

SPARKS

The technology magazine dedicated to the future aspect of tech

Smart Homes: Are they worth the hype?

Reddit:
The front page
of the internet?



The Impossible Burger



Self Driving Cars:
When will they arrive in the UK?



Mechanical Keyboard:
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EDITOR'S NOTE



David Curry - Editor

Welcome to the first edition of our technology magazine. This month, we cover a wide selection of tech news, which is split into three categories: Future, Gear and Social.

In Future, we look at the current state of augmented reality (page 8), flying cars (page 13) and self-driving (page 18). I

n our Gear section this month, we take a look inside the smart home (page 25), get a rundown of how to build a mechanical keyboard (page 28) and debut our What's In Your Bag series (page 31).

For Social, we reveal the Top 10 most useful apps (page 38), take a look at alternative social media platform Reddit (page 42) and figure out if you're living in an echo chamber (page 48).

The rest of the team



Amy Chandler-Massaro
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CONTENTS

FUTURE

- 5 Future News
- 6 The Impossible Burger
- 8-10 Augmented Reality
- 11-12 Top 10 UK Startups
- 13-15 Flying Cars
- 16 Why you'll be waiting a while for 5G
- 18-21 When will Self Driving Cars arrive in the UK?

GEAR

- 22 Gear News
- 23 Foldable Phones: Pointless or Innovative?
- 24 The iPhone Battery Issue
- 25-27 What is a Smart Home?
- 28-29 How to make a Mechanical Keyboard
- 31 What's in your bag: Cinematographer
- 32 What's in your bag: Photographer
- 33 What's in your bag: Video Editor

SOCIAL

- 34 Social News
- 36-37 Facebook Algorithms: How do they work?
- 38-41 Top 10 Productivity Apps
- 42-43 Is Reddit the front page of the internet?
- 44-45 When should a child be given a smartphone?
- 46-47 App Store Villians
- 48-51 The Dangers of Deceit: Illusion Politics

FUTURE NEWS



Research conducted by Tech London Advocates has found a 23 percent deferment in London tech investments, due to the Brexit result. 60 percent of tech entrepreneurs have found it harder to attract international investment and 29 percent have said staff are worried about immigration and visa checks. London Mayor Sadiq Khan and members of the government have been imploring tech companies and entrepreneurs that London remains a tech hub, but it appears the industry is not listening.



SpaceX confirmed this week that the Crew Dragon capsule was destroyed during tests last month. The SuperDraco abort engines, designed to shoot the capsule away from danger in the event of an emergency, caused the explosion. In other space news, Blue Origin completed its 11th unmanned mission to suborbital space and back, landing the reusable rockets back in position.



Toyota will invest £75 million into early stage startups developing "distributive, robotic technologies". The venture is part of Toyota's mission to figure out what's next for the company, which is still the largest auto manufacturer by production, but has reportedly slipped behind in the self-driving race. General Motors and Ford have both spent hundreds of millions on startup acquisitions, in an effort to catch up to Google's self-driving division, Waymo and Uber.



Highways England has unveiled its self-driving dump trucks, aimed at speeding up roadworks across the UK. The trucks, developed in partnership with CA Blackwell, will be trialled on the A14 between Cambridge and Huntingdon. Deputy project director Julian Lamb said: "We're increasingly looking to technological advances to help us safely bring improvements to drivers on England's motorways and major A roads."



Huawei has received a few knocks to its 5G rollout, after the US government banned its technology. U.S. officials claim the Chinese company has embedded spying equipment into the 5G receivers, which will be utilised by the Chinese government. Germany and the UK followed suit after pressure from the U.S., but it appears the UK government has changed its mind, according to a 5G plan allegedly leaked by UK Defence Secretary Gavin Williamson. Two days before the leak, China urged the UK government to "act independently" and ignore the pressure from the US in regard to Huawei's technology.



The turn-off for many would be vegetarians is the taste of meat-free alternatives, which are typically less nutritious, drier and more processed. Impossible Foods, a startup in California, claims to have replicated the taste of meat, using science.

It launched its signature product, the Impossible Burger, three years ago, trailing it in restaurants across the United States. It improved the product at the start of the year with the launch of Impossible Burger 2.0, adding a bunch of new ingredients aimed at making the burgers even more meaty.

Impossible Foods primary goal is to reduce the amount of industrial farming, which harms the environment in a multitude of ways. As Impossible Foods mentions on its 'Mission' page, animal agriculture occupies half the land on Earth, consumes a quarter of the world's freshwater and destroys entire wildlife ecosystems with its expansion.

Inject Science into Burgers

Pat Brown, CEO of Impossible Foods, said in an interview with Re/Code: "I chose a problem where I felt like it could have the biggest positive impact on the world, and it was the use of animals in food production technology... The reason I think you don't hear much about this is that that people assume since the vast majority of the world's population love meat, and it's a very important part of their quality of life, and therefore, we're stuck. But actually, the reason we're not stuck is that the problem isn't that people love meat, it's that we've defined meat too narrowly."

"We've defined it in terms of the tech that we use today to produce it as opposed to in terms of what consumers actually value. What consumers actually value is the special kind of deliciousness they get from meat, the

The meatless burgers changing meat-eaters minds

nutritional value, protein and iron and stuff like that, and the affordability and convenience. But it turns out they love it not because it is made using animals, it's in spite of the fact that we use animals to make it."

To match the meaty flavour, Impossible Foods select specific proteins and nutrients from plants that have similar molecular biology to meat. In the case of the Impossible Burger, the scientists use the iron-containing compound Heme from the Soy plant root, insert it into genetically engineered yeast and let it ferment. From there, it binds it with methylcellulose, a binder used for sauces and jams to make them easier to handle.

Jake Sanchez, who tried an Impossible Burger out at Bareburger in New York,

"It turns out they don't love meat because it is made using animals, but in spite of the fact that we use animals to make it"

said: "I tried the burger in 2016 when it first came on the menu and wasn't that impressed. But I went back in February this year, when the 'new recipe' had just launched, and it tasted a lot more like meat. I'm a big burger eater, and most of the 'meat-free' burgers I've tried taste like crap. This is the best one of the lot."

Impossible Foods business is primarily through select restaurants, but a new partnership with Burger King, announced on April 2, 2019, will see a major expansion in the company's reach. Burger King rolled out the meat-free Whopper in St Louis, Missouri, but intends to branch out nationwide, then worldwide if successful. It may be a while

before it comes to the UK or EU however, due to Impossible Foods genetically modifying soy grain.

