RUSSELL
INTERNATIONAL
EXCELLENCE
GROUP

Russell Group response to Sir Andrew Witty's review of universities and growth

1. Summary

- Our world-class universities already make a very significant contribution to the UK economy and growth – in their regions, nationally and internationally. They are an essential part of the innovation ecosystem, extensively engaged with business, but they also make substantial positive impacts on society, policy, health, the environment and culture of the nation, the value of which must not be underestimated.

- The continued ring-fencing of the science budget is essential in demonstrating the Government's long-term commitment to science and research, and protecting that investment from being diverted to other more short-term policy priorities.

- The UK needs to signal clearly that its doors are fully open to genuine international talent if it is to maximise the economic potential of higher education.

- There is already an underlying alignment of university activities with the priorities of Government and industry. However, we would strongly oppose any approach that seeks to reduce our world-class universities merely to a supporting role for the Government's industrial strategy and/or local business aims.

- The UK needs to create the right environment for new ideas to develop and grow into commercial success. The Government should continue to support universities' efforts to build strong links with business and public services and to establish their own spin-outs and other commercial activities. The availability of proof of concept funding and financial and tax support for early stage ventures from universities should be enhanced.

- The Higher Education Innovation Fund (HEIF) is vital in helping universities translate research ideas, knowledge and technology strengths into both economic and social impacts – HEIF must be maintained and targeted to support research-intensive universities where it can have most effect.

- Strong engagement between the Technology Strategy Board and the UK's research-intensive universities is essential – in particular in the new Catapult centres as these should be a vehicle for helping to drive transformative innovation in business. Funding from LEPs could be used to boost investment in the TSB's priority themes and enable wider collaboration between universities and businesses.

- LEPs must work together and closely with universities to maximise the growth potential for their area and the UK as a whole. They should see their key role as facilitating national growth opportunities at the local level, working collaboratively with each other, with universities, business and other parts of Government to

attract inward investment and scale-up existing growth-related initiatives to make a bigger impact.

- EU structural funding must be made easier to access for universities as key economic players in their regions. It should be used to support business-university collaboration, enabling universities to scale-up investments in knowledge transfer, commercialisation and development activities and to develop research capital for solving business challenges.

2. Introduction

2.1 The purpose of The Russell Group is to provide strategic direction, policy development and communications for 24 major research-intensive universities in the UK; we aim to ensure that policy development in a wide range of issues relating to higher education is underpinned by a robust evidence base and a commitment to civic responsibility, improving life chances, raising aspirations and contributing to economic prosperity and innovation.

2.2 The independent review being conducted by Sir Andrew Witty is timely and right to focus on the future comparative advantage that our universities can bring to the UK. All the evidence shows our leading research-intensive universities are the engine room of long-term, sustainable growth and prosperity. We provide numerous case examples of this in two recent publications:

(a) *The economic impact of Research conducted in Russell Group universities*[1].
(b) *Jewels in the crown: The importance and characteristics of the UK's world-class universities*[2].

2.3 Our submission should be read in conjunction with these reports, our input to the forthcoming Spending Review[3] and contributions from individual universities which highlight the incredible diversity and scale of activity linked to current and future economic prosperity in the UK's world-class universities.

2.4 This range of activity covers everything from world-leading basic research to applied R&D, design and innovation work to education, leadership training, skills development and entrepreneurship opportunities to knowledge exchange, business incubation, demonstrators, and facilities and equipment services, not to mention universities' links to networks of knowledge and skills right across the globe. Our universities engage extensively with the full spectrum of businesses, charities and other organisations from the smallest start-ups to the largest multi-nationals as well as creating many dozens of their own spin-out companies every year. A few examples are listed in **Annex A**.

2.5 Russell Group universities are highly effective and successful in the commercial exploitation of their research. Academics at Russell Group institutions are more likely to take out patents, license their research to a company or form a spin-out than

[1] http://www.russellgroup.ac.uk/uploads/RG_ImpactOfResearch2.pdf
[2] http://russellgroup.org/JewelsInTheCrown.pdf
[3] http://russellgroup.ac.uk/uploads/Russell-Group-submission-to-the-2013-Spending-Review-final_3.pdf

academics at other UK institutions[4]. With their connections into science and research internationally, our universities also provide the core of the UK's absorptive capacity for new ideas that may originate elsewhere. Problems faced by industry and others often require solutions developed through collaboration and universities are well placed to make effective connections.

