual property by providing support to increase the number of new spin out businesses and license opportunities. We have set targets to create 60 new knowledge based companies or license opportunities by the end of the project, in June 2005.

One **common misconception about spin-out companies** is that only research in science and engineering can generate spin-off opportunities. Examples from within the University of Sheffield that refute this include a spin-off from the Department of Biblical Studies (RAE Grade 5) to publish the first Classic Hebrew English Dictionary, the Department of Landscape (RAE Grade 5) spin out company that sells wild flower meadow seeds and the School of Modern Languages’ spin-out that offers MA students part-time employment to translate complex technical literature. Advances in CIT and strengths in learning and teaching have also created opportunities for new companies. For example, the recent commercial exploitation of Skillbase, a web based teaching and learning system. The company is developing a series of interactive modules, accessible via the Internet, which integrate both research based theory and actual visual and textual instructions and demonstrations in a form that students can access easily. Whilst early applications have been developed with healthcare in mind, the technology is equally applicable to other industry.

Sheffield University Enterprises Ltd (SUEL), the University’s 100% owned technology transfer company, also manages the University’s patents portfolio and systematically examines existing patents to determine how they should be supported and how they can realise value through licensing the exploitation rights to a third party. The University can demonstrate some highly successful licensing arrangements. For example, in 2001/02 the University earned net £240K from a software licence with a private company, originating from software developed in the Department of Information Studies (RAE Grade 5\*). This licence has been in place since 1996 and has provided a healthy annual income stream.

### *Working with the City and Region*

The University’s experience to date indicates that the Regional Development Agency has not played a major role in instigating business-university interaction. However, it has, in conjunction with other key public sector bodies, provided valuable support in enabling the partners to realise the full potential of these collaborations. The Advanced Manufacturing Park outlined earlier providing an ideal example of this.

As the role of RDAs is developed, **it is important that their priorities for economic regeneration do not become the drivers for research activity** within those universities located in the region, but instead that they are able to **support innovation and opportunity where there is genuine potential to achieve mutually beneficial objectives.**

The University of Sheffield is working at the heart of economic regeneration within the City as well as the region. Senior representatives of the University, Sheffield City Council, the Local Strategic Partnership (Sheffield First) and Sheffield’s Urban Regeneration Company (Sheffield One) meet regularly to explore how they can work together to stimulate and deliver against the City’s Economic Strategy and exploit the University’s knowledge base, through the development of priority clusters. These meetings have led to a series of collaborative projects resulting in a bid for Single Pot funding (as part of the Sub-Regional Action Plan) to progress these. The University also works closely with Sheffield First for Investment in promoting and stimulating inward investment opportunities.

### **Sports Research, Development and Innovation Consortium**

The University of Sheffield, Sheffield Hallam University, the Chamber of Commerce, and private sector companies, including Fluent (a global flow modelling company) and Montgomery Leisure (a Sheffield based sports management company), are partners in a £2.28m part Objective 1 funded project. The project aims to grow the sports sector of South Yorkshire by establishing it as an internationally recognised centre of excellence for sports science and engineering. This project further exploits the strengths of the University's DTI funded Sports SET Network, committed to improving the competitiveness of the UK sports product sector through collaborative research, technology transfer and networking and sports-related activities and industry within the sub-region.

Academic staff in the University of Sheffield, Department of Mechanical Engineering (RAE Grade 5) provide the research focus for this project. The department secured £4m worth of industrial research sponsorship in 2001, including significant investment from Rolls Royce (including hosting of a University Technology Centre in Materials Damping Technology, and the Rolls Royce plc/BAE Systems University Technology Partnership).

The University hosts a series of successful 'town and gown' clubs to engage local public and private sector organisations. These include the Managing Directors' Club (which has been running since 1987), the Public Sector Club, the Green Business Club, the Enterprise Club and the Materials Forum. The clubs meet over breakfast or dinner and following presentations from external speakers, debate topical issues and how these impact on local businesses or services. The clubs also provide an excellent forum for networking.

