

# Business – University

## COLLABORATION IN SCOTLAND

The Scottish Executive's Response to the Lambert Review



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scotland  
SCOTTISH EXECUTIVE

# **Business – University**

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## **COLLABORATION IN SCOTLAND**

The Scottish Executive's Response to the Lambert Review

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## FOREWORD

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Harnessing innovation and discovery for the benefit of the whole of society is key to our future economic success, and in raising our quality of life. Our universities are highly competitive in terms of their research, and their potential to contribute to our economy is enormous. But the focus and expertise for many academics lies in the research itself rather than in subsequent exploitation of its commercial potential. On the other hand, businesses, particularly small ones, are often too pre-occupied with their day-to-day trading to seek out research teams in universities to see how they might help with maintaining their competitive edge through research and development. The result is that commercial opportunities from the research base are sometimes only slowly realised in Scotland, or are developed elsewhere.

These issues, while not new, were the subject of Richard Lambert's highly influential study of business-university collaboration in the UK in 2003. That report contained a range of recommendations for business, universities and public support agencies, and there is no doubt that moving forward strongly on these issues is a central strategy in the UK Government's recent science and innovation investment framework covering 2004-2014.

In Scotland, the Lambert recommendations also have a strong relevance, although in recent years there has been a concerted drive by the Scottish Executive and its agencies to put in place a range of initiatives to tackle this agenda. Many of these initiatives are ahead of those in the rest of the UK. We have, for instance, established three Intermediary Technology Institutes (ITIs) as a long term strategy to support the development of key market focused technologies in Scotland. However, business investment in R&D remains much weaker than in the rest of the UK, and the importance of maximising the benefits of university-business interaction is correspondingly greater. This report contains numerous examples of where universities are supporting business and I am sure that there is much to be learnt from these.

We have also recently refreshed our enterprise strategy for economic growth in Scotland, *A Smart Successful Scotland*. This strategy depends crucially on our ability to maximise the economic impact of science and technology to businesses in Scotland. We are therefore increasing our focus on the adoption of new technology by new and existing companies. However, because of the complexity and long term nature of development, this is not an area where we can expect rapid or step changes. But it is critical that we continue on a strongly upward path of better and more frequent interactions between business and industry, and in overcoming cultural barriers to these.

I believe this report will provide not only a commentary on Scotland's position on this important agenda, but also some clear ways forward for business and universities. These include further encouragement of university commercialisation activity, supported by significant increases in funding from the Scottish Higher Education Funding Council (SHEFC), and the launch of a new single point of access for business to aid its interactions with the university sector. The new SEEKIT and SCORE schemes operated by the Executive will also make a positive contribution to these developments.

This work will require an ongoing dialogue between business and the higher education sector but this is something that should allow Scotland to use its size to good advantage. And I am pleased to announce that Technology Ventures Scotland has agreed to help take forward this dialogue.

A handwritten signature in black ink that reads "Jim Wallace". The signature is written in a cursive style and is underlined with a single horizontal stroke.

**Jim Wallace**

Deputy First Minister and Minister for Enterprise and Lifelong Learning



## INTRODUCTION

1. The Lambert Review of Business-University Collaboration<sup>1</sup> was commissioned by the Chancellor in the 2002 Pre-Budget report with a remit to examine how the links between universities and businesses in the UK could be improved. The Review was led by Richard Lambert, member of the Bank of England's Monetary Policy Committee and former editor of the Financial Times. The final report was published in December 2003. The UK Government published its response to the Lambert Review in July 2004 as part of the Spending Review in the *Science and Innovation Investment Framework 2004-2014*.<sup>2</sup>
2. The Lambert Review attempted to cover the whole of the UK and, while much of the analysis and recommendations also applied to Scotland, it was inevitable that much would not, or not to the same extent. The purpose of the Scottish Executive's report is therefore to provide a summary of current and planned activity in Scotland in relation to the issues covered by the Lambert Review, including a detailed response to the various recommendations in the report as they apply to Scotland. A further purpose is to highlight a selection of different forms of commercialisation and broader knowledge transfer to demonstrate what can be achieved through business-university collaboration. These cover a wide range of activity including consultancy advice, licensing and spin-out. Many factors will influence which form of collaboration is most appropriate in each case, and the Scottish Executive does not have any preference for one form of collaboration over another.
3. The responses in this report were developed in consultation with an ad hoc forum of interested parties including the Enterprise Networks, the Scottish Higher Education Funding Council (SHEFC), Universities Scotland, CBI and representatives from Scottish universities. This forum considered both the Lambert Review and the response by the UK Government and discussed the relevance of each to the situation in Scotland. The forum also sought to identify issues that from a Scottish perspective were not covered, or covered inadequately, by Lambert but which are of particular relevance to Scotland, and any actions that should be taken on these.
4. Not every organisation in the forum agreed with every detail of this report but the analysis and response are generally based on consensus where that has been clear. In many instances, the forum agreed that the Lambert analysis was applicable in Scotland and agreed with the Government's response. In these instances this is stated in the response, but the reader will need to go to the source documents for the full text.
5. In developing these responses, it became evident that there is a need to involve a broader spectrum of organisations, particularly from the business community, in taking forward the work arising from the responses. The Scottish Executive has agreed that this should be undertaken by Technology Ventures Scotland.

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1 [http://www.hm-treasury.gov.uk./media/DDE/65/lambert\\_review\\_final\\_450.pdf](http://www.hm-treasury.gov.uk./media/DDE/65/lambert_review_final_450.pdf)

2 [http://www.hm-treasury.gov.uk./media/33A/AB/spendo4\\_sciencedoc1\\_090704.pdf](http://www.hm-treasury.gov.uk./media/33A/AB/spendo4_sciencedoc1_090704.pdf)

## THE POLICY CONTEXT

6. Scotland has in many ways led in the UK on developing business-university interactions, and policy-making has for many years strongly recognised the value of developing these interactions further. However, it is important to acknowledge that the financial benefits for universities to commercialise are uncertain, and that the intention of the Scottish Executive in encouraging greater interaction with business is not driven by a wish for the sector to increase its income from this source. The intention is rather to ensure that the economic benefits of innovation and discovery are harnessed for the whole economy. A range of tailored support schemes therefore now exist to encourage these interactions. However, there is also wide recognition that Scotland needs to do much more on this front if it is to continue to match the performance of other countries. The opportunities are huge, but there remain too many barriers, misconceptions and insufficient interaction between business and universities for these to be exploited to the extent they deserve.
7. The Scottish Executive's top priority is growing the economy, and, as in the rest of the UK, the successful application of science, innovation and skills will be crucially important in achieving that goal. This is a central theme of our refreshed enterprise strategy *Smart Successful Scotland*.<sup>3</sup> The Scottish Executive also supports the UK Government's 10 year Science and Innovation Investment Framework published in June 2004 which sets a target of increasing UK business and public investment in research and development (R&D) as a proportion of GDP from 1.9% to 2.5% by 2014. The framework promises a real terms increase in public science expenditure but recognises that reaching the target on overall R&D investment will require a parallel investment by the private sector. While in Scotland the latest surveys indicate an encouraging improvement in business R&D since 1999, the gap with the rest of the UK remains very marked. Investment by business in Scotland was only around 0.6% of GDP in 2003 compared with 1.2% for the UK as a whole. Moreover, in an international context, the UK is itself behind a number of its main competitors in business R&D investment levels.

