

European Innovation Council

Submission from the Royal Academy of Engineering

29 April 2016



About the Royal Academy of Engineering

As the UK's national academy for engineering, we bring together the most successful and talented engineers for a shared purpose: to advance and promote excellence in engineering.

Royal Academy of Engineering's position on the European Innovation Council

The Royal Academy of Engineering welcomes the opportunity to submit a position paper to the European Commission's Call for Ideas for a European Innovation Council (EIC) to support Europe's most promising innovators. As the UK's National Academy for engineering, the Academy frequently comments on issues relating to engineering, innovation, research and entrepreneurship in both the UK and the world. This position paper outlines a number of high-level principles drawn from recent work by the Academy, but which are applicable to the development of the EIC. The development of these principles has been informed by the expertise of the Academy's Fellowship, which represent the nation's best practising engineers, including leading researchers, innovators, entrepreneurs, and investors.

Access to current EU innovation support schemes could be simplified

Innovation is a complex, non-linear process, so a complex innovation ecosystem is not surprising and may be to a degree inevitable. However, as detailed in the Dowling Review of Business-University Research Collaborations, the complexity of the policy support mechanisms for research and innovation poses a barrier to businesses, especially SMEs, seeking support.¹ Consequently the over-arching recommendation from the Dowling Review was that the UK government should seek to reduce complexity wherever possible and, where simplification is not possible, every effort should be made to ensure that the interface to access innovation support mechanisms is as simple as possible, even if internally the system of schemes is complex: a process that has been referred to as 'hiding the wiring'.

The UK's innovation agency, Innovate UK, has understood the need for simplification and is implementing a 'no wrong door' approach, as detailed in their 2016/17 Delivery Plan.² The 'no wrong door' approach means that businesses will be taken swiftly and efficiently to the right support for them, at the right time, by ensuring all Innovate UK teams work closely together as well as with other parts of the innovation ecosystem. We would urge the EIC to adopt a similar approach.

Innovation support should be both agile and stable

Innovation is a dynamic process and innovative businesses need to be able to respond swiftly to technology developments and market opportunities. It is therefore important that innovation agencies adopt a flexible approach that recognises and supports the need for innovators to maintain their agility.³ Evidence from other countries suggests that autonomy is a critical factor in achieving this and indeed to the success of innovation agencies.⁴ Both strategic and operational autonomy are considered key to allowing innovation agencies to innovate and experiment with their own approaches, ensuring public money is spent to best

¹ Dowling Review of Business-University Research Collaborations, 2015

<http://www.raeng.org.uk/publications/reports/the-dowling-review-of-business-university-research>

² Innovate UK Delivery Plan 2016/17

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/514838/CO300_Innovate_UK_Delivery_Plan_2016_2017_WEB.pdf

³ Royal Academy of Engineering submission to Innovate UK integration into Research UK, 2016

<http://www.raeng.org.uk/publications/responses/innovate-uk's-integration-with-research-uk>

⁴ Where next for Innovate UK? Nesta, 2016

https://www.nesta.org.uk/sites/default/files/where_next_for_innovate_uk_final_0.pdf

effect. For the EIC combining such agility and autonomy with increased transparency would be welcomed, particularly to allay concerns that decision making in Europe may sometimes prioritise politics and geography over excellence.

However, it is important that agility is considered alongside stability. Stability enables businesses, institutions and researchers to plan for the long-term and can impact upon leverage as the long-term visibility can give investors confidence. The benefits provided to the UK from the seven year funding cycles characterised by the Multiannual Financial Frameworks, such as FP7 and Horizon 2020, compared to the UK's national programmes, which tend to have shorter funding cycles, have been recognised by the Academy.⁵

The *push* from research and technology needs to be balanced against the *pull* from businesses, customers and markets

Innovation often draws from research and technology, and may involve commercialisation, but it is not synonymous with either.⁶ Innovation can also derive from developments in design, business models and mechanisms of service delivery. Therefore an effective innovation agency should not be overly reliant on the push from research and technology: the pull from businesses, customers and markets is critical.

A close interaction between the EIC and the European Research Council (ERC) could help bridge the 'valley of death' by enabling a more seamless transition between the funding agencies for high-quality research with strong commercial potential. However, the EIC would also require a close connectivity to businesses, entrepreneurs and an understanding of markets, supply chains and mechanisms.

Public sector investment can entice private sector investment

The vast majority of grants issued by the UK's innovation agency, Innovate UK, are accompanied by co-investment by the recipient or other funders, and returns from Innovate UK schemes show substantial leverage, with an average of £6 returned to the economy in gross value added for every £1 invested.⁷ Therefore the Academy would encourage the EIC to build in requirements for co-investment into its schemes as appropriate, both to leverage the public investment and to ensure the private partner has 'skin in the game', thus increasing their drive to see the scheme succeed and achieve further returns on their investment.

