

## Universities Scotland's response to the Science and Technology Committee's inquiry on managing intellectual property and technology transfer

### Summary

- Universities work to commercialise research in order to produce beneficial economic impact and as a part of their broader missions to deliver benefit to society; overall, work with industry does not deliver a surplus
- This work (licensing and spin-outs) is part of a much wider approach to economic impact delivered through HEIs
- While HEIs should be aspirational in their goals for research commercialisation, a narrow focus on commercialisation as the means of economic impact runs a risk of introducing inappropriate drivers into universities
- University strategies will develop in the context of research strengths, sector needs and innovation ecosystems in which the institution operates so it is important to avoid a one size fits all approach

This response provides a broad perspective from Scottish universities, aligned to the areas highlighted in the inquiry terms of reference.

### The role of universities and TTOs in research commercialisation

1. Over (at least) the past decade there has been a cultural change within universities to increase focus on delivering research impact, reflected in the mechanisms of the Research Excellence Framework (REF). Universities are working hard to embed a culture of impact and this includes increased efforts to deliver commercialisation of research (throughout this response we understand this to refer to licensing and spin-outs). However, this is only a small part of HEI engagement with businesses as well as capturing a small part of the beneficial (economic and other) impact, which HEIs deliver. Every university in Scotland has a strategic commitment to knowledge exchange (the two-way flow of knowledge between universities, businesses, the general public as well as the public and third sectors) of which managing IP and tech transfer are a part.<sup>1</sup>
2. HEIs will have different levels of involvement in, and prioritisation of tech transfer. This will reflect discipline mix and the capacity of the surrounding ecosystem to absorb that research. This does not reflect a lack of importance placed on delivering economic impact, rather an institution maximising impact through selecting the most appropriate mechanism to achieve it.
3. Research commercialisation is a long-term endeavour – from initial discovery to application takes years. This speaks to the need for sustainability of funding for both research and knowledge exchange.
4. Of the over 25, 000 formal interactions<sup>2</sup> between Scottish universities and businesses much is based around CPD and consultancy, utilising academic expertise to help businesses to develop. Often the research commercialisation team is part of a broader group in the university with responsibility for employer/industry engagement, public

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<sup>1</sup> <http://www.universities-scotland.ac.uk/bite-size-briefings/uni-research-benefit-of-others/>

<sup>2</sup> Scottish Funding Council Knowledge Transfer Grant Metrics (2013-14)

engagement and enterprise services (including provision of training and opportunities to students and staff). This wide variation of mechanisms of delivering impact underscores the need for a flexible approach to a broad range of knowledge exchange activities.

5. As charitable bodies with a remit for education and research, overseen by the Office of the Scottish Charity Regulator, any research commercialisation practices must align with institutional charitable objectives. This balance of objectives between delivering impact, protecting IP and undertaking excellent research must therefore be struck by each institution, and is monitored through that route.

### The role of research commercialisation in economic impact

6. It is worth noting that overall evidence indicates that UK universities as a whole are operating at a world class standard in technology transfer<sup>3</sup>, and Scotland is the most successful UK region for spin-outs. Research commercialisation can be hugely impactful, for instance, across the diverse range of Impact case studies Scottish HEIs submitted to the REF2014 we have identified 55 spin-out companies which created 869 jobs.<sup>4</sup> Taking into account Scotland's leading impact performance (86% of all Scottish research submitted to the REF was judged to have 'outstanding' or 'very considerable' impact) and world-class research this indicates a strong position for future economic impact through research commercialisation.<sup>5</sup>

