Smart objectives

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Smart cities and 5G sound exciting, but serious consideration must be given to the barriers to, and enablers of, a more connected future

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Just around the corner lies a world where everything is connected ? digitally. In this world, 20bn consumer and business units will be connected and ?14tr of economic value will be generated every year. When do we arrive at the wonderful new world? Experts speculate that it could be as soon as next year.

However, the reality still seems a long way from this. My scepticism is based on the fact that a friend?s office move broke down because he could not access a decent broadband service for at least 2 months ? a critical requirement for a design consultancy that needs to communicate with its clients and prospects.

To help console him, I quoted the government?s national digital strategy , in particular that it would ?complete the roll-out of 4G and superfast broadband by 2020 ? [and] invest over ?1bn to accelerate the development and uptake of next-generation digital infrastructure ? including full fibre and 5G?.

As you can imagine, he challenged the government?s professional capability in no uncertain terms. Despite the government?s declaration in 2018 that it had fulfilled its promise to extend superfast broadband to 95% of UK premises, the company that compiled the data claimed the UK was likely to fall further behind other countries in the coming years.

Everything we do ? live, work, shop, play, learn ? now requires good, fast digital access. By 2028, more than 30% of all retailing will be conducted online, and yet outside city centres and commercial hubs, online access in the UK remains poor.

In a recent survey of 200 countries conducted by Cable, Singapore once again had the world?s fastest broadband, followed by Sweden, Denmark and Norway. Bottom of the league was Yemen. But the good news is that Madagascar, 1 of the world?s least developed countries, was 1 place ahead of France.

As the fifth largest economy in the world, the UK is currently 35th in the global broadband speeds league table, putting us in the bottom third of EU countries, below Andorra and Bulgaria. This shows there is a schism between our ambitions and reality.

The global perspective

There is excited talk of smart cities amid the wide array of stakeholders ? local and national governments, tech businesses, advertisers, those providing the everyday services that cities rely on and many more. The concept is underpinned by a fundamental belief that digital

access has no ceiling, and it is claimed that it will improve the efficiency of almost every aspect of our lives from work to leisure, transforming energy management and quality of life, and offering a panacea for the crowded, congested and polluted experience of many city-dwellers.

Smart cities should allow us to live in a carbon-neutral world, and might include the following features:

- intelligent buildings that self-manage their lighting, environmental and repair requirements;
- smart traffic lights that respond to changing traffic patterns, as well as parking sensors that detect when a car park is full and automatically re-route traffic;
- smart street lighting that only activates when someone walks into its zone; and
- smart waste management, including bins that alert the authorities when they need emptying;
- soil sensors that detect moisture levels and automatically manage the sprinkler systems.

Cities such as Songdo in South Korea are championed as blueprints for the future. It prioritises pedestrians and cyclists, aiming to become entirely car-free, and comprises 40% green space, countless kilometres of cycle routes and 300,000 residents who live in new, digitally enhanced apartments. Neighbours can chat to each other via video links and everything from opening doors to attending college can be done remotely. There is no need for dustbin lorries as rubbish is pneumatically sucked out of every home and recycled .

The domestic perspective

The future of our national economy lies in the success and growth of the knowledge sector.

In a digital world, knowledge-based businesses will not have to be based in London, Cambridge, Reading, Manchester or indeed any major city. Being able to work anywhere, including rural locations, not only reduces congestion and overcrowding in cities, which are already struggling to provide adequate business space and homes, it also offers a viable alternative for those seeking a better work?life balance. Even the chancellor believes that the UK needs a ?big digital upgrade? to thrive after Brexit, as he said in May 2018. But, as my entrepreneurial friend?s predicament highlighted, the reality is a long way off still.

A world populated by the internet of things with 20bn devices all battling for a finite bandwidth is a frightening prospect, and it is no wonder that people are forced to migrate to network-rich but already crowded urban centres. It is interesting to note that in 1800 only 2% of the global population lived in an urban environment. This grew to 13% by 1900 and 47% by 2000, and experts believe that by 2050 almost 80% of the world?s population will live in urban centres. Of course, architects and urban planners claim they will create smart environments to support and enhance the day-to-day living for our booming urban areas, but 20bn intelligent devices need rich connectivity if these plans are to be fulfilled. And therein lies the problem.

I suggest that the answer is not in 5G, 6G, 7G and so on. We need a paradigm shift in our current 1-track thinking ? perhaps this is 1 of those Sony Walkman moments, when new technology seems to come from left field. One such innovation could be ?lifi?, the transmission of data using light waves rather than radio as in wifi. Bear in mind that light waves travel more than 1,000 times faster than radio waves, and that every LED bulb could be deployed as a transmitter, or router. Greater urbanisation then means more homes and places of work, which means more LED bulbs and therefore better connectivity. Eureka ? the growing needs of a global population demanding connectivity as a right are met.

However, there are 2 mountains on the road to this nirvana:

- lifi development appears still to be at quite a nascent stage; and
- the government?s 2017 Industrial Strategy white paper earmarks ?176m for 5G and a further ?200m for local fibre networks, but nothing for lifi.

If after Brexit UK entrepreneurs and the knowledge sector are the key to our economic success, then we have to find a way to enable them to perform to the best of their ability. I am reminded of the 2018 train fiasco that created untold disruption and distress among commuters and other rail users In some parts of the country there was much trumpet-blowing about the rail companies? new generation of trains and how much better the travel experience would be for their customers, but the reality was a far cry from the hype. Not enough drivers had been trained for this new generation of vehicles, which, coupled with timetable scheduling problems, led to months of chaos and inefficiencies. Is the current national digital strategy heading in the same direction?

And has Brexit occupied our leaders so much that it has dominated our national strategic planning capability? Are the mechanics of business being sacrificed on the altar of political ambition? This is not a political carp, but a question posed on behalf of knowledge workers struggling to produce world-class outputs in a digital environment akin to that of a developing country. If lifi is a viable answer, what questions should we be asking our leaders?

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Further information

- Related competencies include: Smart cities and intelligent buildings
- This feature is taken from the RICS Property Journal (May/June 2019)
- Related categories: Data and design