

INGEAR

Where technology breakthroughs could take us next

From virtual reality to 5G mobile, Graeme Lennox asks the electronics experts what trends will shape the year

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Robotics is just one technology predicted to improve this year, with AI-powered robots playing a potentially vital role in social interaction for the elderly
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Drones

Drones have dominated recent headlines and will continue to pose a serious threat to air travel in 2019. However, Professor Kevin Curran, senior lecturer in computer science at the University of Ulster and member of the Institute of Electrical and Electronics Engineers, reckons it's only a matter of time before one is used to assassinate a world leader. "Having six bodyguards around you has worked for 2,000 years but drones fly at incredible speeds and there's nobody in the world that could stop one armed with a tiny trace of ricin. We've got postmen in Brazil using drones to deliver parcels to communities living in mountains and Russia using them to patrol oil fields in the Arctic. We'll soon have them delivering packages and monitoring children as they go to school. Drone swarms will be able to build rope bridges and assist in search-and-rescue operations. Firms like Google and Amazon will lead the way but their range will stay the same until an alternative to lithium ion batteries is found."

Personal mobility

Electric bikes and scooters will reduce our reliance on cars in 2019, as commuters switch to last-kilometre solutions for the final portion of their journeys. Olivier van der Elst, co-founder of Dublin's GreenAer, says: "If we want smart cities, we need to be able to go from point A to B in an efficient, safe and cost-effective manner.

"In America, Uber acquired ebike rental Jump for \$174m (€151m) last year. People try ebikes and are hooked. More than 65% of our customers cover distances of 20km, but the €10,000 Stromer ST5 has a range of 100km. Electric cargo bikes are a big growth area and we are part of a trial with An Post using them for deliveries. Escooters are very popular but they need regulation. In places like Barcelona they are allowed in cycle lanes but having them on pavements here is upsetting pedestrians, who feel their space is being invaded."

Wearables

What we wear on our wrist is increasingly sophisticated. First-generation wearables counted steps and calories but the latest ones can give us the bigger picture on health. Devices such as the Habitaware Keen bracelet can help us kick bad habits, such as nail-biting. Wristbands will even tell us if we are on the verge of a heart attack. Paul Kostek, a former Nasa adviser and senior systems engineer at Bellevue's Base 2 Solutions, says: "We are going to see an evolution like we did with the smartphone. If I am diabetic, my wristband will tell me when to take insulin or monitor my heart rhythm. Google is playing with contact lenses that monitor insulin and we'll have pills with sensors to make sure people are taking their medication. There are challenges; like what happens if my insurance company is looking at my health data?"



Doyle of Dell Ireland said 5G would enable new technology
CHRIS BELLEW/ FENNEL PHOTOGRAPHY

5G

The rollout of 5G mobile networks was one of six big 2019 technology predictions highlighted at last month's Dell Technologies Forum in Dublin. The growing demands of the data-driven digital economy mean rollout of much-hyped 5G mobile networks cannot come quickly enough. As well as bringing faster speeds than existing networks, they offer increased security. Telecom firms such as Vodafone are already testing 5G technology here but it's unlikely to be commercially available until 2020. Catherine Doyle, regional sales director for Dell Ireland, said: "5G is an enabler for a lot of next-generation technologies. One of the challenges is not technology but planning permission for the devices they are going to need to eliminate latency."

VR/AR

Nearly four years after Facebook boss Mark Zuckerberg said he wanted one billion people to try VR, virtual sports events and concerts are still a long way off. While it has yet to fulfil its potential, the emergence of lightweight, tether-free headsets will be a trend in 2019. Augmented or mixed-reality headsets, such as Microsoft HoloLens, will increasingly feature in workplaces. "There is no single factor that will make VR adoption go critical mass," says Professor Gregory Welch, chair at the University of Central Florida College of Nursing. "The US military has just bought \$100m of HoloLens units which it is using for training and UAV [unmanned aerial vehicle] surveys. It is also being used to train medical professionals in childbirth. AR has been around since the 1960s and the technology is improving all the time. When the hardware can be packaged like eye glasses, I suspect people will be more comfortable, but it still lacks a killer app."

AI/Robotics

AI will not be without its challenges, chief of which is how can it save us from ourselves? When software engineers coding artificial intelligence are subject to the same prejudices as everyone else, how do we eliminate bias and discrimination? Billed as the fourth industrial revolution, advances in machine learning will lead to huge productivity increases, but our jobs are probably safe for another year. “What we are watching is the Model T of AI,” says Antonio Espingardeiro, a PhD student at the University of Salford. “AI is very narrow and task-focused but it has tremendous potential. We have an ageing population where AI-powered robots can provide better quality of life and be vehicles for human interaction. It’s important to look into the dangers but we cannot block progress.”

Blockchain

So what if your Bitcoin stash is worth next to nothing – 2019 is likely to be another huge year for the blockchain technology behind it. With data held in decentralised cloud systems, blockchain’s cryptography is attractive to business. Waterford’s Blackwater Distillery wants to use it to certify Irish whiskey against fakes. Expect wholesale uptake. “Blockchain started out as a digital ledger in a bank and has morphed into something much more than that,” says Doyle from Dell. “Initially, companies looked at it and said, ‘Gosh, what will we do with this?’ But it is being used for things people didn’t imagine at the beginning. Because the information is stored in so many places, you can be pretty sure it hasn’t been hacked.”