2.6 In our submission to the Spending Review we noted that:

> The contribution of universities to generating and disseminating new knowledge and ideas is an incredibly valuable public good, which should never be overlooked. It is important, especially in difficult economic times, to resist the tendency to view universities primarily as instruments to deliver short-term economic development or the skilled labour force of tomorrow. Their role is much more complex, and their contribution much broader than that.
>
> We are well aware of the current economic conditions facing the UK and the need to bring the economy back to a position of long-term sustainable growth while containing levels of debt and Government spending. The UK, along with most western economies, is coming to terms with a new economic reality in the wake of banking crises and an extended period of recession or near recessionary conditions. At the same time, competition from China, Brazil, India and many other nations continues to gain momentum.
>
> Economic growth is not something that can ever be taken for granted even in benign periods, but the current situation requires a more determined approach. We recognise the Government is taking steps to create the right conditions in the UK that should allow growth to occur and that much of the emphasis so far has been on business – for example improving the corporate tax environment, developing new sector-specific industrial strategies and investing in infrastructure. However, in highly developed economies such as the UK, growth increasingly needs to come from investments in research, innovation and human capital– all areas in which the role of universities is critical[5].

2.7 Russell Group universities are major contributors to the economy in their own right, supporting more than 270,000 jobs and generating an economic output in excess of £30 billion a year. And the contribution from our universities is growing apace. The economic impact has increased from £28 billion to £30 billion in just one year[6]. That represents 7% growth at a time when growth across the whole economy was flat.

2.8 This benefit is spread right across the UK and in some of our major cities up and down the country universities are key contributors to their regional and local economies. The

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[4] *The dual funding structure for research in the UK: research council and funding council allocation methods and the pathways to impact of UK academics,* UK Innovation Research Centre and the Centre for Business Research, revised May 2013.

[5] For example:
https://spiral.imperial.ac.uk/bitstream/10044/1/9913/6/Haskel%202012-06.pdf;
http://www2.lse.ac.uk/researchAndExpertise/units/growthCommission/documents/pdf/LSEGC-Report.pdf;
http://dl.njit.edu/mnj/MGI_Manufacturing_the_future_Full_report_Nov%202012.pdf; http://www.oecd.org/innovation/knowledge-is-growth.htm

[6] Russell Group calculation based on universities' 2011-12 financial statements and previous work on economic impact by UUK.

University of Birmingham, for example, generated £1.1 billion of spending in the region in the 2011-12 academic year. Their value-added contribution to the West Midlands economy (c. £530m) was almost double that of the region's eight largest football clubs and has increased 38% since 2005-06[7]. Similarly, higher education is now the largest single sector of employment on Merseyside.

2.9 However, this is only a small part of the story. There is a huge social value in educating a skilled, questioning and engaged population and developing the leaders of tomorrow. The research generated in leading universities helps us understand our society and informs the infrastructure that supports social cohesion. It informs policy and practice across areas that touch all our lives directly, such as medical treatment for the ill or the education of our children, and shapes our social environment through debate on topics such as human rights, equality and national security. Our research also helps us to preserve and appreciate our magnificent cultural heritage, playing a vital role in our appeal to individuals, organisations and governments as a nation to visit and to do business with[8]. It supports the production of numerous art forms, often in ways that allow the public to engage with the art in an interactive and enjoyable way.

2.10 These wider impacts are explored in depth in our recent report on *The social impact of research conducted in Russell Group universities*[9].

2.11 In truth the majority of university activity will have not just intellectual, but financial and wider benefits too, such as when research leads to new products and services that benefit health or the environment whilst also generating income or savings.

2.12 To deliver these benefits, all of which either directly or indirectly have the potential to underpin economic growth, universities need a supportive environment that fosters intellectual curiosity and creative thinking in our very best researchers.

2.13 Our world-class universities already make a very significant contribution to the UK economy and growth – in their regions, nationally and internationally. They are an essential part of the innovation ecosystem, extensively engaged with business, but they also make a substantial positive impact on society, policy, health, the environment and culture of the nation, the value of which must not be underestimated.

3. Comparative economic advantage can be derived from our universities

Research and innovation excellence

3.1 Our universities are far from the image of remote ivory towers. A report last year by the World Economic Forum ranked the UK among the best countries in the world for business-university collaboration and significantly ahead of other G8 nations[10].

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[7] http://www.birmingham.ac.uk/Documents/university/economic-impact-of-university-of-birmingham-full-report.pdf

[8] For example, culture and quality of life factors were highlighted among the UK's key strengths in attracting the international headquarters of businesses to the UK in a report on making the UK the best place to do business: http://www.cbi.org.uk/media/934670/making-the-uk-the-best-place-to-invest-report.pdf

[9] http://russellgroup.org/SocialImpactOfResearch.pdf

[10] http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf

3.2 This strength is reflected in official statistics on the services UK universities provide to the economy and society. The annual Higher Education – Business and Community Interaction (HE-BCI) survey released recently reveals that the total value of universities' services to the economy and society increased by 4% to £3.4 billion in 2011-12[11]. Within this, contract research is the largest single element, worth £1.11 billion. This is 192% more than in 2003-04, the time of the Lambert Review of business-university collaboration. The ultimate impact on the economy and growth is orders of magnitude higher still as businesses invest in taking ideas from such research through to market.