### Sharing best practice, and developing strategies

7. Across Scottish HEIs there is variation in the detail of policies for spin-out companies, licensing and other vehicles for economic impact (such as consultancy fees), however, there is a consistent approach. The IP strategies have been developed by institutions to suit discipline and industry sector strengths, as well as being part of the incentives and other provision (such as training) to enable academics to engage with knowledge exchange.<sup>6</sup>
8. Scottish HEIs invest considerable resources in research commercialisation which may include helping to find investors, setting up a business, registering IP and business development. This work also necessitates taking into account the policies of the funders involved. Largely the expertise to do this rests with the professional KE staff in HEIs (rather than academics). HEIs must therefore develop strategies that recognise a (usual) net cost of tech transfer.
9. There are several national, and international, communities of practice enabling universities to work together. For Scottish HEIs there is significant joint work across numerous aspects of knowledge exchange and research commercialisation including ongoing development of standard contracts for high volume interactions with Scottish

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<sup>3</sup> McMillian Group, University Knowledge Exchange (KE) Framework: good practice in technology transfer (2016)

[http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2016/University,KE,framework,Good,practice,in,technology,transfer/2016\\_ketech.pdf](http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2016/University,KE,framework,Good,practice,in,technology,transfer/2016_ketech.pdf)

<sup>4</sup> Universities Scotland, Research Impact in the Year of Innovation, Architecture and Design (2016)

<http://www.universities-scotland.ac.uk/publications/research-impact-in-the-year-of-innovation-architecture-and-design/>

<sup>5</sup> <http://www.universities-scotland.ac.uk/bite-size-briefings/research-excellence-framework-2014/>

<sup>6</sup> <http://www.universities-scotland.ac.uk/bite-size-briefings/uni-research-benefit-of-others/>

businesses, delivering the Universities Scotland Innovation Action Plan<sup>7</sup> and shared practice such as Easy Access IP

10. Generally students (both undergraduates and postgraduates) in Scottish HEIs wholly own IP generated while at an institution and can draw on considerable support to pursue their ideas (ranging from sector-wide initiatives such as Enterprise Campus, institutional specific programmes and onto university incubator space). This demonstrates where HEIs have identified an appropriate balancing point between IP protection and wider benefits.
11. It is important to emphasise the context specific nature of this work and that successful practices and strategies are not necessarily translatable into different contexts. The US system is often a reference point for comparison of systems (particularly Stanford or MIT). From a report from Edinburgh Research and Innovation (considering 8 Scottish HEIs, undertaken in 2013<sup>8</sup>) we can see that the commercialisation outputs from Scottish HEIs compared favourably with counterparts in the US. More new licences and spin-outs were produced by Scottish HEIs on average (when research income is normalised) compared to the US. More disclosures were produced compared to the top 11 US Institutes. In terms of spin-outs the systems in the UK and US are poorly comparable, and as the directors of MIT and Stanford tech transfer note: *The final answer to the question “Are US spinout processes better?” is: They are not better or worse; they are different because of very different ecosystems and adaptations thereto.*<sup>9</sup>

## Engagement with SMEs

12. Scottish HEIs work with ~13 000 SMEs per year and there are numerous structures to facilitate SME access to commercialisation opportunities not least Interface’s Innovation Vouchers and Student Placement Innovation Vouchers which are designed for SMEs. Furthermore, Scottish universities make commercialisation opportunities readily available to any interested company via the University Technology website, and Interface host a database of HEI facilities available for commercial use.

## Measures to assist research commercialisation

13. Overall, universities do not make a surplus from tech transfer, and research with industry covers over 69% of total costs therefore there is a necessary driver for cost-recovery within HEIs.<sup>10</sup>
14. From a Scottish perspective, the National Centre for Universities and Business’ (NCUB) Growing Value Scotland Taskforce report stated that: *the debate has been too narrowly*

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<sup>7</sup> <http://www.universities-scotland.ac.uk/campaigns/five-point-plan-for-innovation/>

<sup>8</sup> Edinburgh Research and Innovation, Comparison of Exploitation Performance of Scottish universities with US institutions 2012/13 (2013) <http://www.research-innovation.ed.ac.uk/Portals/0/Documents/Exploitation-Efficiency-Report-2013.pdf>

<sup>9</sup> Lita Nelsen and Katharine Ku, Are US university spin-out processes really better than those of UK universities? (2016)