While Impossible Foods has led the charge of meat-free alternatives that have the characteristics of meat, there are a few notable players in the UK market. The NoBull Burger launched in Iceland last year, which quickly became Iceland's fastest selling product of the summer.

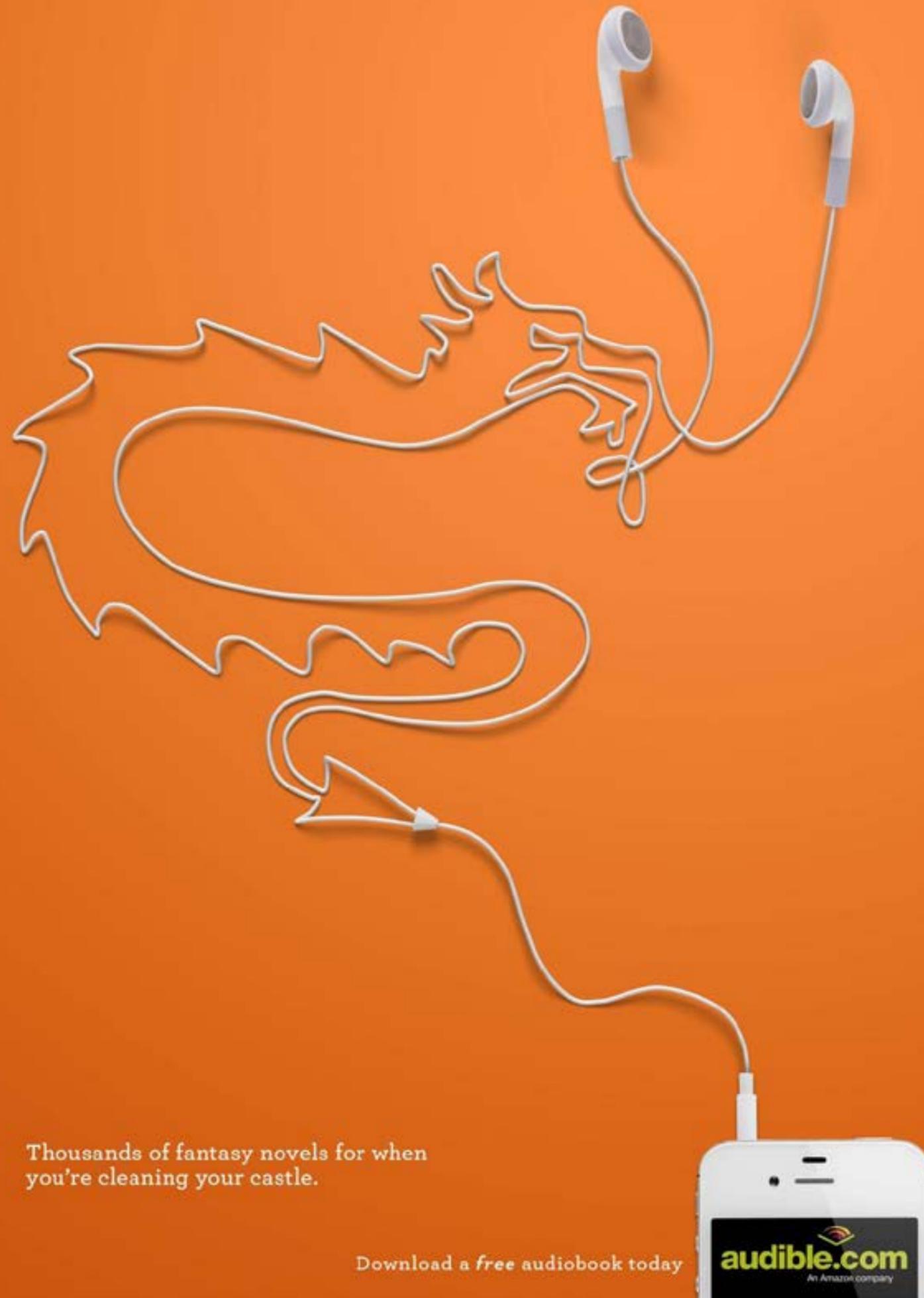


ABOVE: TESCO Beyond Burger sold out when first stocked

Instead of using science, NoBull is focused on using ingredients you could pick up from the store to make its burgers. NoBull Burger founder Crissanne Raymond said: "Other veggie burgers are labelled vegetarian, but are full of oils, fillers, additives, and unpronounceable things, and they taste like cardboard. With ours, you could go to the grocery store and buy our ingredients. Your grandma would know what they are."

Tesco also announced last year it would start stocking the Beyond Burger in 350 stores. It has since expanded, and the burger is available fresh or frozen in most stores across the UK. Beyond Beef, the company behind the burger, has been working since 2009 on meat-free alternatives, and also produces chicken and pork sausage alternatives.

While vegetarian substitutes have been around for a while, a lot have not stacked up in taste, texture or cost against the meat competition. That is, slowly, starting to change, and we are starting to see a lot more meat eaters move to a flexitarian or vegetarian diet. With 43 percent of UK citizens saying they would like to reduce meat intake, it looks like the perfect time for more 'meat-like' products to hit the market.



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Blending Virtual With Reality



Our interaction with augmented reality (AR) has so far been limited to Snapchat filters and Pokémon Go, but the future promises interactions so immersive it'll be hard to tell the virtual world from reality.

Apple CEO Tim Cook has said a few times that AR is the future of the iPhone. In a conference call late last year, he said: "Simply put, we believe augmented reality is going to change the way we use technology forever. We're already seeing things that will transform the way you work, play, connect and learn."

Apple has not been this adamant of the future since the launch of the iPhone, and it's not the only major company investing millions into what they see as the future of computing. Google, Facebook and Microsoft all have their own AR operations, of varying size, aimed at developing the hardware, software and services for this emerging platform.

But what will this future look like? We are already seeing the issues with constant mobile use, what happens when the smartphone becomes your vision, constantly notifying and updating you on everything in your online world. Will we be able to shut off? And will we want to?

The Glassholes

Google Glass kickstarted the augmented reality craze. In a video posted in 2012, Google previewed a day with the glasses, which included answering texts and calls, viewing 3D maps and directions and video calling. At the time, this was seen as revolutionary if Google could pull it off – sadly, they didn't. Google launched the 'Explorer' edition of Glass for \$1,500 (£990 UK in 2013) a year later, and it failed to live up to the hype, receiving criticism for its garish design and creepy privacy issues. Bars started banning people in California from wearing Glass and people who wore them were referred to as Glassholes. Google soon pulled the plug on the consumer side.

"Google Glass is a breakthrough concept, but it involves wearing a camera on your face, saying things like "OK, Google," out loud, and walking around like it's cool to do those things in public," said technology marketer Dan Kaplan at the time.