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<sup>3</sup> <http://www.scotland.gov.uk/library5/enterprise/sssen-oo.asp>

8. In Scotland, there has been a wealth of relevant policy reviews, including a joint review by Scottish Enterprise and SHEFC on Knowledge Transfer,<sup>4</sup> and the Scottish Executive's Higher Education Review Phase 2.<sup>5</sup> Policy advice from independent organisations also abounds, including the report by Technology Ventures Scotland<sup>6</sup> and most recently a report on Knowledge Transfer by the Scottish Science Advisory Committee (SSAC).<sup>7</sup> These all recognise the need for increased mutual activity by universities and businesses, and propose a variety of actions and additional support measures. Public support in this area has of course grown considerably: we have a very well-developed "pipeline of support" which provides targeted funding to the areas where pump-priming is needed, and increased funding through SHEFC's knowledge transfer grant has more generally enabled universities to develop their commercialisation activity. This budget will be increased still further as a result of Spending Review (SR) 2004. Scottish Enterprise has established three Intermediary Technology Institutes (ITIs) with budgets of £15 million per year each over the next 10 years. These are currently gearing up their activity to commission research into market-focused technologies that can be exploited by a wide range of Scottish businesses. Other promising initiatives include web-based databases showcasing areas of commercialisable activity by universities which may be of interest to business.<sup>8</sup>
9. Survey evidence of commercialisation activity by higher education institutions suggests that these policies and funding are having a positive impact. The annual UK survey of Higher Education-Business Interaction<sup>9</sup> has shown in each of the last three surveys that Scotland's commercialisation activity is generally much more intensive than would be expected on the basis of its population. Thus in 2002-03, Scottish higher education institutions filed 212 new patent applications, 17% of the UK total; had 69 patents granted, 19% of the UK total; and executed 131 licences, 17% of the UK total. Other studies<sup>10</sup> suggest that the efficiency of the commercialisation process in Scotland is competitive with that in the USA when the value realised from this activity is compared with the investment made. And while the USA continues to benefit from an earlier focus on this area and the activity here is, overall, much less intense, the evidence suggests Scotland is beginning to catch up.

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4 <http://www.shefc.ac.uk/library/heco302>

5 <http://www.scotland.gov.uk/library5/lifelong/herp2-00.asp>

6 [http://www.technologyscotland.org/news/pdf/btg\\_2003.pdf?NewsRelevTop](http://www.technologyscotland.org/news/pdf/btg_2003.pdf?NewsRelevTop)

7 [http://www.scottishscience.org.uk/main\\_files/pdf/Publications/KNOWLEDGE%20TRANSFER%20REP.pdf](http://www.scottishscience.org.uk/main_files/pdf/Publications/KNOWLEDGE%20TRANSFER%20REP.pdf)

8 <http://www.scottishresearch.com/>

9 [http://www.hefce.ac.uk/pubs/hefce/2004/04\\_07/](http://www.hefce.ac.uk/pubs/hefce/2004/04_07/)

10 <http://www.research-innovation.ed.ac.uk/information/exploitation2005.pdf>

## THE FUTURE

10. As global competition increases, the strength of the research base in our universities must be maintained, and additional funding through the Scottish Executive's spending reviews in 2002 and 2004 has supported this. But there remains considerable untapped potential for the higher education base to impact beneficially on the Scottish economy. The contribution that universities can make needs to be better harnessed and aligned more strategically with Scotland's economic development. SHEFC has established task forces to consider the wide agenda of how universities and further education colleges contribute to the knowledge economy. The SSAC<sup>11</sup> is currently considering how the science base needs to be reshaped so that it operates more strategically across its many parts. And SHEFC is considering proposals for increased pooling of research activity between institutions, and which build research competitiveness in key disciplines. These strategic realignments should offer even greater opportunities for commercial exploitation.
11. The Scottish Executive, SHEFC, the Scottish higher education sector and the Enterprise Networks will continue to develop and improve the support mechanisms for business-university collaboration, and to promote this agenda as strongly as possible. New ways will need to be found to bring together individual businesses with particular research needs with the experts in universities who are most likely to be able to provide solutions. The single point of access being developed for business will greatly assist it to seek out research of relevance, but may need to evolve further as experience is built up. Ultimately though it is in the hands of businesses and institutions to appreciate that some investment of effort will be necessary before a pay-back can be achieved; the case studies in this report however show that this effort can be mutually beneficial for both business and university.



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11 [http://www.scottishscience.org.uk/main\\_files/about\\_us.htm](http://www.scottishscience.org.uk/main_files/about_us.htm)

## SUMMARY OF ACTION POINTS

- Action 1** The Scottish Executive will ask the Scottish business community to stimulate a better dialogue on promoting and developing activity on innovation and R&D with policy makers and funders in Scotland, and to liaise with the UK forum of top R&D companies. Technology Ventures Scotland has agreed to take on this role.
- Action 2** The Scottish Executive and the Enterprise Networks will review their activities in the area of support for R&D by SMEs in light of the refreshed *Smart Successful Scotland*.
- Action 3** Universities Scotland will encourage development and exchange of best practice on codes of practice in universities to avoid conflicts of interest in carrying out research with business.
- Action 4** Universities Scotland will continue its input to the UK-wide Lambert Working Group on Intellectual Property (IP), and will work with the group to further promote, develop and improve the Lambert Model Agreement Toolkit.
- Action 5** SHEFC will further increase funding for knowledge transfer activity in higher education institutions (HEIs) to at least £15 million in 2006-07 as a result of Spending Review (SR) 2004, and thereby enhance competitiveness; and to continue to improve metrics in relation to benefits from this activity.
- Action 6** SHEFC will continue to review its funding mechanism for knowledge transfer activity and to inform other Funding Councils of progress on developing best practice.
- Action 7** SHEFC, Universities Scotland and the Enterprise Networks will continue their development of the 'single point of access' proposals for collaboration between universities on knowledge transfer services.
- Action 8** SHEFC will be further increasing their knowledge transfer grant in light of the SR2004 allocation (see action 5), and this will enable enhanced training of knowledge transfer professionals.
- Action 9** Scottish Enterprise will review the impact, operation, and funding of the Proof of Concept programme in 2005.
- Action 10** SHEFC will continue to work with other UK Funding Councils to ensure the Research Assessment Exercise (RAE) 2008 recognises excellence in applied research, in new disciplines and in fields crossing traditional discipline boundaries.
- Action 11** The Scottish Executive will be considering the need for a further review of the teaching funding method following the planned merger of the HE and FE Funding Councils.
- Action 12** The Scottish Executive will continue to monitor, promote and strengthen all the support measures that facilitate interactions between universities and business.

## THE SCOTTISH EXECUTIVE'S RESPONSE TO THE LAMBERT REVIEW

1. Please note that all text in grey shaded boxes is quoted from the Lambert Review. Not all recommendations have a specific action point listed for Scotland, but the group agreed a general action point to promote continued progress on these recommendations (see Action 12).

## DEMAND FOR RESEARCH FROM BUSINESS

### RECOMMENDATION 2.1

**UK business should establish a high-level forum to enhance the effectiveness of technical innovation in business in the UK.**

**Chief Executives of R&D-intensive businesses in the UK should agree its remit: it should be business-led and focused on the key issues for retaining and expanding high value-added business in the UK.**

2. The UK Government Response noted that a business-led group of top R&D companies had already been established. Within Scotland, a better dialogue is needed amongst the R&D community to help address the challenge of increasing the levels of technical innovation within Scotland's businesses. We need to bring together the interests of business, academia, and government to discuss, debate and advise on the implementation of action in Scotland on commercialisation and technology transfer, and the broader based diffusion of technology innovation within the business community. It has been agreed that the Technology Ventures Scotland Advisory Forum, which has recently been re-established with a revised remit, will have the lead role in this, but the shape of the business representation on the Forum will need to be adjusted to include a better range of industrialists.