The direct impact that universities have on the city in which they are located must also be recognised. The University of Sheffield is the City's third largest employer, with approaching 5,000 staff and 23,000 students; all of whom contribute to the local economy. Furthermore, these individuals contribute to the vibrancy of the city; they engage in cultural activities and assist in the running of local organisations and services, for example as school governors, magistrates, voluntary workers, etc.

### ***Meeting a Diverse Customer Base: Partnering for success***

The University places particular emphasis on its relationships with global companies, including British Nuclear Fuels Ltd, Rolls Royce, Boeing, and Unilever, and the pursuit of privileged partnership activities. Relationships with leading edge, international companies enable the University to create significant, financially attractive and sustainable **partnerships within which the University's research capabilities and technology transfer become an integral part of the company's activity**. However, the University's focus is not solely on international companies, much work is ongoing across the full spectrum of public and private sector organisations. The University hosts numerous commercially focused centres of expertise and consultancy groups that provide easy entry points for companies unfamiliar with the University's structure but who want access to leading edge R&D capabilities. Examples include, the Ibberson Centre – to assist SMEs in implementing new manufacturing processes and systems, The Polymer Centre, the Statistical Services Unit, Sheffield University Metals Advisory Centre and East Asian Business Services.

#### **Work Psychology: A diverse customer base**

The University's Institute of Work Psychology (IWP) is active in meeting the needs of a diverse spectrum of external customers. The Institute forms part of the Design University Technology Partnership, supported by Rolls Royce and BAE Systems and also involving the universities of Cambridge and Southampton. IWP's involvement relates to "Human Factors and Innovation" within an overall programme to support improvement in design processes for these leading edge companies.

IWP also hosts the Innovation Advisory Service (IAS) aimed at promoting innovation in new products, services and processes within regional SMEs, by helping them manage change more effectively.

These activities demonstrate how a leading research area (RAE Grade 5) can exploit its strengths, working across the disciplines with other subject areas, to provide support to promote innovation in organisations from those at the cutting edge of R&D to small local firms.

At a corporate level, the University is progressing the development of privileged partnerships in a way that will take the development of its 'strategic corporate partnerships' to the next level. These are relationships with major organisations that go beyond the boundaries of the individual and research projects, by focusing on a holistic relationship, i.e. student recruitment, sponsorship, staff exchanges, student projects, etc. **An exciting recent development is the introduction of Mobile Capability Teams (MCTs)**, where academic staff from diverse disciplines and senior staff from across a private sector organisation take a day out to effectively brainstorm long term priorities, plans and problems with a view to trying to identify novel approaches to addressing these. The first of these was piloted with BNFL and has prompted a series of follow up projects and activities, further developing this relationship.

The University recognises the value of its collaborations with other regional, national and international universities. In particular, our relationships sub-regionally with Sheffield Hallam University, regionally within the White Rose Consortium, nationally within the Russell Group and internationally through the Worldwide Universities Network (WUN). To focus on one of these, **the White Rose Consortium (highlighted in the recent White Paper on the Future of Higher Education as an example of good practice) has been a highly effective collaboration** between the universities of Sheffield, Leeds and York (the three major research universities in Yorkshire). The consortium has a critical mass of research, teaching and enterprise activities and members have partnered on a number of major projects.

#### **The White Rose Technology Seedcorn Fund**

The White Rose Technology Seedcorn Fund (WRTSF) assists in turning research into commercial reality. The Fund has £9 million to invest (including £4.5m from the Government's University Challenge Fund, £1.5m from the three universities, and £3m from Yorkshire Forward) and provides venture capital funding of between £5,000 and £250,000, in return for a stake in the company. The fund helps growing companies with management input, advice and experience.

