

Innovation in engineering services

Summary

Technology- and knowledge-based services are an increasingly important part of the UK economy¹. But there is limited support for companies that offer services to engage in R&D and innovation, including in engineering.

Most support mechanisms, such as grant funding, have largely been designed to support product-based companies. Traditional procurement models, including from government, can also fail to incentivise innovation by service companies.

Government should work with engineering companies offering services to ensure that they can access support for innovation and drive continued growth.

Companies that offer services produce intangible goods rather than products, covering a vast range of companies from fintech to transport. Many engineering companies are also service-based rather than focused on products.

Service-based engineering companies can either be focused on engineering, providing technical services such as prototyping or consultancy, or offer services to the broader economy, such as designing infrastructure, or developing software for smart traffic management systems.

These companies are an increasingly important part of the engineering and technology sector, accounting for at least 15% of business expenditure on R&D³ and over 16% of engineering businesses in the UK⁴.

R&D is a vital for many of these engineering companies for the development and integration of new technologies, to enhance and extend their services, to increase efficiency, and to up-skill staff. However, the intangible nature of services makes the output of R&D less immediately visible than in product-based sectors.

80%

Contribution of services to the UK economy²

“We find it difficult to engage with UK grant funding programmes that are focused around specific product developments as these are based around use of our existing capabilities rather than creating new engineering process innovations.”

Professor Neville Jackson FEng,
Chief Technology and Innovation Officer,
Ricardo

The challenge

Innovation support

R&D for services looks different to R&D for products, for example:

- In collaborative R&D projects, product-based companies may benefit directly from the outputs, while service-based ones may benefit more from working closely with customers, developing joint solutions and understanding technological trends.
- The intangible nature of services makes it more difficult to evaluate success in innovation, so the monitoring and evaluation of schemes is more challenging.
- Tracing a direct line between R&D spend and return on investment can be more difficult in service innovation, particularly if the company investing is not the

primary beneficiary of the resulting innovation. For example, in the construction sector a design agency may develop a new approach to an infrastructure project that accelerates delivery and extends the lifetime of the asset. The major beneficiary of this innovation is likely to be the asset owner or constructor rather than the designer.

While UK programmes, such as Innovate UK grants, are available to and accessed by companies developing services, most programmes are designed to support product R&D, with few of them currently tailored for services. Many competitor countries, such as Germany, Sweden and Finland, have service innovation programmes^{5,6,7}. These may be in the form of a tailored grant or voucher schemes, design centres, and service innovation incubators.

Procurement

Traditional procurement models across public and private sectors often fail to incentivise R&D investment in engineering companies that offer services because the procurement of services is usually on a person-hour basis. R&D activities often require highly skilled staff, therefore typically leading to higher person-hour costs.

➡ See also *Public procurement*.

“Price-sensitive person-hour based procurement rarely recognises the value of service companies investing in innovation. This can therefore act as a barrier to R&D investment.”

Dr Steve Denton FEng, Executive Director and Head of Civil, Bridge and Ground Engineering, WSP

To increase business R&D investment:

- ➡ Increase support for service innovation in a way that recognises its importance to the UK economy.
- ➡ Government should work with companies that offer services to explore how initiatives should be tailored to encourage them to invest more in R&D.



This explainer is part of a series based on interviews with individuals responsible for making decisions on R&D across a wide range of engineering companies.

➡ See *Introduction* explainer to find out more.

- 1 *Services transformed: Growth opportunities for the UK Service Economy*, Government Office for Science, 2018.
- 2 *Services transformed: Growth opportunities for the UK Service Economy*, Government Office for Science, 2018.
- 3 *Business Enterprise Research and Development*, UK 2016. Office for National Statistics, 2018. Figure refers to the total percentage of business expenditure in the following product groups: research and development services; computer programming and information service activities; miscellaneous business activities, technical testing and analysis.
- 4 *The state of engineering*, Engineering UK, 2018. Figure refers to the percentage of engineering enterprises in the 'Professional, scientific, and technical activities' sector.
- 5 *The smart guide to service innovation*, European Commission, 2014.
- 6 *Service Innovation: The key to Sweden's economic prosperity?*, Service Innovation Sweden, 2016 <https://www.teknikforetagen.se/globalassets/i-i-debatten/publikationer/fou/service-innovation--key-to-swedens-economic-prosperity.pdf>. Accessed September 2018.
- 7 *Serve - Innovative Services Technology Programme 2006-2010*, Tekes. <https://web.archive.org/web/20071012184426/http://akseli.tekes.fi/opencms/opencms/OhjelmaPortaali/ohjelmat/Serve/en/etusivu.html> Accessed September 2018.