

UNIVERSITY OF KENT

Response to the Consultation on

The Lambert Review of Business-University Collaboration

This document sets out the University of Kent's response to the consultation being undertaken by Richard Lambert on behalf of the Government to examine how the long-term links between business and British universities can be strengthened to the benefit of the UK's economy.

1. Examples of Best Practice & Excellence

Departments within the University interact with industry on many levels and through many different funding mechanisms. Examples of best practice and excellence in business-university collaboration within the University are typified in the following examples:

a) Research & Consultancy Collaboration

The University collaborates with industry through established funding schemes including LINK and Industrially funded Studentships including CASE, as well as directly through research contracts and a wide range of activities.

Examples of how this has worked successfully are:

- The Electronic Systems Design Centre has provided support to companies in the South East of England to improve their competitive position through adopting more systematic and powerful electronics design techniques since 1997. The Centre provides practical help to small and medium-sized firms; including seminars, user-friendly documentation and support. Participants benefit from independent consultancy, product design support and practical hands-on training as well as a portfolio of training courses. Since its creation, the Centre has generated over 2000 local business contacts, met with 500 companies and helped with over 100 product developments. The Centre is recognised by the Manufacturing Advisory Service as a Centre of Expertise in Manufacturing.
- Steve Kelly from the Department of Electronics is producing invaluable audio-visual tools for Speech & Language Therapists around the world. He has developed a system that combines time-coded digital movies and even videofluoroscopy (moving x-rays) with its original oscilloscope and wave data animations. The SNORS+ device was designed at the University to assist in the treatment of speech related problems and measures the airflow from a patient's mouth and nose, the position of their tongue and the vibrations of their vocal cords. The SNORS+ technology is being used in sixteen countries around the world and these software and hardware advances will now

enable therapists to study a patient's visual reactions whilst examining data. Recently the University has been approached by an ex-student who worked within the group to secure a licence for production and sale of the product in Greece.

- Dr Stuart Kent of the Computing Laboratory was awarded a Royal Society Industry Fellowship, to work in collaboration with IBM over four years from October 2001. His research focuses on automating aspects of the development of e-business systems from models of business. This means businesses can adapt systems as technology evolve, with greater control and less risk. The new work ties in with his interest in improving e-business systems by changing the nature and improving the discipline of programming. It also strengthens the department's current links with IBM - Steve Cook, one of IBM's distinguished engineers, has been appointed a Visiting Professor at the Computing Laboratory.

Best Practice in Research & Consultancy Collaboration:

En-face OCT imaging and OCT/SLO, a high resolution versatile dual channel imaging instrument for the eye has been developed by the Applied Optics Group under the leadership of Adrian Podoleanu and David Jackson. The rights to exploit the technology commercially belong to a Canadian commercial company, OTI, who allow the University to continue the research and use the findings in teaching. OTI supports the teaching and research of the technology with hardware and software. Once the series production commences, royalties will be paid to the University. The technology is in the phase where it is being tested in different clinics worldwide prior to commercial production. The industrial partner, OTI, intends to open a subsidiary at the University and support more research in applied optics in the future. OTI has also instigated different medical partners in USA to support research in applied optics on the OCT/SLO concept. Another indirect benefit from collaborating with OTI is the development of a product, which is close to commercialisation. The support received from the OCT/SLO project triggered and created a critical mass, which has led to further developments. Collaborative links have been established in the UK and abroad with partners using the technology now developed with OTI this was made possible by the industrial partner making the technology available to the University.

b) Teaching Collaboration

Interaction through the University's teaching is achieved through the following methods:

- Involvement of business contacts in the delivery of courses
- External speakers for individual lectures

- Honorary appointments
- Sandwich year placements
- Industrial liaison committees for course development
- Student projects

Examples of how this has worked successfully are:

