

National Innovation Plan: Call for Ideas

University Alliance responded to the Government's Call for Ideas on the National Innovation Plan in April 2016.

The Government was looking for suggestions on how the UK's innovation system will need to continue to evolve through the development of an innovation framework that:

- Builds and supports an **open business environment** that encourages innovation
- Promotes collaboration and the **sharing of ideas** to drive innovation opportunities
- Provides businesses with the confidence to **invest in R&D** and supports them to diffuse and scale the best ideas
- Uses the **power of procurement and customer demand** to stimulate the development of innovative products

Below are our responses to some of the questions that the Government was consulting the sector on.

Please note we did not answer Question 1 or 2 so they are not included here. You can read more about this [consultation](#) here.

Question 3: How can we ensure that we put the UK at the forefront of open data opportunities?

The UK leads the world in open government and transparency, and we have already made over 20,000 government data sets available through our world-renowned data.gov.uk portal. We are now at the start of a data revolution in government with the potential to drive greater efficiency, support economic growth and deliver better public services for citizens. How can we ensure the momentum continues?

Consider: *How can we ensure the open data momentum continues? What is working well? What more needs to be done? What challenges do we still need to overcome? How do we continue to make government department R&D open access and as effective as it can be?*

Universities are already supporting the open data agenda and look forward to engaging further. Here are two examples.

The use of big data for civic development underpins TravelSpirit, a Manchester Smart City Partnership aiming to revolutionise transport systems. The aim is to create a 'technical ecosystem' for transport providers and users, so that people (and things) can travel uninterrupted across many different modes of transport via one booking. Manchester Metropolitan University are partnering with Department for Transport, the Satellite Applications Catapult, BT, Accenture, Tech North, The Institution of Engineering and Technology and Transport for Greater Manchester (TfGM) to develop an open-source code to realise this vision. Manchester Metropolitan is also partnering with the University of Manchester, Manchester City Council, Cisco UK, MSP, BT, Kiltr and Future Everything on the LEP-led CityVerve Project. Its plans include talkative bus stops, which let bus operators know when commuters are waiting; and a network of sensors in parks and along commuter routes to encourage people to do more physical activity

MK:Smart is an Open University-led project (funded by HEFCE Catalyst) with partners including BT, ThingWorx, University Campus Milton Keynes and Milton Keynes Council, aiming to tackle barriers to economic growth in the city through deployment of 'Internet of Things' technology. The core of the project is the MK Data Hub, developed in partnership with BT and building on the world-leading digital technology research at the Open University. The Hub processes the huge amounts of information generated by smart city sensors across Milton Keynes. It also provides a purpose-built development environment offered free to SMEs taking part in MK:Smart, to develop marketready apps, and a platform to deliver apps and services to the city. It has already trialled services designed to make it easier for residents to find parking spaces, and to make waste disposal more efficient.

Question 4: Where can we maximise the opportunities for innovation, as we deliver high-quality infrastructure that unlocks broad economic opportunities?

Budget 2016 announced radical reforms that will drive future prosperity, investing in the infrastructure that will deliver economic growth for the next generation. It drives forward the devolution revolution, giving local areas further control over the decisions that affect their communities, with headline measures including strengthening city regions, agreeing new mayoral devolution deals, building the Northern Powerhouse and the Midlands Engine.

High-quality infrastructure boosts productivity and competitiveness, allowing businesses to grow and enabling them to reach suppliers and customer, to collaborate, innovate and attract inward investment. Technological developments and advances will change both our infrastructure needs and the way in which those needs are met – through the development of new types of infrastructure, or the opportunity to deliver or use existing mechanisms in new ways.

Consider: *How can we ensure our infrastructure system can adapt to and take advantage of future technological advances, so as to support innovation-driven growth? High quality infrastructure (eg road, rail, housing) unlocks the potential for growth. What other aspects of infrastructure should the Government address? What and where are the barriers? What is working well that we should do more of? How can we build on the radical reforms government is taking to investing in infrastructure and devolving power to enable local governments and local leaders to drive innovation in their cities?*

1. Universities occupy a unique position in the innovation ecosystem. As anchor institutions, they shape the physical environment and have the scale and local connections to bring skills, knowledge and opportunity to Britain's cities and regions. They also provide the critical infrastructure for businesses to cluster and innovate.
2. With regional innovation strategies becoming increasingly important in rebalancing the economy, the role of SMEs within the innovation landscape is now at the forefront of the debate. In its 2005 report¹ the OECD set out how innovation strategies can benefit SMEs through
 - the creation of university-business and business to business networks,
 - a focus for clustering of SMEs and using supply chain knowledge to link up innovative businesses
 - advanced business support.
3. In each case the anchor university role is key to providing a single point of contact (or one stop shop) for SMEs which can help support and guide them. Many higher education institutions (HEIs), such as Alliance universities, consider

¹ OECD (2005) Regional innovation strategies and foresight.

these knowledge exchange activities as core to their mission, and in particular recognise the value they bring to their wider local economies.