The Fund is actively making investments. It is flexible in its approach, and will discuss ideas at an earlier stage (prior to development of a business plan), as long as the individuals involved have followed the appropriate exploitation route for their University. There are also funds available to help with initial market studies and to develop the new Company's business model.

The WRTSF, administered by Aberdeen Murray Johnson, has assisted 16 companies with investments of up to £250,000.

### ***Outreach Activities***

The University has a dedicated Outreach and Access section within the Student Recruitment and Admissions Office, which has pioneered initiatives over the past 10 years to increase opportunity for students from disadvantaged backgrounds. The Early Outreach Scheme, which began in 1991, works with children from 22 schools in Sheffield, Rotherham, Barnsley, Wakefield, Derbyshire and North Nottinghamshire, targeting students who ordinarily are unlikely to consider aiming for Higher Education.

The University has also signed a Compact Agreement with 77 schools and colleges in the region to help students make the most of the Higher Education opportunities that are available to them. Applicants are recommended for special consideration by their school/college for a variety of circumstances. In many cases it is simply that, for reasons including financial, cultural or family commitments, they need to study in their local university and if they are not offered a place here they may miss out on the opportunity to enter Higher Education. Applicants offered special consideration are also eligible for the same special consideration at any of the other White Rose universities.

Sheffield's Outreach and Access to Medicine (SOAMS) is a recent initiative giving the opportunity for pupils from under represented groups and opportunity to study for a degree in medicine. The School of Medicine and Biomedical Sciences was recently awarded 20 additional student places for the MBChB for pupils who have the ability to become good doctors but who would not normally consider this as a serious option. Support and guidance are given to Y9-13 school students with an interest in science and medicine through a range of programmes aimed at raising awareness, aspirations and levels of achievement.

## **2. Main barriers to strengthening relationships**

### ***Structure and Funding***

The University believes that it has developed robust, flexible and sustainable organisational structures for the development of successful collaborative ventures. In formulating current structures the University has placed emphasis on reducing disincentives, in particular:

- **Ease of Entry:** there must be a clear entry point for organisations that are unfamiliar with the University to avoid them being discouraged at the first stage.
- **Reducing administrative burdens:** academic staff must be able to access appropriate levels of support to help them manage their external relationships, and administrative burdens must be kept to a minimum.
- **Clarity:** the processes for collaborative activities must be clear to both internal and external partners, easily accessible, simple and as seamless as possible.
- **Responsive:** the University's structure must allow speedy decision-making and turnaround of contracts etc.

Our knowledge transfer activities are focused primarily around three key offices as outlined below. The appendix to this document maps the interactions of these offices with business, city and regional bodies.

Research Office	Office of Corporate Partnerships	Sheffield University Enterprises Ltd (SUEL)*
<ul style="list-style-type: none"> <li>• Management of industrial research contracts.</li> <li>• Early identification of potential commercial opportunities arising from research activity.</li> <li>• Research expertise and knowledge management systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Support for the identification, development and continuance of the University's relationships with business, industry and the public sector.</li> <li>• Support for individual academic staff/departments in the pursuit of knowledge transfer priorities.</li> <li>• Liaison with city and regional bodies, including the RDA, LSP, and City Council.</li> <li>• Consultancy and other knowledge transfer initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>• Assessment of commercial opportunities identified within the academic community.</li> <li>• Establishment and provision of support for University spin out companies.</li> <li>• Management of the University's patents and licensing portfolio.</li> </ul> <p>* SUEL is 100% University owned technology transfer company</p>

Over recent years, the investment through funds such as HEROBC and HEIF have enabled universities to improve the infrastructure for supporting business-university liaison. It is important that this 'third stream' of funding is 'mainstreamed' in a way that **supports the basic infrastructure costs** of these activities. The Government's approach to funding at this point may prove to be instrumental in ensuring that UK universities can deliver effective and sustainable relationships with business. The introduction of HEROBC funds in 1999 allowed a first step to be taken towards dramatically improving infrastructure and resource levels. **There needs to be a healthy balance of funding between pre-allocation and funds to which universities can bid**; the former to support basic infrastructure and the latter to pump-prime innovative, novel and progressive opportunities for business-university liaison.