3.3 The 24 Russell Group universities were responsible for 74% by value of contract research in the HE sector in 2011-12 and, indeed, these universities contribute out of all proportion to their size on most economic measures. For example, they account for more than 60% of spin-out companies which survive for three years or more and 70% of IP income to the HE sector (including 96% of IP income from overseas)[12]. In 2011-12, there were over 640 university spin-out companies active under Russell Group ownership with 6,350 full time equivalent employees.

3.4 Our real comparative advantage derives from the excellent research conducted in the UK's world-class universities. There is strong evidence that the UK's research base is amongst the best in the world but, as we set out in our submission to the Spending Review, its financial sustainability is far from secure.

3.5 In an open letter to the Prime Minister, published in the *Financial Times* in February when the EU Multi-annual Financial Framework was being negotiated, we noted that:

> The UK leads Europe in the quality of our research. Our researchers have won far more awards from the European Research Council (ERC [which focuses on research excellence]) than our nearest competitor: 761 compared to Germany's 467.
>
> ERC funding alone – which is only one component of total EU research funding – has contributed a massive £1 billion to the UK knowledge economy. With this funding we pursue fundamental, applied and translational research into the grand challenges facing us, including healthy ageing, clean energy, and food security: research which underpins sustainable economic growth.

3.6 Indeed, reinforcing this mark of excellence, the UK received €3.7bn in research and innovation funding from Framework Programme 7 (FP7) in 2007-2011, second only to Germany. The then 20 Russell Group universities alone won over €1.5 billion, 16% of all EU research funding to universities.

3.7 The UK ranks second only to the US in the number of world-class universities and the global reputation of our leading universities remains strong:

- The 2008 Research Assessment Exercise found that
    i. over 60% of the UK's very best ('world leading') research took place in Russell Group universities

[11] http://www.hefce.ac.uk/news/newsarchive/2013/name,81928,en.html
[12] Higher Education – Business and Community Interaction survey 2011-12 (HESA, May 2013)

ii. on average, the proportion of research which is 'world leading' at Russell Group universities is double that of the rest of the sector.

- Apart from the US and UK no other country in the world has more than a handful of universities in the top 100.

- League table rankings are fraught with difficulties but ten Russell Group universities feature in the *Times Higher Education* top 100 world universities, nine feature in the top 100 in the Academic Ranking of World Universities, and four in the top global six and 17 in the top 100 QS World University Rankings.

3.8 Basic long-term research has been enormously beneficial for our nation's economy, and for the health and wellbeing of the UK population. **The continued ring-fencing of the science budget is essential in demonstrating the Government's long-term commitment to science and research, and protecting that investment from being diverted to other more short-term policy priorities.**

International

3.9 In the QS World University Rankings by subject, the UK's excellent credentials are even more pronounced: Russell Group universities gain 52 top-five places (including 33 first or second in the world placings) across the 30 subjects covered.

3.10 It is perhaps not surprising then that higher education overall is also one of this country's most successful export industries and is estimated to contribute more than £8.2 billion a year in overseas earnings[13] - on a par with the UK's earnings from the export of electrical equipment or manufactured food products. In Sheffield alone international students pump £120 million into the local economy every year[14].

3.11 This potential and the importance of attracting internationally mobile talent and research and innovation investments to globally-connected centres such as our world-class research universities was recognised in a major report by the McKinsey Global Institute in 2010[15]:

> Innovate at scale. Government efforts to stimulate the growth of clusters have often ended in failure. Past McKinsey research has shown that only half of clusters have grown faster than the overall economy. Achieving success requires concentration of investments in research into large and connected centres, access to global best practice through the recruitment of top talent and cluster-specific support that builds on existing competitive advantages (e.g., in biosciences) ...
>
> Policy makers should view these sectors [education and health] as international growth opportunities rather than public sector cost centers. This will require new and existing universities to add capacity and capability to attract international students... Education is a huge market - the OECD estimated that in 1980 just over a million students were enrolled at universities and colleges outside their country of origin; that number has now tripled to 3.3 million. This is a significant growth opportunity.

[13] BIS research paper 46, *Estimating the Value for the UK of Education Exports,* 2011.
[14] http://www.shef.ac.uk/news/nr/international-students-economy-sheffield-university-visa-1.257561
[15] http://www.mckinsey.com/insights/europe/from_austerity_to_prosperity_seven_priorities_for_uk

3.12 To build on this and create comparative advantage for the future, it is crucial the immigration system continues to support universities' efforts to attract talented people who have a legitimate interest in studying, teaching or carrying out research here.