<http://www.hefce.ac.uk/media/HEFCE,2014/Content/Knowledge,exchange,subjects,and,skills/Good,practice/UK-and-US-spin-outs-April-2016.pdf>

<sup>10</sup> Scottish Funding Council TRAC data 2013-14

*focussed on IP, spin-outs and tech transfer and should be broadened – businesses do not see IP as a fundamental issue.*<sup>11</sup>

15. This report, with joint university and business leadership, also made a number of recommendations in the Scottish context highlighting that, if university KE offices were to change to focus more on economic development this would *require additional funding from the Scottish Government and should not come at the expense of research funding*, that a *top down approach is not appropriate* to incentivising universities to work with businesses and that public funding for innovation *should not be regarded as a cost but as an investment in future economic capacity.*<sup>12</sup>
16. We would ask that the Committee are aware of this, along with the findings of the HEFCE/McMillan Group report which concluded a narrow focus on spin-outs did not accurately measure impact.<sup>13</sup> It is important that universities can exercise their autonomy to develop IP strategies and focuses for KE, recognising the need to have an aspirational aim.
17. The recommendation arising from the HEFCE/McMillan report around improving evidence on eco-systems development (including novel financing) and scope for additional investments in new pilots would be valuable to pursue. We understand there are barriers arising from culture, as well as access to appropriately skilled leadership, to engage with innovation broadly. Scottish HEIs are working to embed entrepreneurial and enterprise skills in all graduates,<sup>14</sup> as well as embedding an entrepreneurial research culture within the institution.<sup>15</sup> These developments are longer term and but will contribute towards developing an innovative economy. However, there is certainly scope for further evidence gathering and discussion around developing ecosystems that enable entrepreneurship.
18. There is also scope, at a UK level, for growing what is working well including Innovate UK Knowledge Transfer Partnerships<sup>16</sup> and UK wide funds such as RPIF. Such interventions drive more collaboration between universities and businesses, with IP likely to be shared due to joint investment. Relatedly it is important to ensure grants are available to support businesses in working with universities to facilitate early stage product development. We noted the Minister's recent letter to Lord Selborne<sup>17</sup> regarding new finance innovation products and would emphasize the importance of grants to enable joint working between universities and businesses, particularly in terms of research commercialisation.

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<sup>11</sup> NCUB, 'The Step Change: Business-University Collaboration Powering Scottish Innovation (2016) <http://www.ncub.co.uk/reports/growing-value-scotland-final-report.html>

<sup>12</sup> *Ibid*

<sup>13</sup> McMillan Group, University Knowledge Exchange (KE) Framework: good practice in technology transfer (2016) [http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2016/University,KE,framework,Good,practice,in,technology,transfer/2016\\_ketech.pdf](http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2016/University,KE,framework,Good,practice,in,technology,transfer/2016_ketech.pdf)

<sup>14</sup> Universities Scotland, 'Making it Happen' (2015) <http://www.universities-scotland.ac.uk/publications/making-it-happen/>

<sup>15</sup> Universities Scotland, 'Making it Happen' Policy Forum (2016): <http://www.universities-scotland.ac.uk/contribution/creating-entrepreneurial-culture-scottish-heis/>

<sup>16</sup> WECD. The Impacts of KTP Associates and Knowledge Base on the UK Economy (2015) [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/467141/KTP\\_Report\\_July\\_2015\\_1-SEP-15\\_.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/467141/KTP_Report_July_2015_1-SEP-15_.pdf)

<sup>17</sup> Letter from Jo Johnson MP to Lord Selborne (2016) <http://www.parliament.uk/documents/lords-committees/science-technology/InnovateUK/2016-08-31-future-of-InnovateUK-ltr-frm-BEIS-Minister.pdf>

## About Universities Scotland

We are a membership organisation working for the Principals and Directors of Scotland's 19 higher education institutions. We develop higher education policy and campaign on issues where our members have a shared interest.

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