### *Focus on "Third" Stream*

The way in which institutions **promote and embed business liaison** within their academic structure is critical to removing potential barriers. As the focus on business-liaison and knowledge transfer grows at a national level and across education institutions, there is potential for unnecessary barriers to occur due to misconceptions and confused messages. HEFCE's labelling of business and community liaison as "third" stream has given it an unfortunate title, suggesting that it is somehow distanced from the missions of teaching and research; this has created an unexpected hurdle for institutions. Furthermore the concentration, under the "Higher Education and Business" section of the recent White Paper, on knowledge transfer activities around the "less research intensive universities" has unintentionally given a misleading signal to some staff in the research-led institutions.

We are embedding a culture of innovation and entrepreneurship in academic activity rather than treating this as something new or different, especially as these activities have been part of our business for many years. It is **critical that academic staff can see how this activity complements and benefits their research and teaching** activities. We are doing this in a number of ways that are described below.

### **Embedding a commercial awareness**

The University is taking steps to make innovation, enterprise and entrepreneurship a fundamental part of day-to-day academic life. Some of the ways it is doing this include:

- The requirement that Academic Funding Units articulate their third stream strategies as part of the academic planning cycle, demonstrating the financial and other benefits of these.
- The requirement that, as part of the approval process, all new Research Centres must provide an assessment of the local and regional reach-out impact of their activity.
- The introduction of link persons for academic heads of department within the Office of Corporate Partnerships to support and advise on the development and realisation of third stream strategies.
- The appointment of 6 academic staff as Innovation Fellows (each for the equivalent of 1 day per week) to act as champions for third stream activities to staff and students across the faculties and to provide academic peer support.
- Improved internal publicity and marketing of third stream opportunities and initiatives. Including a strong emphasis on innovation, enterprise and regional activities in the University's latest Annual Report.
- The inclusion of third stream strategy development and implementation in the training programme for new heads of department.

Academic staff need to understand how they can "add value" to business, the benefits they derive from collaboration, and the routes for doing so. This coupled with appropriate support helps reduce internal barriers.

**An issue that still challenges is how best to reward academic staff for engagement with business.** Consultancy (the University has just reviewed its policy so that academic staff receive 100% of the first £5,000 of consultancy income secured per academic year), licensing, and spin out generate real financial benefits for academic staff. The difficult area is **the extent to which successful commercial collaboration should influence staff promotions.** In the majority of institutions it would appear that this issue has not been resolved fully.

### ***Encouraging Business Participation***

Many large organisations are well prepared for engagement with knowledge based institutions and there is a high level of support available for the 'small' end of the SME spectrum. However, it is the 'medium' part of the spectrum where companies are the most difficult to target. Finding information about these organisations can be a complex process and we have found that local employer groups and representative bodies have not always had the best structures and mechanisms to assist effectively with this.

More incentives are needed to encourage these companies to explore innovative opportunities. It may be valuable for the Government to consider further ways to pump-prime these organisations to help them release time to engage with universities and to understand the potential benefits of collaboration, particularly around R&D and CPD opportunities.

On this note, criticism has been levied in some areas about the extent to which universities meet the needs of employers in providing appropriate part-time, flexible training programmes for their staff. What is often not communicated effectively to companies is that an **institution's ability to deliver high level training in specialist areas is first often dependent on the research focus** within that institution and secondly, that the costs associated with the planning, development and delivery of a programme are significant – meaning that a full commercial rate needs to be charged for them to be viable and to cover the

set up and delivery costs, or that the course must have a wider appeal and be sustainable as an ongoing programme to make it financially viable.