3.13 The UK needs to signal clearly that its doors are fully open to genuine international talent if it is to maximise the economic potential of higher education.

Proof of concept and early stage funding

3.14 Our universities can be, and indeed are already, significant contributors to the UK's comparative economic advantage and growth, but they could do even more with the right financial support.

3.15 The UK has a problem in accessing 'proof of concept' funds and venture capital (particularly compared to the US). Given the potential returns on investment, there is an argument for putting much more emphasis on proof of concept in the Government's wider support for innovation rather than a range of other initiatives and activities. Proof of concept work helps to demonstrate that commercial returns are possible and thus reduces the risk to private sector investors.

3.16 Proof of concept and proof of market funding is available via the Technology Strategy Board's (TSB's) re-launched SMART scheme (previously grant for R&D), but only SMEs are eligible to apply, which means universities cannot access this directly. The eligibility rules should be changed, allowing universities access to these funds to enable more good ideas to be developed for commercialisation or spin-out. The TSB also supports larger-scale demonstrators to test concepts (for example in low carbon vehicles, digital technologies and sustainable construction), which universities can access. Availability of this type of funding should be increased to ensure the UK can develop and test ideas at the scales needed to compete globally.

3.17 Discipline-focused proof of concept funding, such as the MRC/TSB Biomedical Catalyst Fund (worth £180 million over three years) should be replicated in other fields to support both academically and commercially-led R&D through to commercialisation.

3.18 In addition, further reforms to the tax regime should be considered to encourage more investment in early stage high-tech companies. Changes in tax should make a clear distinction between technology-based businesses, distinct from other small or early stage ventures. The successful University Challenge Fund could also be restarted. This scheme was instrumental in promoting collaboration across institutions, attracting private sector investment in university companies, and developing seed funds in universities.

3.19 Greater investment is required in clustering relevant skills around universities' research pipelines such that disruptive innovations can be recognised and put on an accelerated path to commercialisation. The requirement is at all levels from visionaries to management and operational people drawn from around the world.

3.20 The UK needs to create the right environment for new ideas to develop and grow into commercial success. The Government should continue to support universities' efforts to build strong links with business and public services and to establish their own spin-outs and other commercial activities. The availability of proof of concept funding and financial and tax support for early stage ventures from universities should be enhanced.

Higher Education Innovation Fund (HEIF)

3.21 Universities often face barriers in transforming ideas into social and economic impact due to the risks perceived by the private sector regarding investing in new developments. Government can act as an invaluable "enabler" of such developments, thereby securing future private investment and growth many times the initial investment. The Higher Education Innovation Fund (HEIF) in England and Northern Ireland, and the Knowledge Transfer Grant and Horizon Fund in Scotland, are major public funding sources underpinning the highly successful knowledge transfer/exchange activities undertaken by Russell Group universities. These funds are an essential component of the UK's innovation system, enabling institutions to share high quality innovation with businesses, diffusing knowledge into the economy and creating economic benefit for the nation. HEIF is now well-established as a permanent 'third stream' of funding, currently worth £160 million per year, with the bulk of this money (75%) coming from within the Science and Research Resource budget.

3.22 The ability to access a dedicated fund over an extended period of time has allowed universities to develop professional expertise to support knowledge exchange and the creation of economic and social benefit[16]. Use of HEIF monies has evolved over time to reflect changing needs and is now particularly valuable in universities' efforts to engage with SMEs, to maintain long-term relationships with larger businesses and to support small-scale Proof of Concept activity – critical, before seed and further capital becomes available.

3.23 HEIF allocations are rightly performance based, with institutions only eligible to receive an allocation if they exceed a £250,000 allocation threshold related to their external income earnings and performance of the sector overall. However there is also a cap of £2.85 million on the amount of money individual institutions can receive – restricting the ability of research-intensive universities to receive funding in proportion to the full scale or excellence of their knowledge exchange activities. This cap should be raised significantly. Responsibility for HEIF should be retained by HEFCE to ensure this fund remains ring fenced for universities to use as they need. It would be a mistake to move this funding into the proposed single pot for LEPs.

3.24 The Higher Education Innovation Fund (HEIF) is vital in helping universities translate research ideas, knowledge and technology strengths into both economic and social impacts – HEIF must be maintained and targeted to support research-intensive universities where it can have most effect.

4. University links with the industrial strategy

Industrially relevant research and training

4.1 There are already countless examples of the UK's leading universities working with industry on research, training and other initiatives – and many of these are directly linked with priority sectors in the Government's industrial strategy, or with the 'Eight Great' technology areas provided with additional capital funding in the 2012 Autumn

[16] A study by PACEC for HEFCE indicates that every £1 invested in HEIF results in £6.10 of gross additional income: http://www.hefce.ac.uk/media/hefce/content/whatwedo/knowledgeexchangeandskills/heif/pacec-report.pdf

Statement. Again, **Annex A**, the Russell Group reports highlighted in section 2 of this paper and responses from individual universities provide some useful case studies.

