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The hoaxers and conspiracy theorists are right to be concerned about 5G – it is going to change the world... but for the better, and particularly for SMEs. The digital technology is set to help change today's business, and transform tomorrow's

It's being heralded as the great leveller: the development that will put small businesses on an equal footing with international corporations. "Why is 5G important? Because it allows SMEs to play with the big boys on a level playing field," says Paul Farrelly, enterprise business director at Timico, the Newark-based IT services firm. "It will enable them to buy a technology that can radically change their business but without having to set up complex systems of their own.

"Put simply, 5G means the small engineering firm can have exactly the same capability as JLR."

"5G could drive up national productivity, an issue which has held our economy back for decades, by about 5 per cent," adds Mark Stansfeld, chairman of WM5G – the body tasked with overseeing 5G's introduction to the Midlands and co-founder of telecom business giffgaff. "And SMEs may find adoption easier because they're nimble."

THE BACKGROUND

Despite the elaborate hoaxes about it being responsible for Covid-19 and concerns about Chinese spies eavesdropping, 5G has arrived rather quietly in the Midlands

– ironic, as the region has been set as the great example of how it can be used in business and en-masse.

But don't underestimate its impact from a low-key start: 5G is set to be a quiet revolution that will change everyday activities in scores of small ways, while at the same time often radically changing the ways in which businesses work and

"5G enables smart cities, artificial intelligence, autonomous vehicles and remote surgery."

Paul Farrelly
Timico

interact with each other and the consumer. This is the tech that will, eventually, give us the self-driving car, machines that tell us they need repairing in advance, fridges that automatically order new groceries, smart clothes that constantly check your vital signs.

"What makes 5G exciting is that it's not just mobile: it enables smart cities, artificial

intelligence, autonomous vehicles and remote surgery," says Farrelly.

"The greatest long-term benefits of 5G will not be communications between people, but between things, it will be the engine oil of improvement," adds Adrian Baschnonga, lead analyst in global telecommunications at EY. "Longer term, the implications and benefits could be huge."

Most of these great changes will be some time away. Before then we will see 5G-enabled devices entering our lives and business quietly, making improvements we are barely aware of but opening up huge opportunities.

"There will be thousands of small ways in which 5G will change people's lives, such as sensors in bins controlling the routes and timings of bin lorries, so we never see bins overflowing," says Dan Pech, regional director at Vodafone. "We'll see millions of domestic devices measuring utility usage in real-time, allowing better use of energy and stopping flooding.

"We need to be realistic about time frames and see this as an eight-year journey: the 5G system is still being rolled out. While there are some immediate benefits to businesses it will still be two to three years before the network is fully

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functioning, and maybe four to five years before we see the real impacts on sectors such as industry, but those changes will eventually be profound.”

“5G can bring some immediate benefits to businesses,” adds Baschnonga. “It can help build resilience and get businesses through the current crisis. The technology helps them ‘pivot’ and adapt to a rapidly changing economy. It is already supporting remote working from being hit by network outages because it’s a more robust technology option. And it fundamentally improves data transmission allowing flatter, more robust architectures.”

Roll out has been delayed by the government’s controversial decision over the summer to stop Huawei from providing the equipment for the system – the Chinese company is one of only three businesses in the world that can provide the technology needed for the 5G network.

However, the Midlands is doubly blessed when it comes to getting a head start. Worcestershire was chosen by the government as a national test bed for the manufacturing possibilities of 5G.

Meanwhile, the West Midlands conurbation was chosen as the first region-wide test bed – a giant Petri dish – for the technology. This has led to it trialling schemes in healthcare, such as domestic endoscopy services to tackle bowel cancer – patients swallow a smart pill at home that takes



Mark Stansfeld

thousands of pictures as it passes through their gut to detect any issues, beaming the images back to the lab. It is also experimenting with real-time remote monitoring of data like blood pressure, heart rates and sugar levels among the elderly.

On the horizon are emergency ambulances live-streaming data from patients to doctors in A&E, meaning medics are ready to operate the moment they arrive.

And the technology is starting to spread rapidly. Last month the University of Warwick and BT launched the first 5G network on a British university campus. And it will soon be extended to “Silicon Spa” – as Leamington Spa is often nicknamed because of its digital games companies.