There is also, understandably, a **need to communicate more effectively to business and other bodies the diversity in the nature of universities**, their different missions and strategic aims. This is complicated when Government funding has, until recently, encouraged a “uniform diversity” as institutions seek support from the same funding streams. Similarly, the need to demonstrate excellence across all areas of activity and the uncertainty about future funding priorities make it more difficult for many institutions to move from being active across the full breadth of HE activity. Within many cities there is more than one university and a breadth of FE provision. For an employer to determine which of these can most closely meet their needs (or if there is not currently the provision which institution will be most responsive to their needs) is a challenging task. Whilst the simple answer is that these institutions need to collaborate more effectively, it must be remembered that in many areas they are still in direct competition.

Initiatives, such as the proposed Knowledge Exchanges provide an important route for channelling resource into the less research-intensive universities and supporting their business liaison activities. However, it is important that there is also appropriate support for the transfer of knowledge from the research-intensive universities and that **arrangements are understandable for companies wishing to access the knowledge base in universities**.

#### *Intellectual property and barriers to technology transfer*

Research Councils do not make a full contribution to overheads, arguing that contributions through other mechanisms such as block grant make up the difference. However, it is common for commercial sponsors to seek comparable rates to the Research Councils arguing that their contribution to taxes help to make up the difference. Furthermore, charities that do not contribute to overheads often make a claim on any IP generated.

**The UK might consider introducing** a US practice that would help to address these issues. The Federal US Government auditors establish an overhead rate for each university. Any organisation sponsoring research and paying at least the full overhead contribution can negotiate for IP rights. Often these are licensed and not assigned as is the case in the UK. Organisations, including non-for-profit organisations, that do not pay at least that overhead rate have no rights to resulting IP. This would also help to reduce the potential to trade off one institution against another.

### **3. Enabling enterprising and skilled graduates and postgraduates.**

#### *Business need in the curriculum*

The University of Sheffield is committed to ensuring that the content and delivery of the curriculum, is informed by the needs of businesses. This is achieved in a number of ways, including the use of **industrial liaison committees, company involvement in the delivery of programmes, work experience and placements, and commercial student services**. The University is also part of the White Rose Centre for Enterprise, which is dedicated to the exposure of science and engineering students to enterprise learning as part of their student experience. This includes the delivery of enterprise degree programmes and modules, an Enterprise Club for staff and students and an annual business competition.

Two specific examples of good practice of business-university interaction in improving the student skills base and preparing them for employment are given below.

### **Develop Your Skills Programme**

The Develop Your Skills programme, administered by the Careers Service, gives students the opportunity to identify and develop the skills that employers look for in graduates. The programme is open to all students in all years and disciplines. The 2-hour sessions are primarily run by employers, including Rolls-Royce, PriceWaterhouseCoopers, Ford, Asda, The Royal Bank of Scotland and Northern Foods. Across the 20 sessions run last year, 758 places were filled. Students can also receive a Skills Development Certificate if they attend 3 sessions.

### **Genesys Solutions**

Fourth year MEng students and advanced MSc students in the Department of Computer Studies (RAE Grade 5), as part of their course of study, manage the running of a company called Genesys Solutions. The emphasis is on learning about how IT companies are created and managed, the legal and financial frameworks within which they operate and the practical aspects of successful trading - by actually doing it. The students research market opportunities for software products; carry out IT audits on behalf of local organisations and prepare IT strategies; act as software consultants; develop software for clients; maintain software and deliver training programmes. As far as possible the students have full responsibility for running and managing the company. The company has its own laboratory and independent network of computers paid for by the company earnings. The business generates an annual profit.

Representatives of business and industry also contribute directly to the delivery of the curriculum. They act as external speakers in lectures, they may be heavily involved in the delivery of modules, and they participate in extra curricula, often sponsored, lectures and events.