4.2 It should be noted that, in most cases, these links between universities and business existed long before the sectors or technology themes became prominent in Government policy.

Further alignment

4.3 The call for evidence for the review states that recommendations will be made on how "*incentives and support systems could be aligned with the [Government's] Industrial Strategy to ensure the best outcome for the UK as a whole*". This implies a wish to align university research, which is primarily curiosity-driven, with the needs of current businesses and priorities established by Government. Or rather, to align Government funding for research and innovation even further given that there is already substantial alignment:

- The Technology Strategy Board (which now has a record £440 million of funding) is business focused, taking research ideas closer to commercialisation.
- The R&D tax credit (worth £1.1 billion in 2010-11) is entirely for businesses to decide how it is spent.
- HEIF money (£160 million) is already directly linked to university engagement with business and others.
- HEFCE's QR charity funding (£198 million) and QR business funding (£64 million) are also distributed on the basis of income from these sources.
- Access to the Research Partnerships Investment Fund (RPIF - £300m) requires universities to find double-matched funding from industry and others, which again creates alignment.
- The £600m of new capital funding announced in December is largely aligned with industrial strategy themes, rather than being formula-based for universities.
- In addition, impact is a substantial driver of both mainstream QR (with impact case studies now required in the Research Excellence Framework) and Research Council funding.

4.4 This isn't to say we are against any of these measures – indeed RPIF, for example, has proved to be an excellent innovation, which we are now calling on Government to turn into a long-term strategic initiative – but a balance has to be struck. There is a danger further moves to align university incentive and support systems with the needs of business and Government policy will drive out curiosity-driven basic research.

4.5 This is exactly the sort of research that contributes to the UK's knowledge base and often underpins future innovations that transform our lives – and for which public funding is essential. We should not underestimate the importance of serendipity in considering the impact of this investment in basic research. Some of the most ground-breaking products have resulted from research which set out to explore something completely different, or had no application nor any interest from business at the start.

4.6 It is important to recognise and value the pipeline of research and knowledge from our world-class universities and that what they are working on now may not have

commercial applications for 10-20 years or even longer. In other words the researchers working on the radical innovations of the future may not have much of a current industrial base with which they can align, so in many cases our universities are playing a crucial role in investing in the future UK economy and long-term growth prospects. It would jeopardise the UK's future innovation pipeline to fund further 'aligned activity' at the expense of curiosity-driven basic research.

4.7 There is already an underlying alignment of university activities with the priorities of Government and industry. However, we would strongly oppose any approach that seeks to reduce our world-class universities merely to a supporting role for the Government's industrial strategy and/or local business aims.

Technology Strategy Board

4.8 In our Spending Review submission we recognised the importance of the Technology Strategy Board (TSB) as a key part of the UK's innovation landscape. This is particularly so for engineering and physical science disciplines, while its engagement with life sciences still needs to grow. The TSB's budget has now been increased for the current year but it has always been in danger of failing to create a critical mass of activity in key areas[17].

4.9 The TSB works nationally and it is important for this to remain the case –supporting national strategic priorities and developing world-leading research to the next level. However, funding from the proposed single pot for LEPs could usefully be used to boost TSB investments where there are key centres of research and technology development activity within the LEP area.

4.10 Catapult centres (previously Technology and Innovation Centres) are now becoming a major focus of activity for the TSB, at least in part modelled on Germany's Fraunhofer Institutes and their success in engaging with the country's Mittelstand businesses.

4.11 When they were first proposed, the Russell Group stressed that the benefits of such centres would be maximised only if they were closely linked to existing centres of excellence in research-intensive universities, and built on existing innovation networks associated with such universities. The impact of the Catapults will be diluted if the link with excellent research in universities is not strong. It is worth noting that all Fraunhofer CEOs are also university Chairs.

4.12 There are already good examples of world-class universities involved at the heart of some Catapults (for example Sheffield, Birmingham, Warwick, Bristol and Nottingham are all involved in the Advanced Manufacturing Catapult) but this must replicated in the new Catapults that are set to launch this year and beyond.

4.13 Knowledge Transfer Partnerships (KTPs) which typically engage SMEs with expertise in universities are another valuable mechanism for knowledge transfer now managed and part-funded by the TSB. In future, LEPs could be major contributors to KTP funding, and raising awareness with the SME community, helping to boost the number of partnerships that can be supported each year in their regions.