- The Computing Laboratory has close links with SUN Microsystems in the areas of teaching and research and SUN contribute to the environment for the teaching of programming with the department. SUN has given the University Authorised Academic Java Campus (UAAJC) status and the University is a Sun Target University. Further collaboration is through the provision of equipment for research, Conferences and Seminars and facilities such as the Java and Advanced Web Services Laboratories. SUN hosts a number of student placements in the United States, Europe and the UK. Other benefits to students include:
 - Studentships and CASE awards to assist postgraduate study
 - Java Certification routes
 - Courses
 - Seminars
 - Projects
 - Prizes
- The University's Business School formed a partnership with P&O Stena Line to provide a Diploma in Management Studies (DMS) for P&O SL senior onboard hotel and catering staff as part of their "Taking Service Forward" training strategy. Peter Ambrose, HR Manager for P&O SL explains: "The continued development of our senior onboard Hotel Services Managers is a critical part of our future commercial success. The Business School has designed the programme around the unique features of our business and provides a professional service within an excellent environment for our managers to develop their expertise further. Our partnership continues to flourish based on trust and an understanding & appreciation of our business needs."

Best Practice in Teaching Collaboration:

BAE Systems, the largest employer of Engineers in Kent, recognised an issue with their staff profile in that a large proportion of staff were over 50 years of age. It was clear that without significant effort, this would cause an irreconcilable problem. Discussions with the University of Kent led to the formation of an FDEng degree in Electronic and Computer Systems. This joint University of Kent / BAE Systems venture was the first Engineering foundation degree in the country, and leads to the FDEng degree after two years of study with the possibility of articulation to a BEng degree in three

years. The first intake of students took place in 2002 and the programme is taught at the University's Medway Campus.

c) Technology Transfer & Use of Facilities

Interaction through technology transfer and use of facilities at the University's is achieved through a range of mechanisms, including:

- Licensing agreements
- Spin-out companies
- Academic Secondments
- TCS Awards
- Training Provision

Examples of industry benefiting from the University's expertise are:

- TCS is a good example of how business can benefit from technology transfer. The establishment of a long-term relationship with the university often lead to additional benefits outside the programme. As a result of one programme the University has benefited in the following way:
 - 8 Conference papers
 - 5 published papers
 - 5 MSc projects
 - 2 EPSRC Case awards
 - 1 European funded project
 - 1 Student placement
 - Regular consultancy work

The University has also used one of the company's products as an example in lectures given to final year students providing a direct link between research and teaching.

Externally the programme has raised the profile of the company by:

- Winning a regional prize awarded by TCS TTI2000 exhibition held in London in 2000.
- Winning a prize for the best poster at the International Conference on Measuring Air Pollutants by Diffusive Sampling, Montpellier, France, 2001.
- Awarded second prize in the "Presenting London's Chemistry" event held at the House of Commons on 29 October 2001. This high-profile event drew attention to the company's work, and the TCS project, to local MPs.
- One product developed as part of the programme was entered for the Royal Society of Chemistry's Industrial Division Teamwork in Innovation Award and gained second place in the small company category.

- Purely Proteins are an innovative, informatics-led protein purification company based in Cambridge. Founded by a group of experts in the fields of informatics, pharmaceutical discovery and biotechnology, Purely Proteins has proprietary databases and purification technology to expedite your protein purification program. The Department of Biosciences at the University of Kent has forged a broad based alliance with Purely Proteins Ltd, which covers the development of a unique informatics-led protein characterisation program, as well as a joint marketing alliance whereby both companies will actively promote each other's product and service capabilities. A cornerstone of the alliance is the development of a higher throughput proteomics facility at the University of Kent under the management of an experienced experimental officer. The facility will service both our own increased demand for proteomic analysis but offer an opportunity to minimise the downtime of an expensive piece of equipment. This will culminate in generation of novel intellectual property and establish a new revenue stream for reinvestment in the departmental infrastructure.

Best Practice in Technology Transfer:

Harada Industries is an internationally renowned Japanese manufacturer of antenna systems for vehicles. It is a global operation with production plants in Japan, China, Mexico, Vietnam and the UK. Professor Richard Langley established the Harada European Technology Centre at the University. The University of Kent was chosen to take advantage of the Antenna Systems expertise available in Electronic Engineering. Directly funded by Harada, the Centre currently employs 12 staff. It is closely linked to the research activities in the Department of Electronics including supporting postgraduate research students, consultancy and use of facilities. The company has a number of patents developed by the University inventors and is due to go into production and the University will receive royalties. In the last year the group have moved to a nearby Enterprise Hub, but strong collaboration continues.