The engagement of academic staff in activities including applied research, consultancy and professional training is important in keeping them in touch with the needs and challenges facing private organisations and this knowledge can be fed back into the development of their taught programmes. The University also has several sponsored academic posts, including Professor Tony Ryan, head of the Department of Chemistry, who is the ICI Professor of Physical Chemistry.

### ***Work experience, placements and helping new graduate employers***

The University of Sheffield hosts and operates a project, funded by the ESF and Yorkshire Universities called “**Graduate Link.**” This focuses on the promotion of graduate jobs and careers in SMEs in the Yorkshire and Humber region to graduates throughout the UK. As well as helping to promote these opportunities there is a web based support programme to help recruits quickly settle into new jobs, acquire introductory management skills and develop their creative thinking to become more enterprising. <http://www.graduatelink.com/>

Retention remains an issue as many students wish to remain within the city after graduation, but cannot find suitable employment opportunities. Programmes such as Graduate Link help to increase the number of opportunities available regionally. The University is also in the early stages of working with inward investment bodies within the City to look at ways that this might be addressed.

A **barrier** to the University’s ability to accommodate employer needs comes about as a consequence of **professional accreditation**. The constraints that these bodies apply can be restrictive and limit the opportunity for students to take modules from a broader selection of disciplines and engage in study that would extend the breadth of their skills base. Similarly,

trends in the entrance qualifications and skills of new students also place demands on the curriculum. For example, with an increasing number of new students not having maths A'levels when starting science and engineering subjects, more of the curriculum is taken addressing these skills needs.

A significant challenge for business and universities alike revolves around the **need to expose students to a work environment**. Whilst the benefits of such experience cannot be stressed enough, when this is looked at in the context of the Government's ambitious participation targets and the increasing legislation around health and safety and police checks, an enormous pressure (and cost) is placed on both institutions and business. The University is working on novel ways of overcoming this, such as Genesys Solution (described above) and simulated case studies or externally supported group projects, but the push to expose school children and students of all ages to the working environment means that the traditional approach of work placements alone is no longer feasible and this needs to be recognised by the policy makers.

#### **4. Financial considerations**

The financial support available to both business and universities in facilitating collaborative activities is extremely valuable, particularly at the early stages of partnerships. Schemes, such as the Teaching Company Scheme (TCS) have been hugely successful in stimulating business-industry relationships. Small level projects, through to major research collaborations with multi-nationals, all benefit immensely from the additional leverage that comes from access to financial support.

What is often confusing is the sheer number of different initiatives, from a wide variety of sources, and trying to identify, appraise, assess the appropriateness, and access these funds can be a time-consuming and resource hungry process. It would be helpful if more could be done to summarise these opportunities and promote them in a more coherent way to both private sector bodies and education institutions, thereby helping to reduce the resource demands of researching these.

Two areas for particular comment relate to “**proof of concept**” funding and **state aid rules**. With the former, there is a need to address the support available for progressing the commercial potential of research outputs at the point at which a research project ends, but before a firm commercial opportunity has been identified. This early stage funding will prove essential if universities are to avoid missing out on the full potential of their intellectual outputs and to prevent projects that need further development not having the resource to advance before seeking more traditional investment funding. Furthermore, **these funds need to be under the control of universities** themselves to ensure that the routes of access are simplified and that they are complimentary to local exploitation routes and procedures.

**State Aid rules continue to restrict University spin out companies.** The rule that spin-outs companies do not classify as SMEs due to the parent university owning a stake hold in excess of 25% mean that spin out companies cannot access the support mechanisms that are available to SMEs. Plans to relax this rule would have a significant beneficial impact.

This response highlights a number of the many areas of good practice at the University of Sheffield and explores the barriers associated with managing business-university collaborations. For further information, or to discuss the points made in more detail, you should not hesitate to contact Dr David Fletcher, Registrar & Secretary at the address below.

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# Overview of University - City - Regional - Business Interactions

(For the sake of clarity not all possible relationships are shown)