### ACTION 1

**The Scottish Executive will ask the Scottish business community to stimulate a better dialogue on promoting and developing activity on innovation and R&D with policy makers and funders in Scotland, and to liaise with the UK forum of top R&D companies. Technology Ventures Scotland has agreed to take on this role.**

## UNIVERSITY OF ABERTAY – NCR/HIDING BUFFALO

### A university start-up company helps to exploit a global company's patents

NCR holds a large portfolio of unexploited patents. The collaboration with Hiding Buffalo via University of Abertay gave NCR a useful new vehicle to investigate the potential value of one particular patent. Hiding Buffalo was already known to Abertay as a product of its Embreonix graduate incubator and the university recommended the company to NCR.

Additional business support was provided by Scottish Enterprise Tayside in refining the specific application of the patent, the commercial opportunities, preparation of the business plan and value proposition to financial institutions.

Nic Kjellin of Hiding Buffalo said: "Working with an existing patent to create new products always presents a challenge, especially when, as in this case, the patent involved is a few years old. Hiding Buffalo tackled this problem by identifying the core components of the original patent and looking at ways of employing these in new areas, rather than simply updating the original concept. This allowed Hiding Buffalo to envisage completely new products, not previously considered by the patent owner. Hiding Buffalo benefited greatly from the expertise and guidance of the original patent owner, and from also being associated with such a reputable corporation. This association undoubtedly helped to stimulate interest from third parties, and we believe it will continue to benefit Hiding Buffalo for the foreseeable future."

Paul Durrant, Director of Business Development, University of Abertay, said: "We have a long-term commitment to encourage and grow the significant talent residing in our students and graduates. The project with NCR has provided us with an opportunity to do this, with a win-win situation for one of our graduate incubator companies and a global company."

#### For further information, contact:

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## RECOMMENDATION 2.2

**Government should seek ways of directing a higher proportion of its support for business R&D towards SMEs.**

3. The approach taken in Scotland is outlined in the document *Smart Successful Scotland* which details the enterprise strategy for development for Scotland. It has now been reviewed and the refreshed strategy was published in November 2004. A significant proportion of R&D support in Scotland is focused at new and growing SMEs through programmes run by the Enterprise Networks and the Scottish Executive.
4. The Scottish Executive and the Enterprise Networks will review their activities in this area in light of the refresh of the *Smart Successful Scotland* enterprise strategy and the action underway in the UK as a whole as a result of DTI's Innovation Strategy.<sup>12</sup> SHEFC and Universities Scotland's proposals to introduce a single point of access (see Recommendation 4.2) should benefit the SME sector and will be useful in establishing the demand for such services.

## ACTION 2

**The Scottish Executive and the Enterprise Networks will review their activities in the area of support for R&D by SMEs in light of the refreshed *Smart Successful Scotland*.**

## RECOMMENDATION 2.3

**The review recommends an enhanced role for the development agencies in facilitating business-university links. A priority should be to identify non-collaborating SMEs that have the potential to gain significant benefits from working with universities.**

5. Scotland already has a much stronger record in this area than the rest of the UK, with the Enterprise Networks supporting the development of business-university links through a variety of programmes. The networks have an ongoing involvement with HEI commercialisation offices and, through their account management strategy, are able to highlight the companies that could potentially benefit from working with HEIs.
6. Several programmes are specifically targeted at this area, including several new ones. Following a review in 2003, the Scottish Executive re-assigned budget from Regional Selective Assistance to support collaboration between businesses and the science base. The Deputy First Minister announced two new funding programmes (SEEKIT and SCORE)

<sup>12</sup> <http://www.dti.gov.uk/innovationreport/innovation-report-full-pdf>

on 1 December 2003. The SEEKIT scheme helps fund the necessary infrastructure to enable public sector organisations such as universities to undertake projects that promote co-operation in R&D and knowledge transfer with Scottish SMEs. The SCORE programme provides support for SMEs jointly undertaking pre-competitive R&D projects in collaboration with public sector research bodies. Both programmes have been well received and the first awards under each scheme were made in July 2004.

7. The Scottish Proposal Assistance Fund (SPAF) was introduced in 2003 to support companies wanting to become involved with EU R&D programmes.

#### RECOMMENDATION 2.4

**The Review recommends that the Government should continue to support Knowledge Transfer Partnerships (formerly TCS) but that the programme should be better marketed to businesses. Increasing the regional focus of the scheme would allow it to be tailored more closely to the needs of local businesses.**

8. This is an area where Scotland is already more active than the rest of the UK, and the Scottish Executive will ensure a strong programme is maintained. Knowledge Transfer Partnerships (KTP) in Scotland are often targeted at specific industries through the activities of Scottish Enterprise cluster teams. They are widely recognised as having significant value with high profile promotion taking place within higher education institutions and further education colleges. The Scottish Executive is represented on the KTP Management Board and participates fully in decisions on the future of the scheme. The scheme is becoming increasingly regional in focus and we will ensure that this continues to work to the benefit of Scotland.

#### RECOMMENDATION 2.5

**The Government should market the R&D tax credits better in order to increase their take-up by business.**

9. This is a reserved area and there are no peculiarly Scottish angles. The Inland Revenue and Customs and Excise have held roadshows and information workshops in Scotland as part of their UK-wide programme as part of the Government's response to the Lambert Review. The Scottish Executive and the Enterprise Networks will ensure that Scottish businesses are fully aware of the tax credits and other support available.

## KNOWLEDGE TRANSFER

### RECOMMENDATION 3.1

**Universities UK and the Standing Conference of Principals should establish a list of academics with relevant qualifications who are interested in becoming non-executive directors on company boards, and should arrange training for them in this role.**

10. The Scottish Executive supports the UK Government's response. Universities UK are taking forward this recommendation and, after discussions with Universities Scotland, have agreed that such a database should be accessible to Scottish stakeholders, and should be searchable by region, subject and HEI. There is also a need to educate businesses in how academics can play a role.

### RECOMMENDATION 3.2

**The Department for Education and Skills (DfES) should exempt business people from the requirement to undertake training to lecture in universities.**

11. This recommendation does not apply in Scotland as there is no requirement for such training in Scotland. However SHEFC supports the need for appropriate training for business people who undertake teaching in HEIs and, as in the UK Government's response, would lay stress on the training being proportionate. It is for HEIs to decide the level of support that needs to be provided to ensure that lectures from business people are relevant and pitched correctly at the target audience.

### RECOMMENDATION 3.3

**Universities, departments and faculties should develop their alumni networks in order to build closer relationships with their graduates working in the business community.**

## GLASGOW SCHOOL OF ART – VOICE TECHNOLOGIES LTD

### An SME licenses software from a university to develop a product

Voice Technologies Ltd, a Paisley based SME, leads the market in the supply and support of digital dictation systems in Scotland. However, it was aware that investment to develop its own product was essential to avoid stagnation in a competitive market. Equally, it was recognised that this product would have to be innovative and appealing if it were to generate a significant customer base outside Scotland.

Voice Technologies MD, Heather Wylie, was aware of the reputation achieved by the Digital Design Studio at Glasgow School of Art in the field of digital interaction strategies and approached them directly. A strategic business relationship was quickly established to develop the product known as 'Voice Messenger'. Scottish Enterprise Renfrewshire guided and supported Voice Technologies through their application for funding and provided access to useful business advice.