2.a Barriers to Strengthening Relationships

Links between business and Universities can have significant benefits but need to be managed well to understand the constraints on both sides. Benefits to business include further research collaboration, the generation of new ideas and routes to the best graduates. The benefit to Universities include greater exposure of their capabilities and expertise, increased awareness of business needs, providing a reality check on the relevance of their research activity and long term business partnerships. However, the disadvantage for research staff within Universities is that they may

have to concede some of the flexibility and freedom in the way that they undertake their research.

Some of the main barriers to the University strengthening relationships with business are:

- Business focus and project turnover appears much greater in industry. This can lead to on-going projects suddenly becoming less important to industry, or stopped prematurely, despite students or staff being committed to work on them for an extended period. The strategic relevance of the projects should, wherever possible, be maintained for the duration of the project. It affects both the personnel involved in the business, as well as the more short-term nature of the needs of a business.
- A lack of attention to academic guidelines and requirements by industry means that they do not maximise the potential even though students are issued with guidelines for the production of the desired outputs e.g. project, thesis or dissertation.

On a broader issue, it is not clear that the training requirements the University are asked to adhere to are the same in the industrial laboratory.

- The transfer of technology can depend on the area of expertise as certain research and development lends itself more readily to this type of activity. Industry needs better awareness of the nature of research in universities and to appreciate that individual staff are not always able to respond promptly. The government could assist in managing expectations.
- Discussion on IP, even in a 'protected' environment can be problematic and requires greater openness when operating under confidentiality agreements. This can prevent open discussion or disclosure, and it is often difficult to meet business needs because of different cultures. Whilst the University appreciates the sensitivity of the research undertaken in industry/academic collaborations, the issue of confidentiality can be unduly constraining. The University have mechanisms to protect IP but it appears that industrial collaborators often perceive this as insufficient.

2.b How can interaction with business be made more effective?

Examples of how better interaction with business could be achieved are:

- Given the view of the Government that Technology Transfer is just as important an activity as research, then measures should be put in place to recognise this through the provision of incentives and rewards. However, this is not adequately addressed in the White Paper. Funding for further development to take place would assist this process, e.g. the Wellcome Trust's Translation Awards and other similar schemes are required. The restriction of such schemes pushes research

into spin-outs to take advantage of SMART for example too soon, and so the company does not succeed.

- Currently Research Associates are tied to specific grants, on short-term contracts. In order to move away from this restrictive form of funding universities need a funding scheme to support established successful collaboration.
- Involve industry more directly in reviewing IP available at Universities e.g. by the development of IP Review Boards to appraise the technology developments currently underway within institutions. Companies within a given sector group would make a financial commitment to a development fund, under strict confidentiality, universities would be able to present what they believe to be commercial ideas with a view to securing funds to progress their idea (from patent costs to proof of principle to spin-out). The benefits of this would be:
 - A greater understanding of the drivers that each partner, academic and industrial, are operating under.
 - More regular industry: academic fora to discuss funding opportunities and strategic developments with BOTH parties bringing ideas to the table.
 - Development of strategic liaison committees charged with areas of collaboration e.g. postgraduate training.
 - Greater transparency in the award of industrially focussed studentships and the quality of their training.
- Increasingly Regional Development Agencies (RDAs) have a growing role to play in the way funding for universities is allocated across the region to support economic regeneration and growth. A closer interaction between universities at the development stage of emerging initiatives would allow universities to advise and offer guidance on the practicalities of meeting these demands. RDAs may be in the best position to foster university-industry links but they have a poor understanding of HE and (RDAs) require training and education. There is a great deal of scepticism in the HE sector that RDAs will allocate funding to meet HE targets rather than RDA targets and therefore we need to work together and build trust. RDAs need support from Government at developing their capability to support Science and Innovation.