The retreat from Google caused a bit of development stagnation. The hype leading up to the launch of Glass led to rumours of Apple, Samsung and other technology companies were developing AR glasses. The future was upon us, but as it happens, the people weren't ready for it.

Things have progressed significantly in the past four years however, carried by the use of augmented reality on the smartphone. Photo filters, animations and games that use the real-world environment have exploded in popularity, leading to a resurgence of interest in AR glasses.

In 2016, Microsoft unveiled HoloLens, a \$3,000 (£2,100 in 2016) headset for developers that want to build augmented reality applications. Instead of marketing it as a smartphone alternative, Microsoft envisions HoloLens as the future of the desktop computer. It is built on the Windows 10 platform, and Microsoft has made all of its major apps – Office, Skype and Minecraft – available on the platform.

HoloLens received a lot less backlash, partly because Microsoft marketed it directly to developers, partly because over the three years AR became a more familiar platform. Talking to phones has become a lot less weird as well, with the proliferation of smart speakers like Amazon Echo and the improvements to Google Assistant and Siri.

Microsoft announced a second version of HoloLens a month ago at Mobile World Congress in Barcelona. It is still marketed at developers and costs \$3,500 (£2,600).

"Google Glass is a breakthrough product, but it involves saying 'OK Google' out loud and walking round like that's cool"

The support for HoloLens has inspired many startups to build augmented reality glasses for the enterprise market. Companies like Spatial, ThirdEye, Epson and Vuzix are just a few of the brands that have launched AR glasses and platforms in the past few years, designed specifically for professionals. Google Glass has found a second life as enterprise glasses; used by DHL for logistics, General Electric for manufacturing and AugMedix for healthcare.

Augmented reality for non-enterprise is a less established, but showing promise. Leading the pack is Magic Leap, a startup that has created a lot of hype since its first YouTube video in 2014. It launched Magic Leap One, its first developer model, for \$2,295 (£1,750) in January this year. Many were disappointed with the first edition, as Magic Leap had promised a lot of features that weren't added.



Google Glass (2013)
£1,000



Microsoft HoloLens (2016) £2,100



Snapchat Spectacles (2018) £200



Magic Leap One (2019) £1,750



FOCALS: North's £450 smart glasses

One of those unexcited by Magic Leap's technology was Oculus co-founder Palmer Luckey, who said: "Unfortunately, their current offering is a tragedy in the classical sense, even more so when you consider how their massive funding and carefully crafted hype sucked all the air out of the room in the AR space. It is less of a functional developer kit and more of a flashy hype vehicle that almost nobody can actually use in a meaningful way, and many of their design decisions seem to be driven by that reality. It does not deliver on almost any of the promises that allowed them to monopolize funding in the AR investment community."

A few months after Microsoft announced HoloLens, Snapchat unveiled Spectacles. Unlike Google and Microsoft gargantuan attempts to build the operating system of the future, Spectacles were built for a singular purpose: Snapchat. The £200 glasses are able to take photos and shoot short video and upload it to Snapchat, similar to the smartphone. While they haven't broke into the mainstream, it seems Snapchat is fine with the small adoption numbers. It launched a second version in 2018 with different styles and made the glasses available through Amazon and other retailers.

The two major players missing from the AR conversation are Apple and Facebook. While both have boasted about the importance of AR, neither have launched their own hardware, although both have platforms for building AR applications. Facebook has said it is building AR glasses, possibly utilising the Oculus brand and hardware expertise, but has not given any details on the release date and features. Apple has remained elusive as ever, although we expect it will announce something this year or 2020.

The Future of AR

All signs point to AR having a profound impact on computing. It is already shaping the future of many industries: in car assembly, workers can see the specific tool required and view a tutorial on how to attach a part; in healthcare, a doctor is able to examine a 3D model of the patient to formulate more appropriate treatments. But workers hand in all equipment at the end of

their shift – what happens when augmented reality is 24/7, like our smartphones today?

The same privacy issues that marred Google Glass need to be solved before we see widescale adoption. The ability to record another person without them knowing can be easily fixed through red lights and flash, making it as obvious as someone recording from a phone, but the trouble what the person sees in the mixed reality world. In this age of user-created content, we may see people create content for AR that is not safe for the outdoors. Extreme adult content, racism and virtual graffiti on landmarks could all damage AR's reputation, making it undesirable for a large section of potential buyers.

TechCrunch contributor Cyan Bannister said: "AR could be used to create a digital doppelganger of someone doing something compromising or illegal. AR might also be used to add indelible graffiti to a house, business, sign, product, or art exhibit, raising some serious property concerns."

"AR could be used to create a digital doppelganger of someone doing something illegal"

Facial recognition technology is already incredibly accurate - as shown in - and artificial intelligence makes it a lot easier to identify people on the streets.

Fiona J McEvoy of YouTheData.com said: "The free-to-download Blippar app already boasts how it can harness facial recognition and artificial intelligence tools, allowing us to use our smartphones to unlock information about the world around us. At present, they encourage us to look-up gossip about famous faces, but there a very real prospect of AR identifying individuals in the street. If this information can be cross-referenced with other available



ABOVE: A preview of Google Glass 2.0, showing a cyclist directions

records, then AR could blow holes through personal anonymity in public places."

There's also the worry that as we import more virtual objects into our own world, we lose focus of where we are and what we are doing. If a driver is wearing AR glasses, are they more at risk of an accident, even if the overlay is minimal? Studies suggest AR objects win in a battle of attention against real world objects.

Once AR becomes commonplace, people may also struggle to differentiate virtual from reality - especially if, as with Gen X and smartphones, the next generation are introduced to the platform from an early age. Reality manipulation can come in many forms: swapping a shop open sign to closed, splicing a road closed sign on your commute home, setting the roof of a tower block on fire, which is why AR app store admins will need to keep a close eye on apps and games uploaded.

Commentators say standardisation and rules are necessary before AR is adopted by mainstream customers. Without it, newbies may find the technology too difficult to use. The development of operating systems, software programs and more recently app stores that lower the barriers to entry have catapulted a device type (PCs, smartphones) or platform (Windows, Android) into the mainstream, the same needs to be done for AR.

This may take five or ten years to arrive, until then expect to see more developer editions and low-power, mobile friendly glasses, like Snapchat's Spectacles, which offer a limited AR experience.



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16K TELEVISION



THE FUTURE OF CINEMA?