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[17] For example, CBI input to the Government's research and innovation strategy in 2011: http://www.cbi.org.uk/media/1178686/research-and-innovation-strategy-2011-cbi-input.pdf

4.14 Whilst the TSB has a valuable role to play, it should not be seen as the only mechanism through which public funding supports innovation and growth from R&D investment. The TSB complements research and innovation activity funded through the Research and Funding Councils and elsewhere in Government. Building even stronger links with universities would help to bring novel research ideas closer to market faster and could help to prevent deadweight developing in the system.

4.15 Strong engagement between the Technology Strategy Board and the UK's research-intensive universities is essential – in particular in the new Catapult centres as these should be a vehicle for helping to drive transformative innovation in business. Funding from LEPs could be used to boost investment in the TSB's priority themes and enable wider collaboration between universities and businesses.

5. Working with LEPs to exploit our comparative advantages

Local growth plans

5.1 The 39 Local Economic Partnerships (LEPs) are new and relatively untried bodies. They may help to drive some growth locally and regionally, but the bigger picture of national economic growth must not be forgotten: in many sectors of the economy, the UK will need to build critical mass and tap into strengths across the whole country if it is to compete internationally.

5.2 LEP growth plans should help to facilitate national priorities at the local level, ensuring that universities, businesses and other economic partners have the local support they need to deliver sustainable growth.

5.3 We already know that some critically important multinational businesses in the UK plan not to engage with LEPs as there are too many of them and each is likely to pursue its own individual and sub-critical agenda. At the very least, LEPs must not develop their strategic plans in isolation. Nor should Government seek to impose a one size fits all solution.

5.4 We recommend much greater involvement of leading universities on LEP Boards and their advisory councils and in particular in the development of plans that will help to maximise potential for growth from our world-class universities.

Collaboration and coordination

5.5 LEPs need to collaborate closely with each other and with the leading universities and businesses within and around their regions. And, equally, universities should be open to collaboration with LEPs.

5.6 With limited resources it is essential that effort is not duplicated. Where there are world-class universities in a LEP area, for example, they should be supported by the LEP to help local businesses tap into the skills, research, knowledge and facilities they may need wherever these are located in the UK. Universities already have the networks and knowledge to make links quickly and could scale up this sort of activity with additional resources.

5.7 Universities can also help in connecting between LEPs, building on existing collaborative links they have with universities, businesses and other organisations

across the UK. In particular this can be of value in undertaking foresight-type activities and for making links across wider supply chains that are likely to extend beyond individual LEP boundaries.

5.8 As discussed elsewhere in this submission, LEPs should build on the priorities identified by others, coordinating their funding to support HEIF, TSB, RPIF and other initiatives where there are already established mechanisms for delivering growth from business-university collaboration.

Foreign Direct Investment

5.9 R&D and innovation activities are not bounded by LEP or even national geography. Attracting Foreign Direct Investment should be a key priority for LEPs – helping to boost the UK economy as a whole, rather than redistributing existing resources within the UK.

5.10 Our leading research-intensive universities are successful in attracting inward investment from international investors, which can then underpin the growth of related business and research clusters. Examples include:

- TATA and Jaguar Land Rover investment with the University of Warwick to create a £92 million National Automotive Innovation Campus, which is now also attracting inward investment from JLR's supply chain partners, including the powertrain division of Germany's ZF.

- Microsoft established its European research centre at the University of Cambridge. Similarly, Pfizer and Astra Zeneca have recently announced significant investments in research facilities in the Cambridge area.

- The Bill and Melinda Gates Foundation has made major investments in research into HIV vaccine development at Imperial College and University College London.

- Unilever Plc has a long standing research partnership in high-throughput materials chemistry with the University of Liverpool's Centre for Materials Discovery.

- In Wales, a tripartite Joint Venture between European Aeronautic Defence and Space Company N.V. (EADS), the Welsh Government (WG), and Cardiff University has been incorporated to support early stage R&D via joint investment funding from EADS and WG, circa £2.5-3.0 million p.a.

- More than 50% of Imperial College's industrial research income and consulting income currently comes from outside of the UK.

5.11 Attracting investors such as these should be at the heart of plans to boost the contribution universities can make to UK economic growth. The investments have significant value to the economy in their own right, but in many cases they can lead over time to the creation of self-sustaining clusters of research and business activity, which creates an even longer-lasting legacy.

5.12 These clusters clearly locate in a particular region, but the actual geography is of secondary importance to the research and innovation links. Rather than competing against each other, LEPs must work together and with central bodies such as UKTI, the TSB and BIS to attract inward investment to the UK. In particular, they should

support universities as they seek to build on the UK's research strengths to attract high-value global partners.

5.13 LEPs must work together and closely with universities to maximise the growth potential for their area and the UK as a whole. They should see their key role as facilitating national growth opportunities at the local level, working collaboratively with each other, with universities, business and other parts of Government to attract inward investment and scale-up existing growth-related initiatives to make a bigger impact.