THE IMPACT ON BUSINESS

In the West Midlands there has been a particular focus on getting SMEs to adopt 5G by literally allowing them to play with it. WM5G has been setting up accelerator units in Wolverhampton, Birmingham and Coventry in which businesses can come to experiment with the technology for free.

“The trick for SMEs should be to embrace 5G and then look at the possibilities in terms of adoption, because SMEs will find their own solutions after playing with it,” says Stansfeld.

“What we’re driving is not the technology but the business outcomes it can provide,” adds Pech. “SME directors know their businesses better than we ever could: our job is to bounce ideas around with them that have practical outcomes.”

The Midland case studies usually put forward as examples of how early adopters



can use 5G to get a business edge are the Worcester-based manufacturers Mazak and Bosch.

Boiler-maker Bosch has been using 5G to experiment with predictive maintenance – working out when its machines need repairing before they go wrong. It is now expanding its use of 5G to look at running autonomous vehicles in the factory.

Meanwhile Mazak, as part of its 5G experimentation, has been equipping its apprentices with microphones and augmented reality (AR) glasses, which project extra data and images on objects in the “real” world: it connects engineers fixing machines in factories around the country to people sitting at computers in Mazak’s base in Worcester. It is especially useful for less experienced engineers who might not be able to fix the problem themselves and can transmit high-quality video to more experienced ones who can help out with a problem.

Mazak has also developed Smooth – a technology that gathers and analyses factory floor data to make faster, better-informed decisions and increase output. It is now looking to a factory where every aspect of production is connected and analysed, with automated scheduling and advanced digital simulations of components.

The University of Warwick will be using its new 5G network to experiment with autonomous pods – slow-moving self-driving cars – allowing them to exchange live data, including information on obstacles to make pedestrians safer.

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Dan Pech
Vodafone

THE TECHNOLOGY

“It’s not that important to get obsessed about the tech behind 5G – it’s merely an enabler that allows businesses to come up with new techniques. 5G fundamentally is not a mobile technology – it is a business solution,” says Farrelly.

Despite Farrelly’s claims about ignoring the tech, understanding the potential of 5G for SMEs involves a bit of insight into what the system is and how it differs from existing mobile systems – 5G is not a souped-up version of 4G, it is a technological transformation.

“3G gave us texting and basic communications, 4G gave us video on demand and fast data. 5G replaces superfast broadband,” he adds. “Its real impact is not people-to-people communications, but in the way it connects machines and objects. It allows the Internet of Things [IoT] to occur.”

The 4G system runs at about 100 megabytes per second: a high-definition Hollywood blockbuster takes about ten minutes to download on a good signal: 5G lets users achieve that in perhaps ten seconds. This will probably lead to a

collective “neat but so what” shrug among most business leaders. But to speak to pundits is to discover that real transformative possibilities are in other improvements in the system.

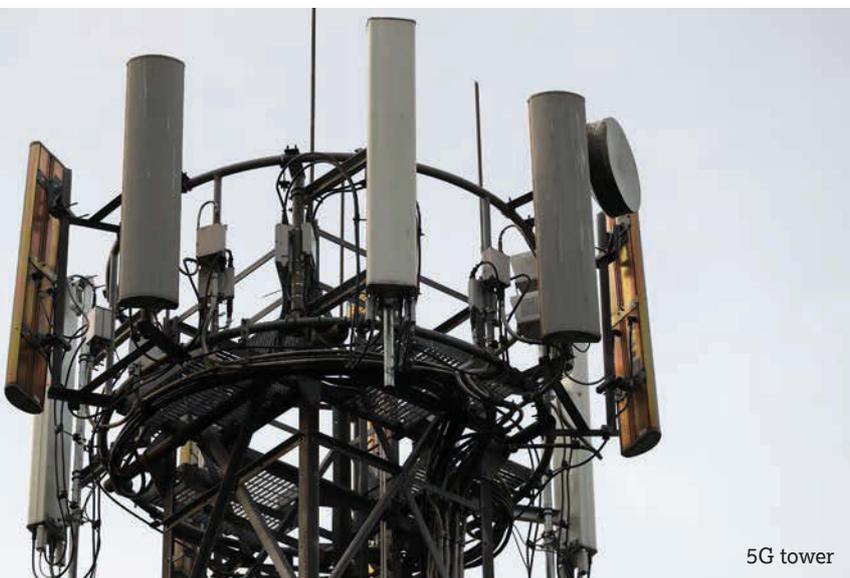
The first is ultra-low latency – the speed at which a signal travels. Currently, digital signals travel at 20-50 milliseconds, too quick for humans to notice but still slow enough to stop many potential applications. However, 5G brings in speeds of less than one millisecond – faster than the human brain interacts with its nerve endings. That allows technologies like autonomous vehicles, robotic surgery and a genuine Internet of Things to take place. This, far more than the super-speeds, is the step that allows radical technical innovations to take place.