For the past 125 years, cinemas have used projectors to display movies, but this may soon change. At the National Association of Broadcasters (NAB) trade show in Las Vegas, Sony announced a 63-foot wide, 16K resolution television. The gigantic TV is currently being installed in a research centre in Yokohama, south Tokyo. Standard cinema screens range from 45-feet to 65-feet, with some IMAX screens reaching up to 72-feet wide and 98-feet tall. Sony's TV sits comfortably in that range, and could be the next upgrade we see to cinemas. 4K TVs are available for under £1,000 now and almost all electronics retailers have one in stock, but 8K, the next generation, is still in development. It may take a few years before 8K TVs are the same price, and we suspect 16K will not be ready for home TVs till at least 2025.

That said, the technology may

come to select cinemas earlier, especially if Sony, which owns Sony Pictures, wants to push 16K TVs as the future of cinema.

Consultancy strategist David

"We're moving slowly towards 8K TVs at the end of the decade and who knows how long it will take to get beyond that, so 16K is likely to be limited to the corporate world for the time being."

Mercer said: "We're moving slowly towards 8K TVs at the end of the decade and who knows how long it will take to get beyond that, so 16K is likely to be limited to the corporate world for the time being. "But there's no doubt about it. These displays are incredibly impressive in person - even 8K on a

big display is almost mesmerising. "When you get to this resolution it delivers almost a quasi-virtual reality experience as your eyes perceive there to be depth to the content."

There are many reasons why a TV screen of equal size would outperform a projector. In 2017, Samsung premiered a 4K cinema TV, which it claimed was far superior in quality to a typical projector. Drew Blake, who attended the preview demonstration at The Orleans Hotel & Casino in 2017, said: "Samsung's Cinema Screen, while rather bright compared to a cinema projector, delivered an amazing picture quality... This could definitely be the future of cinema."

If that's what can be achieved with a 4K display, we suspect a 16K TV, with a few years development, will be far superior to any IMAX projector.



How Far Away Are Flying Cars?

News that ministers are looking to change the existing rules regarding flying cars may be interpreted as a positive sign for the industry, however, there is still an enormous amount of work to be done before this technology becomes a reality for everyone. We take a look at the challenges and barriers that will need to be overcome in the next few years, if this project is to ever get off the ground.

The flying car may be more synonymous with science fiction than any other technology currently in development. Books and comics dating back before the Second World War saw it as the future, but until very recently it seemed too monumental a task to pull off.

In the past five years, several major aerospace and technology companies, alongside start-ups in the United States, Europe and China, have begun testing vertical take-off and landing (VTOL) vehicles. These tests have shown the potential of flying cars as a future for transport, which may alleviate many of the congestion problems plaguing major cities.

There isn't much consensus on what a flying car should look like, some look like larger drones, others like cars with propellers and then there's companies like Bell and Boeing, which appear to

be modifying the helicopter framework. Some want the flying car to work on roads and in the air, while others are building strictly for air travel. Most are aiming for 100 percent electric, although some see hybrid as a necessary mid-point, if we want flying cars before 2030.

Due to the progress made by developers of self-driving car technology, flying car manufacturers have started to look into whether they can add similar systems. However, it is not seen as a starting point for many manufacturers, which aim to implement it in later models.

While the actual technology is progressing quite well, there is still a mountain to climb when it comes to regulations and rules. Manufacturers and advocates for flying cars see it as a new form of transport that everyone can use, which could be as popular as taxis

or metro services. For that to happen, there needs to be a willingness from governments to introduce regulations, allow multiple providers to work and not segment the technology off to people with a specific license or skillset.

"Flying autonomous vehicle technology is developing rapidly, but it's likely to be more disruptive than transformational. High costs, safety concerns and regulatory burdens are likely to limit the use of this overhyped technology," said Michael Ramsay and Kimberley Harris-Ferrante for Gartner.

There is a worry that flying cars will essentially become tools for the wealthy to get around, costing millions to own and maintain. While the tech companies are clearly looking for this technology to be more readily available to all parts of society, it may take them a few decades before that is the case.

Ilya Pozin of Pluto TV said: "Such visionary predictions tend to overlook the fact that our cities, infrastructure, and general social lives aren't quite ready for a Back to the Future Part II souped-up DeLorean. Certainly, some flying cars may be available on the market for one-percenters with deep pockets and a need for expensive playthings. For most people, though, the plane-car hybrid will remain a futuristic fantasy item for the foreseeable future."

That is a rather downbeat assessment however, compared to MIT Technology Review editor, Gideon Lichfield, who said: "Is that plausible? Assuming a big leap in battery capacity, the biggest hurdle is likely to be regulatory. If flying cars are licensed and flown under the same rules as other aircraft, they could start to appear in a few places pretty soon, but managing large numbers of them will require a whole new approach to air traffic management,"

these flying cars are in real-time.

These flying car trips may cost the same as a typical taxi fare, according to Uber, Bell and Airbus. Due to most of the machines being built to run on 100 percent electricity and eventually autonomous technology, it removes a lot of the cost of running of the machines, especially if some type of renewable energy source is attached, like solar panels.

In a study published recently in Nature, Akshat Kasliwal and other researchers at the Ford Motor Company provide evidence that flying cars may also be more reduce emissions, by reducing the amount of flights taken and cars on the road. They even argued that flying cars could be more efficient than self-driving and other forms of public transport, although this did come with a caveat: "despite certain sustainability benefits of VTOLs, their



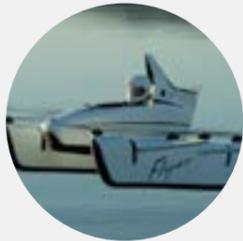
NEXUS: Bell debuts its flying car at CES 2018

feasibility as a future transportation option depends on advances beyond those of a technical nature, including regulation, consumer, and societal acceptance of aerial transport in urban areas."

Compared to many other new forms of transport – self-driving cars, pods, Hyperloop, super-fast rail, electric bikes and scooters – flying cars are the most inventive, but also the most difficult to implement on a large scale. The recent issues with drones flying over Heathrow Airport, which brought the airport to a standstill for days, is testament to how unprepared we are for thousands of small, single passenger vehicles.

We are already seeing some of the technological and ethical issues with self-driving cars, which are a lot less demanding than flying cars. Without full automation, it's hard to see how flying cars will ever be more than an infrequently used form of transport, as the costs of hiring a qualified pilot and regulating the airspace would be too costly.

The Six Major Players in the Flying Car Industry



Kitty Hawk – Google co-founder and Alphabet CEO Larry Page has invested millions into secretive flying car startup Kitty Hawk, which is run by Sebastian Thrun, an ex-Google employee responsible for the development of the company's self-driving car.