6. Linking EU structural investments to research, innovation and growth

6.1 There are significant opportunities to use EU regional development funding to support research and innovation activities that can underpin sustainable growth. However, European funding must be made easier to access by universities and any reduction in administrative burden would be very welcome.

6.2 As ERDF, ESF and parts of EAFRD are brought together into an 'EU Growth Programme' there is a real opportunity to radically overhaul the governance and reporting structures and to foster the support of projects that will deliver meaningful economic outcomes (rather than focusing on those where reporting against expenditure plans is easier, as has sometimes been the case with ERDF).

6.3 The Russell Group has proposed to the European Commission that EU structural funding could be used in some of the newer Member States, in eastern Europe in particular, to develop centres of research excellence that would enable them to compete effectively for Horizon 2020 funding in the future. Rather than focusing on typical road and rail projects etc, funding could be used for R&D infrastructure and investments in intellectual capital to enable these countries to develop knowledge-based capacity and capability.

6.4 In the UK, we already have world-class centres of excellence in our research-intensive universities, so we can and should focus on developing them further – using European funds to complement existing public funding for research and innovation. Where universities have already identified key priorities for growth, working with key partners including businesses, European funding could be used to scale up activity and build critical mass.

6.5 European structural funding could be used to develop, refurbish or expand key facilities, support technology/knowledge transfer and boost the potential for commercialisation through proof of concept, seed and demonstrator funding. For example, the RPIF model for capital investments already works well where industry and universities are working together on research challenges and the impact of this could be boosted by directing EU funding to universities as one of the elements of required matched-funding.

6.6 EU structural funding must be made easier to access for universities as key economic players in their regions. It should be used to support business-university collaboration, enabling universities to scale-up investments in knowledge transfer, commercialisation and development activities and to develop research capital for solving business challenges.

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Annex A – some examples of Russell Group university ventures linked to the economy and growth

Rolls-Royce and the **University of Birmingham** are developing a £60 million world-leading research centre for high temperature metallurgy and associated processes for components including turbine blades. This will ensure a more effective translation of fundamental research to production and train engineers from apprenticeships to postdoctoral fellows. Focused initially on the key manufacturing areas of investment, including casting, design for manufacture and systems simulation, the centre will then draw in additional research competencies related to these areas through wider industry and academic involvement. The investment is part of investment under the first round of RPIF.

In November 2011, **Cisco** announced a three-year partnership with **Imperial College** and **UCL** to set up a Centre for Future Cities, based in the TechCity area of London (and part of their National Virtual Incubator Network programme). The centre's work focuses on the thematic areas of Future Cities and Mobility, Smart Energy Systems, the Internet of Things and Business Model Innovation.

The **University of Cambridge** co-ordinated a four year €6.7m project ('Plasticise') with researchers from the UK, Switzerland, Poland, France, the Netherlands, Italy, Germany, and Israel. It has involved researchers from universities, **large pharmaceutical and small biotech** companies and enabled scientists to work with clinicians looking for new treatments. Early results have developed treatments that can restore neuro-plasticity in adults back to the level seen in children. These treatments can restore plasticity in stroke, brain or spinal injury and Alzheimer's disease. In Alzheimer's they can restore the ability to learn and remember.

Queen Mary University of London coordinated a series of Marie Curie action funded studies on special ceramics that can function in extremely hot and hostile environments, where most sensors do not, making them very useful in **aerospace, advanced industrial processes, the automotive industry, and power generation**. This information will soon help produce more sophisticated sensors that enhance monitoring and safety as well as meet energy needs across several industries.

The **University of Warwick** has just won HEFCE Catalyst funding to address the chronic and growing shortage of graduate engineers for engineering and advanced manufacturing. The project will stimulate a new industry-funded undergraduate programme, with a novel managed learning environment, which will focus on the latest technologies and be taken partly in the workplace, including through Higher Apprenticeships. It will build on the Warwick Manufacturing Group's strength in applied research and novel developments at postgraduate level, particularly focusing on the automotive sector (with **Jaguar Land Rover** as an initial co-investor). Students will undertake international projects with technical universities and institutes in China, India, Singapore and the USA. The University of Warwick is already working closely with Jaguar Land Rover to deliver university-industry co-designed modular masters courses to up-skill 3,000 engineers in green manufacturing and other key areas for the company.

The **University of Leeds** works with many industries to offer bespoke short courses for continuing professional development. The Leeds Centre for Integrated **Petroleum Engineering and Geoscience**, for example, offers courses for industry in exploration geophysics, structural geology and oilfield corrosion.