Currently, 'Voice Messenger' has been developed as a product and will shortly be undergoing the first in a series of user tests. It is expected that the relationship established between both parties will continue as the product undergoes development and spawns related products.

The value of the contract to the Digital Design Studio exceeds £120,000. However the DDS stands to benefit from a royalty on each 'Voice Messenger' licence sold with potential income in excess of £100,000 over three years.

Heather Wylie said, 'Developing our own, technically advanced software lay at the heart of our strategy for growth, which is to double the company size in the next three years. Although the prospect of working with higher education was daunting at first, the experience has been hugely beneficial to the company and illustrates the high levels of expertise available in Scotland. I would urge any company that has the need for product development but thinks that it can't be done in-house to get in touch with the university sector.'

#### For further information please contact:

**DDS:** Avril McAllister

**tel:** 0141 353 4424

**Voice Technologies:** Fiona McLean

**tel:** 0141 847 5610



12. The Scottish Executive agrees with the UK Government’s response which supports this recommendation. Of the Scottish institutions responding to an informal survey on this topic, three quarters currently use their alumni networks for this purpose, and the others are developing plans to do so. The Scottish Executive has recently awarded a grant of some £570,000 under its SEEKIT programme to support the Strathclyde Entrepreneurial Network (SEN), a project run by the University of Strathclyde which aims to promote research collaboration and knowledge transfer with its graduate community to create new business opportunities.

### RECOMMENDATION 3.4

**Where they do not exist, clear codes of conduct to avoid conflicts of interest in carrying out research with business should be developed by universities.**

13. The Scottish Executive agrees with the UK Government’s response which supports this recommendation. Over half of all Scottish HEIs currently have such codes of conduct, or are developing them. Universities Scotland will encourage the development and exchange of best practice amongst its members on this issue.

### ACTION 3

**Universities Scotland will encourage development and exchange of best practice on codes of practice in universities to avoid conflicts of interest in carrying out research with business.**

### RECOMMENDATION 3.5

**The Association for University Research & Industry Links (AURIL), the Confederation of British Industry (CBI) and the Small Business Service (SBS) should produce a small set of model research collaboration contracts, for voluntary use by industry and universities.**

- **A range of model agreements should be developed, setting out various approaches to IP ownership, management and exploitation rights including, but not limited to, ownership of the IP by the university with non-exclusive licensing or exclusive licensing to industry.**
- **The model contracts should be agreed by the main representative bodies. They could be distributed through the same means: to universities through AURIL and Universities UK and to industry through the CBI and the SBS.**

14. The Scottish Executive agrees with the UK Government's response, which notes that an Intellectual Property (IP) working group has been established to produce an IP protocol. Universities Scotland is represented on this group. The outcome of this work is the Lambert Model Agreement Toolkit which was launched in February 2005. The Scottish Executive believes that it is important that there is significant information sharing between university commercialisation departments on contracts signed with businesses in the areas of IP, contract research and knowledge sharing. IP protocols are often specific to the nature of the work undertaken and although they may benefit from the availability of model research collaboration contracts, a key priority is to ensure mutual benefit for the university and the business, taking into account both background rights and the ability for continued research.

#### **ACTION 4**

**Universities Scotland will continue its input to the UK-wide Lambert Working Group on Intellectual Property (IP), and will work with the group to further promote, develop and improve the Lambert Model Agreement Toolkit.**

#### **RECOMMENDATION 3.6**

**The Review recommends that the Government should continue to invest in a permanent and substantial third stream of funding, while simultaneously monitoring and evaluating the outputs from its investment.**

**The Review agrees with Sir Gareth Roberts and the CBI that third stream funding should be increased to around £150 million per annum in England in the future, in order to increase the flow of knowledge and ideas from the science base into business and the wider community.**

15. The Scottish Executive agrees that knowledge transfer funding should be further enhanced. SHEFC's Knowledge Transfer Grant (KTG) is embedded as a permanent allocation to universities to underpin their knowledge transfer activities, and amounts to £9.5 million in 2004-05, with an increase to over £12 million planned in 2005-06. KTG is allocated formulaically and predictably on the basis of a basket of knowledge transfer metrics which are the subject of long-term development and consultation. KTG can be used to fund a very wide range of KT activity.<sup>13</sup> SHEFC is examining how to extend the metrical base to reflect better a more diverse range of the benefits of the flow of knowledge from universities.

<sup>13</sup> <http://www.sfc.ac.uk/library/he2401>

## GLASGOW CALEDONIAN UNIVERSITY – BIOPTA LTD

### A university spin-out benefits from Proof of Concept and other public support

Biopta Ltd, spun out in 2002 from Glasgow Caledonian University is a life sciences company offering services and developing instruments to measure the effect of drug candidates on human tissue samples. These help to reduce the incidence of unexpected effects when the new drug is first administered to patients and volunteers.

Intellectual property was developed at the university, and early assistance was provided by a Proof of Concept award from Scottish Enterprise. A licence for the underlying IP was negotiated with the university and a Scottish Executive SMART award helped to fund the next stage in development. As well as developing new instrument, Biopta also offers its expertise on a fee for service basis, which has been a vital part of the company's growth during its first two years of operations.

Recently, Biopta has closed a funding round of £575,000 which will enable Biopta to extend the consultancy service it already provides to pharmaceutical companies and to develop its innovative range of new instruments. The deal was led by Braveheart Ventures, the Scottish Co-investment Fund and LINC Scotland. This investment enabled Biopta to accept a Scottish Executive SPUR grant that will support part of the development of the new Perf-Exion instrument range.

“With cash and more space we will be able to capitalize on rapidly growing worldwide interest in Biopta's innovative technology,” said Dr Bunton. “We have benefited from the support network that exists, which has provided assistance at each stage of the company's growth.”

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The Spending Review 2004 has provided a very significant overall real terms growth in funding for HEIs through SHEFC, from which SHEFC will have the resources to maintain the competitiveness of knowledge transfer activity in HEIs. SHEFC is planning to increase funding for KT activity to at least £15 million in 2006-07.

## **ACTION 5**

**SHEFC will further increase funding for knowledge transfer activity in HEIs to at least £15 million in 2006-07 as a result of SR2004, and thereby enhance competitiveness; and to continue to improve metrics in relation to benefits from this activity.**

## **RECOMMENDATION 3.7**

**The Review recommends that third stream funding should be allocated for three years on the basis of universities' business plans for their third stream activities. Universities that meet their third stream benchmarks in year one would automatically receive their second and third year allocations.**

**Simultaneously, work should be undertaken by the Funding Councils to develop a basket of metrics that might in the future provide the basis for a predictable way of allocating funds on a formulaic basis.**

**In summary, if knowledge transfer is to achieve its full potential in the UK, the Review recommends that third stream funding should be substantial, permanent and allocated in a way that enables universities to make long-term plans for these activities.**

- 16.** This recommendation is mainly aimed at the situation in England. In Scotland, knowledge transfer grant funding is not released against the submission of plans for use. Instead, higher education institutions report annually on their use and on the impact of their allocation, to allow SHEFC to track the effectiveness of the grant scheme and disseminate best practice. While this is a lighter touch regime than was recommended in the Lambert Review, the system here currently has wide acceptance and allows longer term planning horizons. It is however being kept under review.
- 17.** In the UK, SHEFC and Universities Scotland have pioneered the gathering and use of metrics for allocation of KT funding. SHEFC has kept the other Funding Councils and the Office of Science and Technology (OST) informed of its development of knowledge transfer metrics so that they can also benefit from this work.