Airbus – European aerospace company Airbus has begun work on an autonomous single-person VTOL. It has also started work on a flying taxi service, called CityAirbus, which people would be able to book similar to Uber.



Boeing – The other major aerospace company, Boeing, is also building an autonomous flying car, with a similar taxi-service. The air taxi recently completed a sixty second flight, the first since Boeing unveiled it.



EHang – Chinese drone company Ehang has developed a single passenger drone. It unveiled the drone at the Consumer Electronics Show in 2016 and intends to have it in the air as soon as federal regulations are lifted. The drone can fly over 11,000 feet and has a cruise speed of 62 mph.



Bell – Transportation giant Uber has partnered with Bell to add autonomous flying cars to its transportation network. The company said it will launch the electric VTOL aircraft by the mid-2020s in major cities.



Volocopter – German-based Volocopter has built an 18-rotor VTOL machine capable of transporting people across the city. It is building an air taxi service, which would allow people in New York and other condensed cities to take trips from rooftop to rooftop.

Flying Taxis

Once flying cars are capable of completing multiple trips, companies envision a taxi service that would pick riders up from the top of buildings. This would work well in densely packed megacities like New York and Hong Kong, where hundreds of thousands of people work everyday in skyscrapers. To avoid regulatory issues, some are aiming to provide only a few routes in city centres, instead of ferrying riders to any location. This way, the government or city planners will have a better understanding of where

"The biggest hurdle is likely to be regulatory. Managing large numbers of flying cars will require a new approach to air traffic management"



Kitty Hawk: How close are we to the Jetson's future?

Why you're going to be waiting a while for 5G

Mobile networking has come a long way since the days of 3G. Service is available in far more places, you can stream movies (if you have enough data allowance) and reply to messages in milliseconds. Still, there is a gulf in difference between super-fast home fibre and 4G LTE speeds and thick walls still seem impenetrable. That's where 5G comes in.

5G - not to be confused with 5Ghz, the broadband frequency you may see on your home router - is the next step for mobile networking. Networking firms, standards organisations and mobile operators have been collaborating over the past few years, trying to figure out the exact definition of this new standard and its capabilities.

While not set in stone, the 3rd Generation Partnership Project published Phase 1 of the 5G standardisation in 2018. We can expect carriers in the North America, Europe and South-East Asia to begin providing the first "5G" service later this year, although this will not be true 5G. It will run on the 4G LTE infrastructure that has been in place for nearly a decade, and it is unlikely to be much of a boost to network speeds or latency.

Is That True 5G?

Carriers in the United States have already started labelling their service as 5GE, although as many have pointed out on the web, this is a sham of an upgrade. The reason is this "5G" rollout is simply a prerequisite to standalone mode - the true upgrade - which will be deployed by network providers in the coming years.

As Chris Hoffman of HowToGeek said: "Real 5G is the actual fifth generation wireless standard the industry is working on right now. It requires new hardware radios that support 5G, and it won't work with existing phones. There's no chance of your current phone getting a software update to support 5G."

Real 5G is still a few years away, although network operators like Huawei, Nokia and Ericsson are already promising major breakthroughs in mobile networking.

President of Huawei router & carrier division, Jeffrey Gao, said: "5G will meet the needs of both individuals and vertical industries, and support new services such as virtual reality, private lines and connected vehicles. Future

5G network architecture will be built upon data centers. Therefore, upstream and downstream industry players must seize the opportunities presented by 5G development. Together, we will work to ensure high availability and non-blocking physical networks that support deterministic low latency, on-demand services."



5G: Huawei's Jeffrey Gao introduces the company's 5G routers

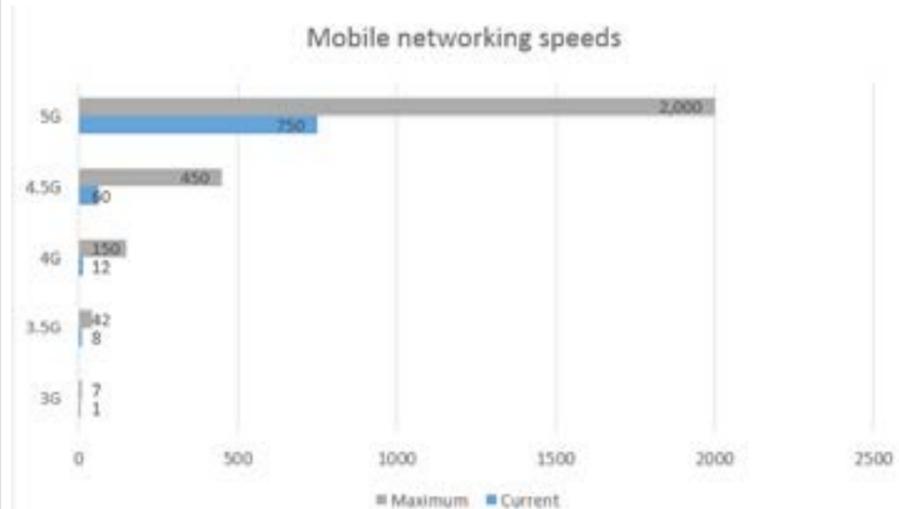
"5G will enable the proliferation of future technology, including self-driving cars, virtual reality gaming and small Internet of Things devices for agriculture and construction"

What's difficult for the people working on 5G is the more heavily demanding tech is being added into the ecosystem, and future networking infrastructure needs to be able to handle these applications. Self-driving cars may need 5G for vehicle-to-vehicle communication, which would require extreme low latency. If virtual reality gaming takes off, that will require a lot

more bandwidth than a PS4. Many of the industries that remain in the 20th century, like farming and construction, may come online with the use of Internet of Things (IoT) devices and augmented reality eyewear - these will both require advanced networking.

So when will we see true 5G? It's difficult to say, although we expect standards to be fully ratified before 2020. Once that is completed, it should only be a few years, depending on how eager network operators and others in the chain are to upgrade to 5G. One potential roadblock is the current ban on Huawei by the United States, which Germany and the UK are now following. Huawei is a networking leader and this ban may stagger the rollout, if Nokia, Ericsson and other networking companies are unable to supply network carriers.

For a lot of people living in the UK, when 5G does arrive, it is likely to be staggered. So, while London and other major cities may get 5G before 2022, it may take another seven years for people living in small towns and villages to receive anywhere near the same service. And it is unlikely that the 5G we receive will be anywhere near the hypothetical speeds presented by the industry, as was the case with 3.5G and 4G.



ABOVE: Graph shows the maximum theoretical speeds of each network technology, alongside the speed normally obtained. 5G current speeds are taken from real-world testing.