The second improvement is separating “the core”. Currently, whole swathes of the telecom system have to be reshaped to allow new services and technology. That is done away with by 5G: instead, businesses can create “microservices” – such as specific digital communications between two machines – similar to the way they can develop an app for a smartphone. Suddenly, creating new services for 5G becomes cheap, bespoke and accessible – and it’s that which will allow SMEs to develop solutions that currently only large corporates can create.

The third major change is untethering, or freeing machines from cables. Unless a business buys an expensive bespoke internal system, currently any machines needing high-speed communications must use copper wires and fibre – they cannot rely on wi-fi. These machines are effectively tethered to the internet. However, 5G allows machines to link via mobile – that is they become untethered – on the same site or even at some distance.

The fourth breakthrough is network slicing. Parts of the 5G network can be assigned for specific users or sectors, so that when children pour out of school at 3.30pm ambulances don’t suddenly find their link with the hospital, giving that critical information on a patient’s vital signs, drops out. Similarly, network slicing ensures a 5G-enabled robot forklift does not go careering about into staff or into stock because the network has become overloaded.

The final revolution is that 5G can carry many more signals simultaneously.



5G tower



WM5G Demo Days Birmingham

So instead of a mast handling connections to 10,000 people and objects it can handle 20 million at the same time. This is the foundation of “super connectivity”, or the internet of everywhere and everything, where almost any object – your car, clothes, the kids’ toys, the warehouse, the delivery drone, the office lighting system – are continuously interconnected, and interacting, swapping masses of data in micro-seconds.

STEP BY STEP

One of the major challenges that 5G will have to overcome if it is to be seriously adopted by SMEs is the in-built scepticism among many managers, particularly owner-managers, towards yet another technology touted to transform their company. It is a re-run of the old VHS versus Betamax debate, the fear of spending a lot on the wrong tech.

It’s not an unfounded view: Baschnonga says both 3G and 4G were oversold as “silver bullets” that would revolutionise business – they didn’t – and naturally 5G is being greeted with some caution. The trick, he feels, is not to sell 5G as revolution but as evolution – an affordable technology that can overcome smaller immediate issues.

“We need to stress that it allows change to take place as an incremental journey.

“5G will mean having to reimagine whole industries in the next few years.”

Adrian Baschnonga
FY

“Its full potential will be achieved by taking baby steps rather than trying to change the business wholesale overnight.”

“Many SMEs lack the in-house capabilities, understanding and knowledge to take advantage of opportunities of 5G,” adds Jenny Rohde, chief executive at consultancy Jones Newton. “There’s a large group who haven’t even taken the first step towards digitisation, who are still using machines designed in the ‘50s, who haven’t the bandwidth or confidence to understand some of the jargon, terminology and concepts. To them 5G feels distant, irrelevant, something further down the road to get to grips with when the current crisis is over.

“To engage with that group the trick isn’t to talk of a bright shiny manufacturing future, but start where they are now, on how 5G and digital can interact with what they already have. Successful adoption will be

achieved not by pushing the technology agenda but by teaching them to be more market orientated, and understand where their clients – who might be developing that smart factory – are going.”

THE LONG TERM

In concentrating on the now we must not forget the long-term impact of 5G on businesses. In the next two or three years the changes it brings will be small, often unnoticed. Over the next decade they will be nothing short of transformational.

“5G will mean having to reimagine whole industries in the next few years,” says Baschnonga. “Just as successful adoption means thinking beyond the workplace, it will also mean thinking beyond the business and ‘point A to point B’ trading. One of the points of 5G is that it makes businesses more collaborative, leading to supply webs rather than supply chains. This means businesses can become and will need to be far more agile in how they interact with their suppliers and customers.

“In the old world it was the big companies that pushed out the technology, and SMEs took what they were given,” adds Stansfeld.

“Now, with 5G, technology is becoming demand-led. SMEs need to lift their heads and come and look at what we’re doing, because it’ll give them ideas.” ■