## **ACTION 6**

**SHEFC will continue to review its funding mechanism for KT activity and to inform other Funding Councils of progress on developing best practice.**

## UNIVERSITY OF GLASGOW – DIAGNOSTIC POTENTIALS

### A spin-out in which the university benefits from royalties

Diagnostic Potentials spun-out from the University of Glasgow in July 1999. The first product that has been developed is ADEPT, a system for the early diagnosis of Alzheimer's disease that will assist clinical consultants on patient care and drug therapy.

In recent years it has been difficult for new companies to secure funding from venture capitalists. The University therefore agreed to a royalty agreement in lieu of an equity stake. This enabled the company to attract a substantial funding package in both the seed and subsequent rounds as they controlled more equity. Funding was provided through a number of sources including a Scottish Executive SMART Award, a Small Company Innovation Scheme Award and funding from Scottish Enterprise Dunbartonshire. The University also agreed to a two-year secondment to help the company reach proof of concept.

Second round funding in November 2002 was provided by the Wellcome Trust, and a Scottish Executive SPUR grant. The company continues to impress the life sciences industry and was recently honoured by the Scottish Council for Development and Industry with the Pfizer Award for Innovation in Life Sciences.

Dr Kerry Kilborn of Diagnostic Potentials said, “ Commercialisation requires expertise that few academic researchers possess. Get the best independent advice available and try to be realistic about how ‘valuable’ a new, untested idea is – investors will be! It can be tremendously satisfying to see an idea progress from the back of an envelope to a product that people want.”

Dr Kevin Cullen, Director of Research & Enterprise at the University of Glasgow, said, “Diagnostic Potentials is an outstanding example of collaboration and partnership. The University is proud to be associated with this company which has the potential to make a significant improvement to society.”

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## INTELLECTUAL PROPERTY AND TECHNOLOGY TRANSFER

### RECOMMENDATION 4.1

**The Funding Councils and Research Councils, in consultation with universities, the CBI and other industry groups, should agree a protocol for the ownership of IP in research collaborations.**

18. See recommendation 3.5. Research collaborations by their nature are often bespoke but there are many common aspects that could be addressed through the development of a high level protocol agreement.

### RECOMMENDATION 4.2

**The Government should use third stream funding to support regional shared services in technology transfer.**

19. The Scottish Executive is keen to encourage increased collaboration between HEIs in knowledge transfer activity. There are a number of opportunities for universities to share services and form alliances in technology transfer, for a range of different reasons, and the scale and geography of Scotland is conducive to collaboration.
20. The Scottish Executive also agrees that third stream funding and development agency support can sometimes help to deliver shared services. The Scottish Executive welcomes a recent initiative by SHEFC and the universities to explore the idea of pooling aspects of universities' services to provide a single point of access for business, particularly SMEs, to research and knowledge transfer. These bodies recognise the need to develop carefully the right collaborative model for the particular circumstances. Scottish Enterprise is working alongside these bodies on this proposal to ensure that linkages with business are developed effectively. The single point of access will provide businesses with a service which answers initial enquiries about expertise and commercial opportunities in the research base and then directs and filters such enquiries.

### ACTION 7

**SHEFC, Universities Scotland and the Enterprise Networks will continue their development of the 'single point of access' proposals for collaboration between universities on knowledge transfer services.**

### RECOMMENDATION 4.3

**The Government should increase the level of funding for technology transfer and knowledge transfer training to stimulate the development of new training courses.**

21. The Scottish Executive welcomes the dedicated training support being provided throughout the UK by the DTI for knowledge transfer professionals. Universities in Scotland are also able to use funds allocated through SHEFC's KTG for knowledge transfer training purposes, and following the overall additional resources provided to SHEFC in the Spending Review, SHEFC will be considering its funding through this stream.

### ACTION 8

**SHEFC will be further increasing KTG in light of the SR2004 allocation (see action 5), and this will enable enhanced training of knowledge transfer professionals.**

### RECOMMENDATION 4.4

**As third stream funding increases, university technology transfer offices should actively seek to attract individuals with industry background and experience.**

22. The Scottish Executive considers that universities in Scotland already have a good track record on this. In the 12 Scottish HEIs responding to an informal survey on this topic, technology transfer offices (TTOs) (or their equivalent) employ 121 FTE staff, of whom 84 (70%) have industry background and experience. This figure is only likely to increase as TTOs expand and improve their activities. In addition to staff in centralised TTOs, many Scottish HEIs employ Business Managers or Commercialisation Officers in Faculties or Schools; these employees almost invariably have industry background and experience.

### RECOMMENDATION 4.5

**UK organisations representing technology transfer should look to the US Association of University Technology Managers to see what lessons can be learnt in terms of providing quality training, increasing industry involvement and sharing best practice.**

23. The Scottish Executive supports the UK Government's response on this, which notes the UK wide courses available through AURIL's continuing professional development programme which have drawn on the Association of University Technology Managers (AUTM) courses in the USA. Like their counterparts in other parts of the UK, Scottish HEIs, their TTOs and the bodies representing them, are well aware of the need for more and better training of Technology Transfer staff. Such training should be a university-based activity and should be modelled on best practice wherever it is found.

**RECOMMENDATION 4.6**

**The Government should set clear guidelines for third stream funding to rebalance commercialisation activities towards licensing. In particular, it should:**

- 1. Increase the availability of proof of concept funding.**
  - 2. Reduce the availability of seed funding, and use public seed funds to draw in private finance wherever possible.**
- 24.** The Scottish Executive considers this recommendation to be aimed at the rest of the UK. Scotland has been operating a Proof of Concept Fund since 1999. This fund, together with an associated support scheme of the Royal Society of Edinburgh/Scottish Enterprise Fellowship for academics seeking to commercialise their work, is proving very successful in developing ideas into viable commercial prospects. The fund now totals £43 million following the addition of European funds. So far 146 projects have been supported with £24 million committed. Eighty-six projects have been completed with a technical success rate of 80%, with 60% on track to produce a commercial outcome. In 2005, the fund will be subject to review by Scottish Enterprise and decisions will need to be taken about the level of funding from then on.
- 25.** The Scottish Executive places no particular emphasis on spin-outs compared with other forms of commercialisation. The key factor in deciding the commercial exploitation channel is usually the preference of the individual academic. The Scottish Executive does not intend to influence this preference by altering the balance of funding for one form of commercialisation or another and will continue to allow universities to manage their activities to achieve the most effective balance of outcomes.
- 26.** The Scottish Executive agrees that follow-on funding should have a significant component that is private sector led. The Scottish Co-investment Fund (SCF) is a clear example of using public sector funding to draw in private sector funds. It was launched in November 2002, after consultation with the market, as a £20 million Co-investment Fund, boosted to £45 million in October 2003, with additional European Regional Development Fund (ERDF) resources. The Fund can invest in individual companies up to a maximum SCF investment of £500,000 although the total deal size can be up to £2 million. It works by forming a contractual partnership with private sector venture capital fund managers, business angels and business angel syndicates. It is administered by Scottish Enterprise but private sector managed and driven. Access is through 22 individual Fund Managers. So far, £7.2 million SCF has been committed to 61 deals, leveraging £19.6 million for the private sector.

**ACTION 9**

**Scottish Enterprise will review the impact, operation, and funding of the Proof of Concept programme in 2005.**

## GLASGOW CALEDONIAN UNIVERSITY – SYSNET

### A Knowledge Transfer Partnership (KTP)

Sysnet provides world class e-business solutions using internet technology and is helping lead the UK in the adoption of digital pen and paper, a revolutionary technology that offers a natural way to communicate digitally.