4. Examples of such activity include:
 - **Sheffield Hallam University's** Fix It Fridays provide drop-sessions offering local SMEs with free targeted help for their problems from academic staff and business professionals.
 - **Plymouth University's** GAIN network provides a central point of contact for all businesses in the area via a B2B portal. The university signposts businesses to relevant help outside or inside the university.
 - The Forge at **Teesside University** offers themed networking events responding to business needs in a rolling programme, from cyber communication to leading and working in international markets.
 - **Liverpool John Moores University's** Open Labs help firms to develop and exploit technology based products, processes and services in partnerships with LJMU and regional knowledge partners.
5. SME engagement requires a large amount of infrastructure including dedicated and specialist university staff. Currently the funding stream to support this activity, Higher Education Innovation Funding (HEIF), allows universities to go beyond transactional relationships for the sake of direct monetary returns to sustain resource-intensive bespoke interactions with multiple SMEs. If such activities are to be maintained, SME growth and productivity must be explicit fundamental objectives of innovation funding policy. Conservative estimates have calculated that HEIF brings a return to society of £7.30 per £1, extending to £9.70 per £1 including non-monetised benefits.²

Question 5: Where can the UK work alongside the private sector to create the deepest pool of innovation finance in Europe?

The UK must improve its R&D investment performance. This will require building on and combining its strengths in key sectors such as manufacturing, life sciences and digital. The UK needs to stimulate new investment throughout the innovation process, from fundamental research to the introduction of a new product, service or business model to market. We want to develop the deepest pool of science and innovation investment funding in Europe. And in doing so provide a continuum of funding that supports

² Thomas Coates Ulrichsen (2015) Assessing the economic impacts of the Higher Education Innovation Fund: a Mixed-Method Quantitative Assessment; PACEC (2015) Evaluating the Non-Monetised Achievements of Innovation Fund, Report to HEFCE.

businesses at every stage of their innovation journey and which enables more companies to grow into global leaders.

***Consider:** How should we prioritise our resources? How can we get maximum value for Investment? What difficulties does business encounter in seeking finance for innovation activities, and how can government and the private sector best help? How can we move towards the landmark figure of 3% of GDP being spent on R&D? How can we further support our university sector to bring spin-outs to market?*

6. Although universities exploit the commercial benefits of new knowledge through spin-outs and revenue generating licensing deals, there are other benefits to the regional and national economies of the knowledge residing in universities.
7. **World-leading research attracts inward investment** – International investment is drawn in by world-leading research expertise. This in turn generates growth and activity throughout the supply chain and thus enhances regional and national economies. Examples of this include partnerships between the University of Huddersfield and the engineering multinational BorgWarner which is based on Huddersfield's expertise in turbo-charged engine technologies. The partnership has resulted in co-investment of over £8million and has financed bespoke turbocharger research and test facilities, co-developed a master's course for training the next generation of turbocharger engineers and has created and safeguarded jobs at the BorgWarner Bradford site.
8. **Anchor universities help connect local businesses with global expertise** – Improving the availability of existing knowledge can also be transformative for businesses. This includes basic insight into markets which is especially important for start-ups. One example comes from the University of Portsmouth, which shares market intelligence with SMEs, and engages in strategic discussions about the big commercial opportunities for innovation and sales and development links to Asia. SMEs also benefit from opportunities to network and present to local business leaders at showcase events around key sector themes such as creative industries, environment, healthcare innovation, high-end manufacturing, infrastructure and logistics, and security.
9. **Multidisciplinary research helps to meet business innovation challenges** – Business challenges usually require multidisciplinary responses. Examples such as the Bristol Robotics Laboratory based at the University of the West of England (UWE Bristol) and the work of Innovative Physical Organic Solutions at the University of Huddersfield show how important end-user access into research base can be directed through entry points into multi-disciplinary research.

10. **Business-engaged research hubs drive local competitiveness** – Universities raise the innovation potential of local SMEs directly, providing connectivity between businesses. Teesside University's Centre for Construction, Innovation and Research, for example, operates as a high level network resource in the construction sector. The group works with clients involved across all seven RIBA Plan of Work Stages, and in doing so it is able to foster commercial opportunities and research collaborations between businesses.

Question 6: What do we need to do to get maximum benefit to the UK economy from challenger businesses?

Challenger businesses use new business models, tools and technologies to offer innovative products and services and can respond quickly to user needs – creating new markets and services that have not previously existed. The government believes these businesses can play an important role in securing UK competitiveness, improving consumer standards and choice, and supporting economic growth.