PRESS TO HEAR THE MOTOR START



SELF-DRIVING CARS

The self-driving revolution is already well underway with public trials in the United States, but how long will it take to move from Silicon Valley to the towns and cities of the United Kingdom?

In the past few months, a wide range of tech companies, car manufacturers, analysts and governments have said that self-driving cars should be road ready within the next three to eight years.

2020 is the year most car manufacturers aim to launch the first 'driverless' vehicles, which will almost certainly be limited to motorways. Executives at Ford, Toyota, Renault-Nissan, Volvo and Fiat Chrysler all have 2020-21 targeted for the launch of the first vehicles.

While this sounds impressive, a computer operating a vehicle on a motorway is not revolutionary. Today's cars already have systems in place to automatically emergency break, and adaptive cruise control systems, like Tesla's Autopilot, already operate on motorways in Europe and the US.

Jaguar Land Rover global technology and innovation press officer, Imogen Pierce, said: "If the question is will fully driverless tech be possible by 2021 the answer is yes - it already is capable on public roads. If the question is will businesses or individuals be able to use it - the answer is almost certainly not."

The real breakthrough comes when driverless vehicles are able to operate in urban environments, which have a much denser volume of information that a car needs to parse in milliseconds. Compared to motorways, which consist of cars, road signs and little else, an urban environment can have hundreds of objects that may or may not require action.

How far are we from a fully automated vehicle driving through a city centre? It's difficult to say, since there still appears to be conflict on exactly what a driverless vehicle needs to work properly.

Telecommunication equipment manufacturers Nokia and Ericsson both believe 5G is a necessity for self-driving, as the car will need constant updates on weather, road conditions and accidents, alongside real-time communication with other cars.

Deploying a 5G network across the entire country may take upwards of 10 years, as there still isn't consensus on the 5G standard.

Some network operators see the evolution as a simple upgrade to speed and density, while others are looking at 5G to be a revolutionary stepping stone in mobile networking, the enabler of drone delivery services, immersive virtual reality and intelligent smart homes.

Is 5G Necessary?

Not everyone is sold on the necessity of 5G for driverless vehicles. In a tweet, Andreesen Horowitz analyst Benedict Evans said the only people who believe 5G is relevant are those working on the networking standard. Most driverless vehicles currently perform almost all computation inside the vehicle, utilising high-end GPUs used in data centres and Bitcoin mines.

Most new cars come with some form of vehicle-to-vehicle communication, sending updates on crashes, congestion and road conditions. The cars use unlicensed spectrum adapted for moving vehicles. This system could, in theory, be improved to allow communication between driverless cars in near real-time, removing the need for a 5G network. Volvo recently announced an autonomous car communication standard, 360c, which would indicate the car's intention to human drivers.

There's also Lidar, a primary sensor on most self-driving vehicles

that measures the distance to a target using lasers. Tesla CEO Elon Musk has said a few times that Lidar is not necessary for driverless vehicles, seeing it as a crutch. Lidar is currently one of the most expensive parts on a self-driving car, costing upwards of £35,000, making it difficult for driverless cars to achieve cost efficiency.

"A wealth of factors are not in place and it's difficult to say when they will be"

Even if these internal issues get sorted, driverless vehicles have a whirlwind of other issues to resolve. Pierce said: "The supporting infrastructure, public opinion, legislation, insurance and a wealth of other factors are not in place and it's difficult to say when they will be."

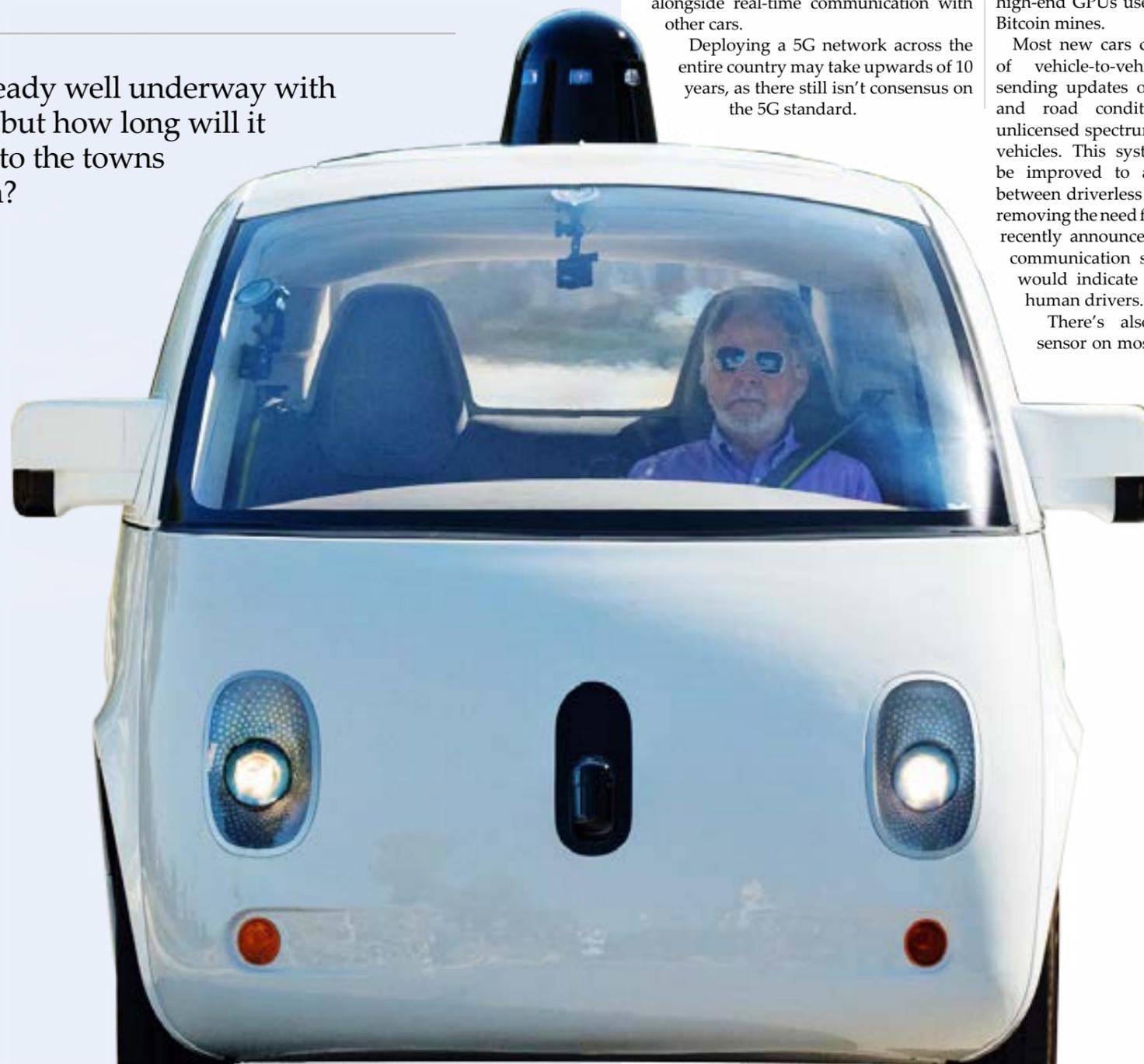
Public opinion on driverless vehicles has plummeted in the past 12 months, after several self-driving fatalities made international news. Uber's fatality in Arizona forced the company to halt its self-driving operation, and several US states that were previously open to self-driving tests have added additional safeguards to avoid further fatalities.