Sysnet was facing the issue of developing and refining a software product within a business with a service culture. They were introduced to Glasgow Caledonian University by the West of Scotland KTP centre, who, having discussed Sysnet's needs, arranged an introduction with Professor James Sommerville at the university's School of the Built and Natural Environment.

The financial support for the project was split equally between the Scottish Executive and the DTI. The University provided support for KTP management and also from a range of other departments.

KTP provided clear benefits for both partners, and future collaborative research projects between the University and the company are planned.

Dr Peter Burtwistle, Managing Director of Sysnet, said:

“KTP is a very worthwhile scheme if the improvements sought can be planned and delegated via clear objectives. The Associates tend to be better quality graduates who can work on their own initiative but should be mentored by a senior member of the management team. Having this type of culture in the organisation is key to the success of any KTP project.”

Nigel Craig from Glasgow Caledonian University said:

“It has been immensely satisfying to develop solutions to industrial problems and to see these migrate through to industrial products which are currently on sale in the global market place. The two associates have developed into highly skilled and competent individuals whose experience and skill levels are highly valued and sought by employers within the construction, IT and academic industries.”

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## REGIONAL ISSUES

### RECOMMENDATION 5.1

**Regional Development Agencies should have targets that promote building business-university collaboration.**

- **Their core outcome target for innovation should reflect the long time lag between R&D and economic impact.**
- **All RDAs should set a specific milestone for building business-university links.**

**The Scottish, Welsh and Northern Irish development agencies should also consider whether their targets adequately promote building business-university collaboration.**

27. The Scottish Executive agrees that better measures of impact in this area need to be devised. Scottish Enterprise have decided to drop their target of assisting a particular number of collaborations because the measure was not particularly meaningful. There are difficulties with such specific targets, in that they may lead to unwanted behaviours in the quest to meet them, and there can be a wide variation in what is counted as a 'collaboration'. Such targets may encourage low level and poor quality 'collaborations', undermining the real goal of improving the intensity, frequency and value of transactions.
28. The Scottish Executive and Scottish Enterprise recognise the long term nature of the economic impact of supporting R&D. The recently established ITI Energy, ITI Life Sciences and ITI TechMedia are aimed at increasing the level of R&D in Scottish companies. The 10 year funding commitment and associated targets placed on them reflect the long time to economic impact.
29. The creation of a distributed federal university in the northern half of Scotland, which delivers international standards of R&D and teaching, is a major challenge to which the Scottish Executive remains fully committed. The Scottish Executive has been working closely with SHEFC, HIE and UHIMI to develop its capacity for fundamental and applied R&D, whilst at the same time embedding the principles of Lambert into its structures and activities.
30. SHEFC have developed a set of metrics for measuring the extent and effectiveness of university collaboration activity, which are used to determine the allocation of their KTG.

### RECOMMENDATION 5.2

**The Government should change Regional Selective Assistance so that it can support more knowledge-intensive clusters and businesses, and be used to help build a region's infrastructure for collaborative R&D projects with universities.**

31. This has already been achieved in Scotland. Regional Selective Assistance in Scotland was refocused in 2003 to include a stronger emphasis on quality projects, increased scope to assist projects with limited capital investment but supporting good quality job creation, and the encouragement of more risk-taking. These changes are all particularly suited to knowledge intensive industries.

## FUNDING UNIVERSITY RESEARCH

### RECOMMENDATION 6.1

**The Government should now take stock of the proposals in the review of research assessment and in the review of the sustainability of university research. It should consider the conclusions of these two reviews together when deciding on the future direction of research funding and policy in the UK.**

32. SHEFC have been actively involved in discussions about the way that the next Research Assessment Exercise (RAE) in 2008 will recognise excellence in applied research, in new disciplines and in fields crossing traditional discipline boundaries. The Scottish Executive agrees with the response of the UK Government, and supports SHEFC's activities with the other Funding Councils to this end.

### ACTION 10

**SHEFC will continue to work with other UK Funding Councils to ensure RAE 2008 recognises excellence in applied research, in new disciplines and in fields crossing traditional discipline boundaries.**

### RECOMMENDATION 6.2

**The Government should create a significant new stream of business-relevant research funding, which would be available to support university departments that can demonstrate strong support from business.**

**Demand for the funding from business would need to be assessed but funding in the region of £100 million-£200 million could be an appropriate starting point.**

**RECOMMENDATION 6.3**

**There are a number of possible ways to allocate the new business-relevant research funding stream including an expansion in the scope of Higher Education Innovation Fund, an expansion of existing schemes such as LINK, or allocation through the Regional Development Agencies and their equivalent bodies in Scotland, Wales and Northern Ireland.**

**The Review's preferred approach is to allocate the new funding stream to the RDAs through their single pot allocation, and to provide them with targets on promoting business-university collaboration.**

33. The Scottish Executive considers that these recommendations are mainly focused on other parts of the UK.
34. The Scottish Executive, the Enterprise Networks and SHEFC all work closely together to promote commercialisation and business-relevant research. Scottish Enterprise has already developed and enhanced its long term support for business relevant research by investing in three Intermediary Technology Institutes (ITIs) with a total allocation of £45 million per year for 10 years. The ITIs will focus on market-based, pre-competitive research in areas of high potential for Scotland: Life Sciences, Communications Technology and Digital Media, and Energy. Although research contracts will be subject to the usual competition rules in the EU, Scottish Universities and Research Institutes will be well placed to bid for many of the research contracts involved. In addition, SHEFC's KTG, which supports commercially relevant research, will be increased to £12 million for 2005/06, and as a result of SR2004, this will be increased to at least £15 million in 2006-07.

**RECOMMENDATION 6.4**

**The Russell Group of universities should encourage the development of a league table of the world's best research-intensive universities. This could well be produced by the private sector: the Sutton Trust is one group which is already considering the possibility.**

35. The Scottish Executive considers that benchmarking of our universities internationally could be helpful in raising Scotland's aspirations in the world. There are already a number of such surveys which indicate that some of our institutions are amongst the best in the world. However such data must be treated with a fair amount of caution. The ranking in league tables depends on the measures that are used and the weights that are attached to them, and so there is inevitably a large degree of subjectivity involved. Moreover, different institutions have different missions and strengths which may not be comparable, and league tables will not reflect this. High quality research may also be undertaken in individual departments within less research intensive universities.

## UNIVERSITY OF EDINBURGH – MEMEX

### The University licenses software to leading software developer

The Edinburgh-Stanford Link is a partnership facilitated by a £6 million grant from Scottish Enterprise, which brings together two leading research centres in Scotland and the US. The Link's objective is to exploit the commercial potential of leading-edge research in language technology, transferring knowledge and skills into Scottish companies.

One of the Link's earliest successes has been a project with Memex Technology, a leading intelligence software developer with clients among the world's police and defence agencies. Memex provides unique and powerful software applications which meet the ever-increasing needs of analysts and agencies worldwide, including police, defence and fraud investigators.

The company has licensed software developed at Edinburgh, for integration with its core product. The Link brought the company and the researchers together to develop the software into a format that Memex could put into use, and the University team also helped Memex to integrate the licensed code, and to train operatives in its features and use.

**David Carrick, Managing Director, Memex, said:**

“Our deal with the Edinburgh-Stanford Link was the first of its kind. It cements our links with the academic research sector, and we will also benefit through access to leading minds in the field of human communications research. We are confident that our relationship with the Link will keep Memex at the forefront of our market.”

**Nick Wright, Commercial Director, Edinburgh-Stanford Link said:**

“We are delighted with this early win for the Edinburgh-Stanford Link. Memex is exactly the kind of innovative successful company we enjoy working with. This deal also serves as an illustration to other Scottish companies that the Link is open for business and keen to work with them.”