The Centre for Additive Layer Manufacturing (CALM) at the **University of Exeter** is an initiative set up by **EADS** and **Rolls Royce** with the University to introduce the concept of

additive manufacturing (3D printing) to the SME manufacturing base in the South West so that the aerospace supply chain, and other advanced manufacturing supply chains, can assess the viability of tooling up to meet the challenge of this new way of manufacturing. Using an ERDF funding stream, the Centre purchased new equipment and facilities and is committed to engaging with 250 SMEs in the region through advice, training and demonstrations.

The **University of Manchester** has a portfolio of some 50 spin-out companies, and in the last 4 years successfully licensed over 100 inventions to commercial parties. A number of spin out companies have achieved success securing an exit and capital return to the university. Examples include: **Nanoco**, a company listed on AIM with a current market value of c.£340 million; *Neu*Tec Pharma a spin out sold to **Novartis** for over £300 million in 2006; and the molecular fungal diagnostic company Myconostica sold to Cambridge-based **Lab21** in 2011.

The **University of Liverpool** runs a "Graduate to Merseyside" scheme which provides high-quality paid internships for graduates within **Merseyside-based SMEs**. It is managed by the University's Careers and Employability Service, in partnership with Liverpool Hope University.

Cardiff University has worked with **Legal and General** since 2002 to deliver medical training for medical underwriters and claims assessors. The content and structure of the courses has been adapted over time to accommodate the changing needs and requirements of L&G.

Nokia has a long-term programme of nanotechnology research projects with **Cambridge University** and in human-computer interaction research with the **University of Glasgow**.

The **University of Sheffield**'s Advanced Manufacturing Research Centre (AMRC) in operation for 11 years focuses on advanced machining and materials research for the global aerospace industry. Over 60 industrial partners are involved, including **Boeing** and many smaller companies in the aerospace supply chain. It now forms part of the UK's first Catapult Centre in High Value Manufacturing.

Work on Wellbeing by the **LSE**'s Centre for Economic Performance has led to the provision of Cognitive Behavioural Therapy Counselling by the **NHS**, in recognition of the costs to the UK economy of stress-related absenteeism; its work on Innovation Policy provided much of the background to the introduction of the R&D Tax Credit; and its research on Labour Markets led directly to the establishment of the Low Pay Commission – all of which continue to have a significant economic impact for the UK.

Procter and Gamble (P&G) and the **Durham University** have a very strong relationship for collaborative research and innovation. Durham initiated engagement with the local P&G Innovation Centre in 2009 and by October 2011, through a very rapid growth of activity, Durham was awarded the P&G Global Business Development University Partner of the Year Award and are recognised as a "best in class exemplar" of this major corporate's University partners. These links which started locally have led to Durham academics working with P&G researchers in locations from Newcastle to Frankfurt, Brussels and Beijing. In 2011, P&G, Durham University, the Centre for Process Industries (CPI), and local SME Peerless collaboratively initiated the £14m project CEMENT – to establish a Centre for Excellence in Methods and New Technologies for Surface Modification and Cleaning. The project delivering cutting edge research and innovation focuses on surface science will create and safeguard more than 50 skilled jobs in the consortium. The centre also forms a strategic hub for building new research projects and technology transfer initiatives in the

North East and UK with likely applications in oil and gas, renewables, chemical, aerospace, automotive, pharmaceutical, and electronic sectors.

Within the 5 year 'ProspeKT' program, funded by Scottish Enterprise, the **University of Edinburgh** and ERDF, a particular focus on developing start-up and spin out companies from research in the university's School of Informatics resulted in 43 new companies over the lifetime of the project, some 30 licenses to the research being signed, 105 collaborations with companies and significant inward investment by companies including **Disney, Amazon and Avaloq**. Early evaluation by Scottish Enterprise in GVA impact shows a return of around £8 for every £1 of investment from the public sector. Follow-on projects have engaged a consortium of 14 Scottish Universities with a Computer Science Department and has lead to the development of a very healthy cluster of some 75+ start-up companies around the School of Informatics with 2 private incubators emerging to cater for the needs of this growing community.

Based in the School of Mathematics and Physics at **Queen's University Belfast**, 'ANSIN' is the new £7.5m advanced materials research and development hub setup in collaboration with **Seagate Technology**, the global leader in data storage solutions. Information and data storage are examples of application areas being investigated in ANSIN.

In the late 1980s, **Rolls-Royce** started to establish a network of University Technology Centres (UTCs) to focus its academic research with a selected group of universities and departments noted for their research excellence in relevant fields for the company. Rolls-Royce now operates a global network of 30 UTCs conducting mostly doctoral level research in everything from materials to nuclear engineering. Twenty one of the UTCs are located in the UK and 17 of them involve Russell Group universities: **Birmingham, Bristol, Cambridge, Imperial, Manchester, Nottingham, Oxford, Sheffield and Southampton**. UTCs are long-term strategic relationships that help keep the company linked in to cutting edge academic research while also providing access to a potential recruitment pool of skilled people.