Only 19 percent of people surveyed by information management company OpenText said they would be comfortable riding in a driverless vehicle, down from 24 percent in a similar survey conducted last year. This is a worrying trend for the driverless industry, although some analysts suggest that increased exposure to self-driving cars, likely to occur in the next five years, will improve public confidence.

The UK government has not shown any apprehension to driverless technology, investing heavily into start-ups and programs through the Centre for Connected and Autonomous Vehicles. Pierce said: "There are a tonne of initiatives - Midlands CAV testbed, UKAutodrive, UKCITE and L3 Pilot, delivered through the Government's Centre for Connected and Autonomous Vehicles and the European Commission that are helping to bring industries and academia together to approach this multi-faceted challenge holistically."

An infographic published by Statista pegged the UK fifth in 'countries most prepared for autonomous vehicles', ahead of Germany, France and South Korea.

While the UK does not have any major auto manufacturers and lacks the technology powerhouses of the US, it has fielded some innovative self-driving start-ups. Oxbotica, a spin-out of the Oxford University, has developed autonomous pods for Gatwick Airport and is trialling self-driving delivery vans with Ocado.



WAYMO: Google's fully autonomous test vehicle, Firefly



2012: Google CEO Larry Page, co-founder Sergey Brin and chairman Eric Schmidt celebrate the company's first self-driving vehicle, a modified Toyota Prius.

May 2014: Google unveils the next generation of its driverless technology. The new vehicle, codenamed Firefly, came without a steering wheel, gas or brake pedal.

Sep 2014: Tesla announces AutoPilot, a semi-autonomous technology fitted into all new vehicles. Tesla CEO Elon Musk predicts self-driving will surpass humans in five years.

March 2016: General Motors, the third largest car manufacturer, acquires self-driving startup Cruise Automation for between £450 and £850 million.

Sep 2016: Mobile taxi giant Uber begins trials of its self-driving technology in Pittsburgh, Pennsylvania. The company aims to have self-driving taxis in cities by 2020.

Dec 2016: In a corporate restructure, Google's self-driving division is rebranded as Waymo. Analysts estimate this division alone could be worth £55 billion.

March 2017: Jim Hackett is named CEO of Ford, was previously the company's Smart Mobility director. Ford spends \$1 billion to be main shareholder of Argo AI; aims to have self-driving car by 2021.

CES 2018: Dozens of automakers preview self-driving technology at the annual Consumer Electronics Show in Las Vegas. Most signal 2021 as the year for self-driving.

Graeme Smith, CEO of Oxbotica, said: "We are confident of initial pilot implementations starting in 2021 and expect the beginnings of commercial service by 2022 in well-defined geofenced areas that will then grow over the following years. We are fully confident of our ability to deliver on this ambitious target and we look forward to deploying this service to London's roads."

Another UK start-up, Five AI, is also showing potential. It will begin trials of its driverless technology in Bromley and Croydon next year, which will ferry members of the public around the two boroughs.

Google in Europe

The expansion of Google's self-driving division, Waymo, to Europe looms over the rest of the industry. In June, Waymo CEO John Krafcik confirmed plans to launch in Europe under a different brand name, potentially in partnership with a car manufacturer.

Most experts agree that Waymo's self-driving tech is far ahead of all other competitors. Not only has it put more real-world miles in than any other company, it also runs advanced simulations, clocking billions of miles into the system. If it were to enter Europe, that may expedite the arrival of driverless vehicles in the UK, as London would most likely be one of the first trial cities.

Waymo, alongside most other self-driving companies, see the driverless future as a close reality. Krafcik has already ruled out any semi-autonomous technology, which would allow the driver to set the car on auto and take control when action is needed. Ford has also ruled out this midway option, after engineers trialling the technology were found asleep at the wheel.

Other car manufacturers seem convinced that a compromise is needed while humans are still allowed to drive. There has been a lot of debate over the ethics of allowing a machine to make critical decisions on the road, decisions that could be fatal. The trolley problem has inevitably been used, asking whether a machine would kill the passenger or run over 10 pedestrians.

What people fail to see is that over 90 percent of all deaths on the road are caused by human error, whether it's not paying attention, failing to indicate or falling asleep at the wheel. It may seem scary to let the machine take over control, but if it reduces fatalities on the road by 90 percent, that could save over 700 people's lives every year in the UK.

Pierce said: "The truth is, we cannot code for every situation or hypothetical, such as the "fridge from a bridge" example. There is no ethics requirement from a human driving test today; so are we obligated to tackle these dilemmas? If

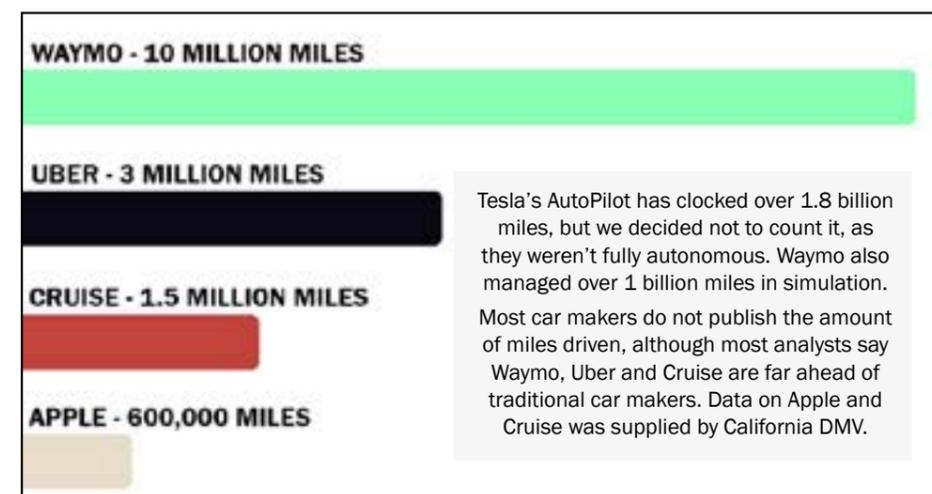
we do, are we making a concerted decision which otherwise would have been left to judgement and instinct?"