Skills training is required to increase the number of investable propositions

There is a need for sufficient and appropriate (pre-)seed stage funding, which can help fund 'proof-of-concept' activities and bridge the 'valley of death' between the development of a

⁵ Royal Academy of Engineering's submission to House of Lords Science and Technology Committee relationship between EU membership and the effectiveness of science, research and innovation in the UK inquiry, 2015

<http://www.raeng.org.uk/publications/responses/relationship-between-eu-membership-and-uk-science>

⁶ Investing in Innovation, Royal Academy of Engineering, 2015

<http://www.raeng.org.uk/publications/reports/investing-in-innovation>

⁷ GVA and job figures calculated by Innovate UK from their published evaluations of Collaborative Evaluation of the Collaborative Research and Development Programmes, PACEC, 2011), Feasibility Studies Programme (TSB Feasibility Studies Programme, WECD, 2013), Smart Awards (Evaluation of Grant or Research and Development & Smart, PACEC, 2009) and KTPs (Knowledge Transfer Partnerships Strategic Review, Regeneris Consulting, 2010)

prototype and a product or service that is an investable proposition. Nevertheless, financial support is not always sufficient; there is a growing recognition of the importance of supporting entrepreneurs to gain the appropriate skills and experiences to enable them to attract investment. The Academy, for example, through its Enterprise Hub harnesses the expertise and networks of its Fellows to provide bespoke mentoring and training to build the capabilities of the next generation of engineering entrepreneurs, and to connect them more effectively with potential investors and routes to markets. The 38 early-stage Enterprise Hub members have gone on to secure £23m in third party investment in the first three years of the Hub's operation.

Innovation support should not just focus on start-ups, spin-outs and entrepreneurs

In the UK, it appears that funding for spin-outs, start-ups and entrepreneurs is most accessible in the range of the tens of thousands of pounds, be it from friends and family, angel investors, feasibility programmes or proof-of-concept schemes. However, it is much more difficult to access finance over £100,000, in large due to the lack of suitable financial products. A balanced portfolio of diverse financial products is important for creating a vibrant innovation system, both in terms of the types of products available e.g. equity and grants, and in the amount of finance.

Discussions about innovation support, particularly access to finance, often focus on relatively new high-tech businesses with the potential for fast growth. It is, however, also important to ensure that appropriate support and financial incentives, for both lenders and potential recipients, are in place for more established companies who wish to innovate, scale up or access new markets, especially for companies who may not have undertaken such activities previously.⁸

Similarly, timely adoption of externally-generated innovation can be one of the most important ways of helping established companies scale up and improve productivity.⁹ In order to adopt innovation, companies need to have 'absorptive capacity': the ability to recognise the value of new, external information, assimilate it and apply it to commercial ends. Absorptive capacity relies heavily on the availability of people with the right skills and experience, and may be something the EIC can influence.

The EIC may wish to consider employing challenge based approaches to address key societal issues of our age such as climate change, sustainable resource management, global poverty and international terrorism, where grants are awarded through competitions based on the challenges.

There is a desire for more long-term patient capital

In the UK, of particular importance to the engineering sector is the need for long-term patient capital, where quick returns are not expected by investors. Such funding enables companies to embark on ambitious projects, often to address complex challenges and to grow. Therefore, action by the EIC to increase the availability of long-term patient capital that is not too

⁸ Royal Academy of Engineering's submission to House of Commons Business, Innovation and Skills select committee Access to Finance inquiry, 2016 <http://www.raeng.org.uk/publications/responses/access-to-finance-inquiry>

⁹ Investing in Innovation, Royal Academy of Engineering, 2015 <http://www.raeng.org.uk/publications/reports/investing-in-innovation>

restrictive in scope and is available to high-risk propositions would be welcomed. Government backed financial guarantee schemes, if designed appropriately, can be used to support long-term investment loans by the private sector, by mitigating the associated risk.

Increased provision of appropriate long-term patient capital may help to address the gap in scale-up funding. In the UK there is a perception that the further a company wishes to progress along the investment spectrum, the harder it becomes to access finance, particularly at the growth and large scale up stages.¹⁰ Anecdotal evidence suggest that many UK companies go overseas to access suitable growth and scale-up funding, often resulting in the relocation of their headquarters, with the West coast of the USA one of the most common destinations.¹¹ Similar concerns appear to apply to other countries within the EU. The EIC could explore ways to incentivise such long-term investment, both for individuals and institutions.

A balanced portfolio of mixed financial instruments, including, but not limited to, loans, loan guarantees, long-term patient capital and other investment vehicles are needed to support innovative businesses.

¹⁰ Royal Academy of Engineering's submission to House of Commons Business, Innovation and Skills select committee Access to Finance inquiry, 2016 <http://www.raeng.org.uk/publications/responses/access-to-finance-inquiry>

¹¹ The Scale-Up Report on UK Economic Growth, Sherry Coutu, 2014 <http://www.scaleupreport.org/scaleup-report.pdf>