Consider: *How can we make sure the business environment does not have unnecessary barriers for challenger businesses? What are the main challenges in this area? Which sectors and/or technologies should Government focus on? How can Government ensure it focusses on the right technologies/sectors at the right time?*

11. Initiatives such as Smart Specialisation and the Science and Innovation Audits can be used to demonstrate regional and local alignments – including those that are across LEPs and City Regions. Incentivising collaborative behaviours between the related businesses these initiatives reveal can help drive growth, innovation and efficiencies.
12. Universities are well placed to help join up activities across administrative boundaries, but report some practical barriers in the system to cross-regional working. The use of individual opt-in mechanisms for national calls of funding can leave neighbouring LEPs participating in different schemes, for example. Similarly, capital and revenue spending is unaligned and channelled through different routes, which reduces the ability for strategic planning. LEP and City Region funding calls are made individually and can be un-coordinated, which makes it difficult to get multi-party projects off the ground. Finally, some funding calls are time limited to two or three years, which can act as a barrier to longer-term partnership working (for example through joint PhDs or more sophisticated multi-partner projects). Two practical solutions are:
- Government should help LEPs and City Region structures synchronise bid calls to allow cross-region alignment of funding for greater impact.

- Government should encourage regional innovation funders like LEPs to consider longer-term timeframes for some funding bids to allow substantive partnerships to develop.

Question 7: How can we ensure that the UK's inventiveness and creativity capitalises on our strong intellectual property system to generate growth and further innovation?

The UK is known for its scientific excellence, its inventiveness and creativity, yet very often we hear that ideas born here are exploited more effectively outside the UK than they are at home. The IPO's 2016 IP Awareness Survey showed that 96% of firms had not valued their intellectual property assets and that only 20% had generated additional income by trading those assets. We would like to hear views on measures that would help ensure the benefits of British research, invention and creativity are felt strongly within our economy and fuel the development of future innovation.

Consider: *How can we encourage businesses to take action to maximise the value of their Intellectual Property assets which are often invisible on the company balance sheet? How can we ensure that the UK secures the best value from research conducted within its Universities? What aspects of our current arrangements hinder effective exploitation of University IP? How easily can those with valuable early-stage ideas access the finance they need to develop and commercialise them and what is needed to improve that access? How can we support a more effective system for exploiting, trading and commercialising IP?*

13. Research in UK universities achieves maximum value when businesses are allowed to develop strong, robust partnerships which include a range of measures around encouraging innovation (for examples Access to Talent, CPD, network and facilities sharing).
14. Interventions such as Knowledge Transfer Partnerships (KTPs) help encourage this holistic approach while frameworks which are aimed at producing spin-outs and licencing deals often focus more narrowly, prevent a the full benefits of university-business collaboration being realised.
15. The updated Lambert Toolkit will be a valuable aid to the formation of collaboration partnerships, and should be highlighted through HEI and business networks. The Decision Tool is particularly important as it can help to guide partners to appropriate forms of collaboration agreements.
16. A focus on IP licencing and spin-out valuation as a proxy for the value of IP exploited is misguided. If these two indicators are too overly emphasised in knowledge exchange metrics, it would lead to a technology "protect and push" approach from universities, rather than earlier engagement of industry in the innovation cycle and co-creation of appropriate IP and technologies. This points to the need for a nationally recognised shared service platform, rather than a series of competing initiatives.

17. Universities are working together – and could do more – to educate and facilitate patenting, copyrighting and trade marking activities with SMEs. A better understanding of the issues and information gaps may help Government to provide routes for low cost patent litigation fee insurance for SMEs.

Question 8: Is there anything else the UK could need to do to create the best possible framework for innovation?

The Government wants to create an innovation framework fit for the digital age and has identified several areas to focus on. We would like to hear views on what else might help to create an open business environment, promotes collaboration and the sharing of ideas, gives businesses the confidence to invest in R&D and scale the best ideas, and uses the power of procurement to stimulate innovation.

18. Our new report, [Creative innovative regions: the role of universities in local productivity and growth](#) outlines the following recommendations to improve the structures and linkages in regional innovation ecosystems as they develop:
- Local authorities should look to existing best practice and embed universities in strategic regional innovation policy planning.
 - Government should extend support for cross-LEP and cross-City Region working.
 - Local authorities, City Region structures and LEPs should use the existing infrastructure of SME-engaged universities to reach out to this constituency.
 - Government can help regions get the best from their universities by mandating full and inclusive participation in the Science and Innovation Audits (SIAs).

The report also outlines the following principles for funding:

- Knowledge exchange activities complement research impact and achieve much more than research commercialisation. They must be supported through dedicated national and regional funds.
- Excellence in research should be funded wherever it is found, and impact and multidisciplinary research given greater priority.
- Higher Education Innovation Funding (HEIF), and equivalent innovation and engagement funding streams in other regions, should be focussed on activity beneficial to SMEs, including bespoke employer-focused skills activities.
- Funding bodies should remove disincentives to university-business mobility.

- Innovate UK should ensure direct grant funding is maintained for talent-related programmes and for small business grants.