Rise of the machines

We are living through a new technological revolution – but is Britain in danger of being left behind? Three experts discuss how to reboot Government and business for the digital age.
Technology is transforming everything we do – from public transport to agriculture, from household goods to financial services, and from the way we learn to the way we communicate. It is changing our lives, our work, our society and our politics, and its impact is all around us, all of the time. Every week a media outlet carries a huge new story about an aspect of the new paradigm.

It was in the context of this ‘digital revolution’ that the House of Lords appointed an ad hoc Committee last year with a remit to “consider information and communications technology, competitiveness and skills in the United Kingdom”.

We heard evidence from a wide range of individuals, businesses and organisations, including Google, IBM, Siemens, British Chambers of Commerce, BT, Virgin Media, Ofcom, leading technology experts, local authorities and enterprise partnerships and academics.

The evidence we received was startling. We heard how universal digitisation, including universal digital access, could be worth up to £63bn in additional annual GDP growth. Increasing the number of women working in IT alone could generate an extra £2.6bn each year. We heard of massive opportunities and big challenges – all in the context of change happening at an exponential rate.

After nearly nine months assessing the digital landscape of our nation, and whether the UK is prepared for the future, the Committee came to the conclusion that we are at a tipping point where action is urgently needed. Its report, “Make or Break: The UK’s Digital Future”, published earlier this year, was a call to action to the incoming Government to address significant issues facing the country.

The report spelt out what the priorities for the new Government should be – top of the list was the creation of a single ‘Digital Agenda’, placed right at the heart of Government. This Agenda would include joining up the separate responsibilities within Government, currently splintered across individual departments, as well as establishing a new Cabinet Minister post to oversee the Digital Agenda. We wanted regular reports to Parliament on progress.

We concluded that the UK’s approach to educating people of all ages was in need of a radical re-think. We called on the Government to make digital literacy a
core subject at school, alongside English and Maths. We felt that the introduction of the computing curriculum was a positive move, but we were very concerned about the number and ability of teachers to deliver it. We argued that post-16, FE needs an overhaul to become more responsive to local business needs, more nimble and more specialist. At the higher education level, we argued that industry needs to get more involved, so that graduates learn job-relevant digital skills. We wanted all undergraduates to have some digital education, regardless of degree subject, and we were aware that all citizens will need regular upskilling throughout our working lives.

We argued that Government should see broadband as a utility, as necessary as the other utilities to the running of the UK economy, and indeed society. The report found that the standards of Internet provision in the UK were not where they need to be, and that it is unacceptable that there are still urban areas experiencing ‘not-spots’ in addition to rural areas of underperformance.

The Committee wanted the Government to be the “conductor of the orchestra”, encouraging, cajoling, delivering, convening – and crucially working tightly and coherently across the whole digital landscape.

Baroness Morgan of Huyton, a Labour peer, was Chair of the Lords Digital Skills Committee 2014–15.
a no-till system where farmers no longer plough to suppress weeds. The result is more biomass in the soil and better soil structure. Soil erosion per bushel of maize has decreased by two thirds since the introduction of GM traits.

In a free market, farmers and consumers should have a choice about which crops to grow and which foods to eat. Farmers in the UK, however, are denied this choice because of anti-GM scaremongering in other European countries. It is absurd that our farmers cannot grow better, more sustainable crops because of superstitious NGOs based in Brussels. It is even more outrageous that many of these NGOs – including Friends of the Earth, and organic industry lobby groups – in turn receive millions of Euros in taxpayer-funded EU grants to do this lobbying work.

That the UK has been prevented from adopting GM is one further example of how unscientific policy directed at the EU level is tying our hands domestically. As DEFRA Secretary I worked closely with pro and anti-GM member states on the Agriculture Council to agree to the Cultivation Proposal which would allow some to forge ahead and others to opt out. This would allow the UK to once again be a lead innovator in developing and adopting agricultural technology. Doing so will be good for jobs, the economy, the farmer, the environment and the consumer. There is no time to lose.

If the world was to produce all its food based on 1960s methods, we would need additional landmass the equivalent size of three Amazon rainforests.

Then-environment secretary Owen Paterson inspects a genetically modified crop trial at Rothamsted Research in Hertfordshire, June 2013.

Owen Paterson is Conservative MP for North Shropshire and a former Secretary of State for Environment, Food and Rural Affairs.
To understand the future competition for British manufacturers, you just need to look at China’s innovation focus. Copycat products may be today’s irritation, but China-designed products will soon transform global markets. Over a hundred of the world’s top thousand R&D companies are in China, where innovation spending increased by 46% in 2014 alone.

This financing is intended to take advantage of the expansion of emerging markets. That growth creates increased pressure on natural resources, which will lead to international climate change regulations demanding improvements in energy efficiency.

To succeed in this context, British manufacturers will need products that are smarter, lighter and greener.

Smarter starts with digital. From concept to sales, everything is now data driven and analytics based. Whether it’s time to market or nanocomposite materials, companies like Jaguar Land Rover know future growth depends on digital innovation. A new Land Rover customer expects advanced sensor systems to monitor and manage their car, reducing concerns over everything from maintenance times to crash avoidance.

At the same time, cars must be lighter – the new XF weighs 190 kilos less than the old model. Combining digital systems with lighter materials produces both a better product and lower emissions. Finally, all these individual innovations need to be integrated into a single user-friendly interface.

The same principles apply from aerospace to appliances. To compete requires R&D. JLR is investing £3 billion a year in innovation, making it one of the top 100 global R&D investors. Other leading British manufacturers are taking the same
approach, whether its Dyson launching its 360 Eye cleaner in Japan with an efficient new digital motor, or BAE’s IntelliCabin system, which uses integrated computing and lightweight materials to give passengers more space and carriers a 20% weight saving. This adds up to more energy efficiency.

What do these innovation trends mean for Government? First, it means we need more scientists and engineers. In engineering alone, we’ll need 150,000 new engineers and apprentices every year. The Government is addressing this, but the scale of the challenge is huge – the equivalent of one in five 21-year-olds.

By 2020, Britain is projected to fall to 28th out of the 33 OECD countries for intermediate skills. The shortage in UK skills is critical, so we need a transformation in STEM education. Industry-education partnership is crucial – whether in University Technical Colleges, further education or by inspiring future engineers and technicians.

Educating innovators is only the first step. We’re terrible at long-term thinking in Britain. We have the second worst investment levels in the G7, industrial energy prices are the third highest in the EU and Britain’s roads are ranked 30th in the world, below even Namibia. We won’t get a productivity or export-led recovery like that.

We can’t expect governments to solve this for business, as they can only provide a framework. Intervention and interference can’t work, for the simple reason that British business spends half what the US and Germany do on R&D. Indeed, it took an Indian takeover and a German chief executive to get Jaguar Land Rover to invest in their future.

This leads me to my final point. British Business must embrace partnerships, not work in isolation. We have an outstanding science base so, to break barriers to innovation, we must bring research councils and business R&D together, build global innovation networks, and support foreign investment in British business.

We know we can do it. Innovative new British products, like the Jaguar XF, the Dyson 360 Eye and many more, demonstrate how the future of British manufacturing is greener, lighter and more connected.

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