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## MANAGEMENT, GOVERNANCE AND LEADERSHIP

### RECOMMENDATION 7.1

The Review recommends that the Committee of University Chairmen, in consultation with the sector and Government, develops a concise code of governance representing best practice across the sector. The draft, attached as Appendix II to this report, should be seen as the starting point for drawing up the code.

While the code should remain voluntary, all institutions should disclose in their annual report when their governance arrangements do not conform to the code, and explain why their particular governance arrangements are more effective.

36. The Scottish Executive agrees with the response by the UK Government which welcomes the work of the UK Committee of University Chairmen in preparing a new guide for governing bodies that will apply to all UK higher education institutions. The *Guide for members of Higher Education Governing Bodies in the UK* was published in November 2004.<sup>14</sup> It is consistent with Appendix II to the Lambert report and will encourage a 'comply or explain' approach. The Scottish higher education sector has contributed significantly to this work, and is pleased with the result, especially the specific advice for Scotland in Part III.

### RECOMMENDATION 7.2

Each governing body should systematically review its effectiveness in carrying out its obligations to all stakeholders every two or three years.

These reviews should take into account the stated objectives of the governing body, the performance of the institution against key performance indicators, evaluations of senior management and the results of effectiveness reviews of senate and committees.

To ensure transparency, the methodology and results should be published in the university's annual report and on the internet.

37. The Scottish Executive agrees with the response by the UK Government which supports this recommendation. The UK Committee of University Chairmen's proposed new guide for governing bodies will include a requirement that is consistent with this recommendation. The Scottish higher education sector has contributed significantly to this work.

<sup>14</sup> [http://www.hefce.ac.uk/pubs/hefce/2004/04\\_40/](http://www.hefce.ac.uk/pubs/hefce/2004/04_40/)

### RECOMMENDATION 7.3

The Review supports the Leadership Foundation as an initiative to address the sector's need for high-quality leadership and senior management.

- The Foundation should focus its efforts as much on future vice-chancellors as current ones.
- Development programmes and training should be implemented with third parties rather than created and supplied internally.
- The Foundation should develop programmes to support council chairs in their increasingly challenging roles.

38. Scottish HEIs and SHEFC support the Leadership Foundation which was launched in spring 2004 by the Chancellor as a vehicle to provide a distinct and vital focus on leadership and management. To that end SHEFC and its sister UK funding bodies are providing the Foundation with funding for its core structure and base capacity.

### RECOMMENDATION 7.4

The Review recommends that the Government and all funders should minimise the use of hypothecated funding streams.

- Funders should continue to consolidate individual funding into larger streams, more proportionate to the necessary level of bureaucracy and regulation.
- Smaller hypothecated funding streams should, where possible, be allocated on a metrics or formulaic basis, rather than by bidding.
- Funders should minimise audit requirements on hypothecated funding streams.
- 'Top-sliced' funding streams should have a limited life of no more than three years, after which they should be rolled back into core funding, unless policy is explicitly renewed.

39. The Scottish Executive considers this recommendation is mainly aimed at the other UK administrations. SHEFC has for some considerable time developed an approach that is consistent with this recommendation.

40. On 12 December 2001 SHEFC announced a new approach to how it links its main funding for teaching and research to satisfactory progress on relevant major policies. SHEFC has introduced a new condition of grant in four key policy areas: equality of opportunity and widening participation, continuous improvement of learning and teaching, research and knowledge transfer, and human resource policies and management. In return, SHEFC is now committed to avoiding the use of initiative funding and thereby to increasing core funding levels.

## RECOMMENDATION 7.5

**The Review recommends that funders and agencies should apply a significantly lighter-touch regulatory and accountability regime to well-run universities.**

**One agency should be responsible for risk assessments on behalf of all funders and regulators. In time, assessments should be published. Risk should be assessed on:**

- Adherence to the sector's code of governance (see Appendix II).
- Quality of management.
- Financial soundness.
- Institutional performance measured against key performance indicators (such as teaching, research, third stream and so on) set by the governing body, as well as other broad policy goals (as set by Government).

**In the longer-term, well-run universities should receive greater financial freedoms, such as the freedom to move funding across budget lines and longer, multi-year funding cycles.**

41. The Scottish Executive supports this recommendation's aspiration to simplify and reduce duplication of regulatory arrangements. Achievement of the aspiration will, of course, require effective collaboration between a variety of organisations.
42. SHEFC has been focusing on each institution's strategic performance in order to maximise achievement of the Scottish Executive's policy objectives. From June 2003 SHEFC has been engaged in a programme of formal visits to all Scottish HEIs over a two-year period. Each visit involves discussions with the institution's senior management and members of its governing body.
43. SHEFC is currently discussing with HEIs how it might be able to provide firm information about future funding levels that will be of practical help to institutions' forward planning.

## RECOMMENDATION 7.6

**In three years' time, the vice-chancellors of Oxford and Cambridge should take stock of the progress of reform, and agree with the Government what further steps will be necessary for the two universities to sustain their global position.**

44. While this recommendation is strictly only relevant to England, the Scottish Executive does not consider it desirable to develop a policy of focusing on reforms at the leading higher education research institutions in Scotland.

## UNIVERSITY OF EDINBURGH – MACOM TECHNOLOGIES LTD

### A university provides consultancy services

MACOM Technologies Ltd is an SME established in 1999 to develop sensor technology invented at the University of Edinburgh. Edinburgh Research and Innovation negotiated the licence allowing MACOM to proceed with commercial exploitation.

The technology allows sensitive detection of metallic wear particles in the lubricating oil of a machine such as a gearbox or engine. Detection of changes in these particles gives valuable information on the ‘health’ or condition of the machine – a sudden increase in the number and size of particles gives early warning of the failure of part of the machine and allows maintenance and servicing to take place before catastrophic failure occurs. Such continuous monitoring of machinery is valuable as it can remove the need for regular maintenance schedules allowing maintenance only to be carried out as required.

The University assisted the development efforts for different industrial applications through the provision of consultancy services. A contract to further develop the technology was successfully negotiated through Edinburgh Research and Innovation.

Bob Morrow, Director of MACOM Technologies said, “At an early stage, there was a requirement to improve the sensitivity so that the sensor could ‘see’ particles as small as 50 microns. MACOM now have a marketable product that does this and are about to go into the production phase with their TA10 machine wear debris monitor.”

Brian Verth, Consultancy Manager, University of Edinburgh, added, “The University is committed to ongoing support and assisting further product development of technology invented here in Edinburgh and which has been licensed to a Scottish SME set up to pursue its commercial exploitation. The project subsequently was supported by a SMART Award.”

Further information can be found at:

<http://www.macomtech.net/>



## SKILLS AND PEOPLE

### RECOMMENDATION 8.1

**Funding Councils should require universities to publish information in their prospectuses on graduate and postgraduate employability for each department (or faculty, if datasets are too small) by 2006.**

**This information should include:**

- **Employability statistics and first destination data – to allow students to see whether particular courses are likely to be useful for specific careers.**
- **Starting salary data – to give students an indication of the value that employers place on graduates from particular courses.**
- **Other information relevant to specific disciplines.**

45. The Scottish Executive agrees with the response by the UK government in welcoming developments in this area, aimed at helping students choose subjects relevant to their career decisions.
46. In relation to the quality of courses, the Scottish higher education sector has adopted a distinctive new approach to quality assurance and enhancement. The HE Quality Working Group<sup>15</sup> has advised on the detailed development and implementation of the Quality Enhancement Framework (QEF), which was launched in August 2003. A central feature of the QEF is public information about the quality of learning and teaching.
47. SHEFC has published guidance on the range, level of detail and format of the information that should be publicly available (circular letter HE/19/03).<sup>16</sup> The objective is to ensure that potential students and other stakeholders have access to relevant and useful information about the quality of provision.
48. The guidance encourages institutions to consider the information needs of prospective and current students, including information on what careers their courses may lead to and previous graduate destinations. Institutions will be free to develop their own approaches to the presentation of this information to students.
49. Employment data are generated at UK level through the Higher Education Statistics Agency (HESA). SHEFC has recently provided guidance to the sector in Scotland on the various sets of information to be published on the (UK) Teaching Quality Information (TQI) website, from summer 2005.

