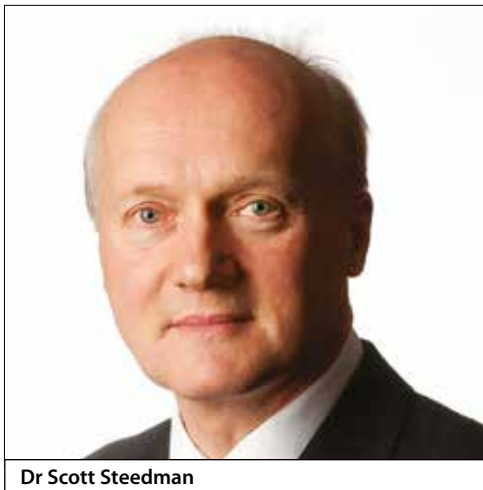# EDITORIAL

OPEN DATA OPPORTUNITIES

Dr Scott Steedman

It is no exaggeration to say that the 21st century is well on the way to becoming the data century, as the ability to capture and process data opens up many opportunities, including the possibility of creating whole new industries. The raw material for this potential revolution is freely available, with a whole new 'open data' movement showing just what is possible. However, as yet there is little evidence that the engineering sector is aware of the possibilities of open data.

The Open Data Institute (ODI) defines open data as data that anyone can access, use or share. Hundreds of companies in the UK already use data published on the internet by government and public agencies to offer new insights into everything from travel to recruitment. Transport for London (TfL) and the Ordnance Survey are two of the most celebrated providers of data, which has fuelled the creation of dozens of popular apps, particularly in relation to travel planning and geo-location.

Beyond tools that help navigate the vagaries of London's transport network or access public information more efficiently, open data has had limited impact on traditional industries in the engineering sector. When it comes to investing in physical infrastructure, production lines or software systems, there remains a persistent problem of trust in the reliability of the open data. How can engineers assure the quality of the data they use if there is no contract with the provider?

In 2015, a joint report from the Royal Academy of Engineering and Institution of Engineering and Technology, *Connecting data: driving productivity and innovation*, recognised the importance of open data as a driver of innovation. It called on every industry sector to consider what data it holds and in what circumstances it can be released, saying that much potentially valuable data remains locked away in corporate silos or within sectors.

Open data provides two major opportunities for innovation. The first is speed to discovery, joining the dots that already exist to create the next breakthrough in understanding. Academic research depends on painstaking efforts to gather the data across multiple sources. This takes time and requires a vast effort, with all the associated risks of error, misinterpretation or oversight. What if all publicly funded research data (once the original research team has secured intellectual property) was openly published in a standard format? How much faster could other researchers (or computers) mine the data and make their own new discoveries?

The second, more challenging, opportunity is where the innovation relies on a future stream of data from another source. It could be weather information, product specifications, traffic data, corporate statistics, even social media. Will the data stream be there next year? Can it be trusted?

The question of how to assure the sustainability of open data is the next great challenge for the open data movement.

In June, the Royal Society and the British Academy recommended the creation of a new independent data stewardship body that would oversee the management and usage of data. Their report, *Data management and use: Governance in the 21st century*, says that agreeing high-level principles on the use of data is critical to giving innovators the confidence to explore new technologies.

In October, Innovate UK announced new funding of £6 million over three years for the ODI to continue its work to keep the UK at the forefront of data use to drive new and improved products and services, through a series of research and development projects aimed at unlocking the potential of open data to transform industry. Helping businesses to understand emerging data technology is central to the ODI's work.

Securing a breakthrough in the engineering sector's use of open data will require new thinking on the relationship between provider and user. Those that hold data need to be convinced that sharing it will bring greater long-term value than holding on to it. Innovators, consumers and regulators need to agree standards that set out best practice and avoid regulation as far as possible. Once it is clear that open data benefits providers as well as users, then there is a incentive to maintain the quality and reliability of the data over time. Only then will the real opportunities become clear in the traditional engineering industries.

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