3. How can businesses attract the best graduates and postgraduates?

Exceptionally well-educated graduates and postgraduates are a valuable resource available to businesses from the university. Businesses could attract tap into this resource by:

- Providing feedback to the University concerning their level of satisfaction with the training of graduates. The business community need to communicate to universities what they want and this could be achieved by working closely with Business

Links sector groups.

- Collaborating in the development of Foundation Year degrees as this provides an excellent opportunity for industry to attract the best graduates. There is concern, however, that in some areas too much emphasis could be placed on degree programmes with a specific vocational goal. The University believes that a degree in mathematics and statistics, for example, opens up a wide variety of career options.
- Industry becoming involved with departments by becoming members of their Industrial Panel. The Panels meet formally once or twice a year, at which industry is invited to provide feedback on significant issues. The Panel meetings also provide an opportunity for industry to meet and socialise and establish close links with the students.
- The involvement by industry in providing placements for students Year in Industry is an excellent opportunity for business to attract good students. The Actuarial Science/Financial Mathematics courses within the Institute of Mathematics and Statistics provide training for students immediately to take up positions in the Financial Services Industry. Students are taught to use the market leading actuarial software package PROPHEX; access to the software is provided by B&W Deloitte. All of the actuarial staff have spent many years working in industry and maintain strong links with the Financial Services Industry.

4. Financial Considerations in Business University Relationships

There has been substantial and persistent under funding of University research by businesses, leading to accusations of business being interested only in research 'on the cheap'. This typifies itself in the failure to pay the full cost of overheads on research projects, and this has added to long term under funding of infrastructure by the Government. A step-change in the strategic thinking behind funding initiatives is required to enable Universities to respond to the increasing demand placed on them to embed their expertise in the regional economy. It is vital to ensure that sufficient resources are available to support the infrastructure in Universities.

The differential between industrial salaries and academic salaries and PhD bursaries has a very negative and marked effect on the productivity of research in Universities in technology related subjects.

An added difficulty for Universities working on industrial collaboration is the poaching of its research staff.

The University has no evidence to support the suggestion that the introduction of R & D tax credits has influenced businesses demand for research and skills at the University although the University does have a project funded under the Landfill Tax Credit System. It is clear however that the volatility of the economic climate, as a result of situations such as September 11th or the War on Terrorism,

has an impact on businesses ability to invest money into strategic collaborative projects.

5. Other Issues

There are broader issues when talking about business-university collaboration the focus of which tends to be on the private sector rather than the public sector. A broad definition of business is required to include both the private and public sectors to allow the opportunities to be developed in terms of partnership and joint bidding. In this context the following are good examples of this type of activity:

- The Public Health Laboratory Service and NHS are collaborators in the development of biomedical programmes. Occupational medicine is a specific and important area of interface - the University have one of the few senior academic occupational health physicians in this part of the country and his work involves very considerable interface with "industry".
- In 1998 the Salvation Army established the National Addiction Service to provide specialist addiction recovery programmes, support to communities and individuals, as well as drugs education and research. It then worked with the University to establish a work-based academic programme of study for the professional development of those with drug and alcohol dependent clients. The courses are also open to prison service staff and to organisations such as Kent Council on Addiction. The Salvation Army has located its research at the University as it appreciates that it can buy into the high research culture within a supportive environment for its own researchers.

6. In Conclusion

It is clear that there is considerable collaboration taking place between the University and businesses, benefiting both partners. The most productive of which usually emerge from informal contacts, however restrictions on travel, budgets, time etc. of those in business and universities lessens the possibility of these happening in times of recession.

Increased interaction between Universities and business can only be achieved through mutual understanding and mutually beneficial opportunities. If the University is to expand its current level of collaboration further an increase in support will be required, which would enable a more co-ordinated approach to take place and which would realise empirical benefits. In conclusion, flexibility of resourcing, the ability to respond rapidly to contingencies and a willingness to support failure are the management issues that need to be addressed by both sides.

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