<sup>15</sup> The HE Quality Working Group includes representatives from SHEFC, Universities Scotland, the QAA Scottish office and the student body.

<sup>16</sup> See <http://www.shefc.ac.uk/library/he1903>. The HE Quality Working Group includes representatives from SHEFC, Universities Scotland, the QAA Scottish office and the student body.

## UNIVERSITY OF STIRLING – MACHRIHANISH MARINE FARM

### A joint venture between a university and a company

Machrihanish Marine Farm's Cod Hatchery is a joint venture between University of Stirling's Institute of Aquaculture and Lakeland Smolt Ltd, part of Marine Farms ASA. The aim of the farm is to address the dramatic reduction in the cod quotas for UK waters. The company is based at the Machrihanish Marine Environmental Research Lab (MERL), owned by the Institute of Aquaculture.

The company lacked the R&D base that a facility like MERL provides and also lacked a site. Following discussions between the University and Marine Farm personnel, a joint business plan was developed. EU funding under FIFG provided financial support of £350,000 and Argyll and the Islands Enterprise contributed a total of £145,000. Other finance in the form of equity capital and bank loans came from Nordea bank, Finland. The company was set up as a joint venture. The University contributed the site, R&D expertise, fish health management, captive broodstock, site management, contacts in Scotland and share capital. Marine Farm contributed expertise, share capital and links into Nordea bank. The company expects to expand into Shetland and other sites on the west coast if the market expands as expected. The major benefit to the University is being in at the inception of a new industry.

Dr Derek Robertson, MERL's Director said, "The amalgamation of R&D and local knowledge with commercial acumen and marine species knowledge has produced an ideal partnership."

On behalf of the University, John Gordon, Director of Finance said, "MMF has placed the University in the driving seat of a new and exciting industry that is expected to return significant profits which will be ploughed back into the research and development of new species aquaculture in Scotland. Everyone gains from this initiative: Scotland plc, the University staff and students and the community at large."

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50. SHEFC have reservations about the inclusion of first destination and salary data which may not give a reliable picture of a student's career choice and salary achievement. SHEFC has therefore commissioned a longitudinal survey to track the progress of the 2004 cohort of graduates and postgraduates at regular intervals over five years, to help improve this picture.

## RECOMMENDATION 8.2

**The Government should ensure that Sector Skills Councils have real influence over university courses and curricula. Otherwise, they will fail to have an impact on addressing employers' needs for undergraduates and postgraduates.**

51. The Scottish Executive agrees that it is important that HEIs and SHEFC have better evidence about employers' needs, to help them improve the relevance and responsiveness of their provision. Futureskills Scotland plays a role in gathering key data through their major surveys of employers in Scotland, and through their individual Scottish industry sector profiles. The Council works closely with them on labour market issues.
52. The Scottish Executive also welcomes the creation of the Scottish Sector Skills Stakeholders Group, set up to work closely with Sector Skills Councils (SSC) and their work in Scotland. The Scottish Funding Councils are members of that group and are planning to sign up to pilot sector skills agreements with the other stakeholders for four SSCs initially. These agreements will show how SSCs will work with the Funding Councils and learning providers to improve the relevance of provision.

## RECOMMENDATION 8.3

**The Higher Education Funding Council for England should ensure that its forthcoming review of the teaching funding method for universities:**

- Takes account of the views of employer-led bodies and representatives from the public and voluntary sector rather than funding courses solely on the basis of historical cost.
- Considers whether the UK university system is producing the right balance of graduates in the disciplines that the economy needs.

**The other funding councils should also consider these issues.**

53. The teaching funding method was reviewed in Scotland in 2001 and implemented in 2002-03. The Scottish Executive will however be considering the need for a further review following the planned merger of the HE and FE Funding Councils. Any future review will take into consideration a wide range of issues and will consider the views of a broad range of stakeholders.

54. The Scottish Executive welcomes the close co-operation between SHEFC, Futureskills Scotland and the Skills for Business network in Scotland, which has provided a much more robust analysis of the needs of the economy in terms of particular industry sector requirements for qualified individuals. However, these organisations have noted that it is difficult to predict the balance of particular disciplines required, and that many employers are more concerned with the generic skills and aptitudes of potential new recruits than with their discipline-related knowledge.
55. There is clear evidence that the knowledge economy will require more highly-qualified individuals in all disciplines, as well as more detailed planning of supply of particular professions such as teachers, doctors, nurses or veterinary surgeons.

### **ACTION 11**

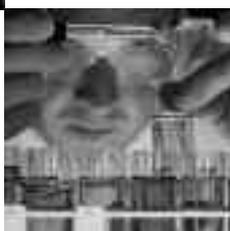
**The Scottish Executive will be considering the need for a further review of the teaching funding method following the planned merger of the HE and FE Funding Councils.**

## **CONCLUSION**

56. The Scottish Executive intends to continue to encourage strongly a further growth in business-university interaction. It will therefore continue to monitor, promote and strengthen all the support measures that are in place in this area.

### **ACTION 12**

**The Scottish Executive will continue to monitor, promote and strengthen all the support measures that facilitate interactions between universities and business.**



## GLOSSARY OF TERMS

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AURIL	Association for University Research and Industry Links
AUTM	Association of University Technology Managers
CBI	Confederation of British Industry
DTI	Department of Trade and Industry
ERDF	European Regional Development Fund
EU	European Union
FE	Further Education
FTE	Full Time Equivalent
GDP	Gross Domestic Product
HE	Higher Education
HEI	Higher Education Institution
HESA	Higher Education Statistics Agency
HIE	Highlands and Islands Enterprise
IP	Intellectual Property
ITI	Intermediary Technology Institute
KTG	Knowledge Transfer Grant
KTP	Knowledge Transfer Partnership
OST	Office of Science and Technology
QEF	Quality Enhancement Framework
RAE	Research Assessment Exercise
R&D	Research and Development
RDA	Regional Development Agency
SBS	Small Business Service
SCF	Scottish Co-investment Fund
SCORE	SME Collaborative Research Programme
SE	Scottish Executive
SEEKIT	Scottish Executive Expertise, Knowledge and Innovation Transfer
SEN	Strathclyde Entrepreneurial Network
SHEFC	Scottish Higher Education Funding Council
SME	Small to Medium sized Enterprises
SPAF	Scottish Proposal Assistance Fund
SR	Spending Review
SSAC	Scottish Science Advisory Committee
SSC	Sector Skills Councils
TCS	Teaching Company Scheme
TQI	Teaching Quality Information
TTO	Technology Transfer Office
UHIMI	UHI Millennium Institute

## CONTACT

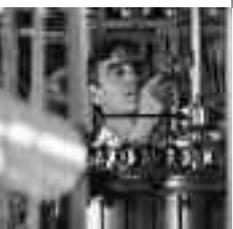
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