"We cannot code for every hypothetical. There is no ethics test for a human driving today; so are we obligated to tackle these dilemmas?"

As we move from human to robot, Credit Suisse predicts a massive reduction in the number of cars sold. We are already seeing the outline of how self-driving cars will be commercialised, using apps like Uber and Lyft, which will cost significantly less once the driver is not a factor. There will be some form of car



ABOVE: Oxbotica's autonomous trial vehicle, tested in Milton Keynes and London with Ocado



Tesla's AutoPilot has clocked over 1.8 billion miles, but we decided not to count it, as they weren't fully autonomous. Waymo also managed over 1 billion miles in simulation. Most car makers do not publish the amount of miles driven, although most analysts say Waymo, Uber and Cruise are far ahead of traditional car makers. Data on Apple and Cruise was supplied by California DMV.

for those who always require a car, but for most people, the remarkably cheap taxi service will suffice.

Ownerless Future

The change in ownership will also have an effect on the car insurance industry. Instead of the owner paying, the company operating the car are most likely to cover it, with the insurance changing every-time a new passenger enters. For those who still want to drive, insurance prices will skyrocket, once it becomes clear that humans are the significant risk factor.

With a heavy reduction in taxi fares, there is a worry that congestion will become even more ridiculous in major cities. If the cost of riding in an Uber becomes similar to a metro fare, we are sure to see more people choose the clean, quiet back seat of a Skoda Octavia instead of the dingy, underfunded public transport services.

Graeme sees working with local authorities as a key element in ensuring autonomous vehicles don't add to congestion. "Autonomous vehicles have

the potential to not only improve road safety, but also to reduce congestion, pollution and emissions. By working with local authorities, we are able to implement a service that addresses local mobility needs and that integrates with local transportation services without adding to the traffic burden."

"Driverless vehicles have the potential to not only improve road safety, but reduce congestion, pollution and emissions"

It won't just be the roads clogged with autonomous machines, as several start-ups are working on autonomous pods that ride on the path. Some are designed to transport people, like Fusion Processing's all-electric Cavstar, while others deliver goods. It's not hard to see a future where, instead of drones, a small Amazon pod

sits patiently at your door, waiting for you to scan a QR code and take the parcel.

Amazon is reportedly working on driverless delivery vehicles, although these will most likely be long-haul trucks, not small pods.

It is easy to become enveloped by all the news and commentary and believe self-driving is right around the corner. Evans said: "Very few people in the field expect full, 'Level 5' autonomy within the next five years and most tend closer to ten years."

To some, that is still an ambitious time-frame. We haven't fully realised how autonomous vehicles will change our society.

It will remove around 1.6 million from their jobs as taxi, lorry, delivery and bus drivers, and it is not clear how the technology will create new jobs for them, as technology has done in past generations. It will potentially free up hours of people's time every-day, which tech companies believe will spur creativity, but will most likely increase the consumption of Netflix and YouTube as people commute to work.

The thing about technology is it has a way of creeping up on you, changing you, and indirectly harming people in the process. I was too young to realise, but when I moved from my Walkman to the iPhone 3GS, it changed how I interacted with technology. All of a sudden, I spent hours on my phone instead of minutes. A similar thing happened when my parents bought me a PS2. I've never taken a taxi since my first Uber. There's a Morrisons ten minutes away yet I pay the £2.50 delivery charge to have it delivered to my door.

When I click on the Waymo app and get in the front seat, how will that change my day-to-day, and who am I hurting by making that choice?

GEAR NEWS

1 Security labels for smart home devices:

Smart TVs and other smart devices could be made to carry labels informing users how safe they would be from cyber attacks. These new labels, announced by the government, would initially help customers understand which products are most secure while choosing which one to buy. The government's plan is to eventually make these labels mandatory, meaning retailers would only be able to stock products that them. This scheme is part of a wider government consultation, which aims to improve general cyber security in the UK. To find out more about smart homes, turn to page 25.



2 World's cheapest and smallest DSLR invented by Canon:

The EOS 250D/Rebel SL3 is an improvement on Canon's existing EOS 200D/Rebel SL2, with even better features. The new DIGIC 8 processor includes 4K video capability, which is a first for a beginner camera in this price range. It has a Dual Pixel CMOS autofocus, which makes the vari-angle touchscreen display even more effective for composing photos and videos. It even offers an incredible 3,975 user-selectable focus points across the whole screen in live view mode, allowing the user to easily control the camera. It's one of the smallest and lightest DSLRs on the market with a moveable screen, and it retails at £529.99 for the body.



3 Index VR headset revealed by Valve

Valve, an American video game developer, has unveiled its new Index VR headset - with a new version of the SteamVR kit. The Index offers high-fidelity virtual reality, which includes a headset, headphones, two controllers, two base stations and all the cables and chargers necessary. Reviews of the hardware have been largely positive, praising its display, design and comfort. The Value Index is currently available for pre-order on the Steam Store, costing £919 and limited availability in the U.S. and continental Europe.



4 iPhone XI rumours:

Apple is reportedly five months away from unveiling its newest smartphone, and it is suggested that it will keep the same design as the previous two models. This includes the notch at the top of the screen where the front camera is located, a stainless steel band around the base and an edge-to-edge 5.8 inch and 6.5 inch screen sizes. Apple has managed to achieve something relatively new with this model, rumours suggest it has eradicated the bump from the camera. This means the iPhone will be a little thicker than its predecessors, but will be the first one since the iPhone SE with a flat back.



5 First foldable phones revealed:

The first foldable phone was showcased in February 2019 by Samsung, and since then Huawei, Oppo, LG and Sony have all announced that they are also developing models. These foldable phones vary model to model; some with a larger tablet screen on the inside of the device, others have the screen wrapped around the outside.

Samsung's Infinity Flex foldable phone was released to the public on May 3, but the device has been recalled. This is because although users were told not to remove the protective screen film under any circumstances, some still did. If you want to read more about foldable phones, take a peak at page 23.



FOLDABLE PHONES



POINTLESS OR INNOVATIVE?

When I hear 'foldable phones', I immediately envision an old Nokia flip phone from the nineties. This is not quite the type of phone that has just been released.

In February 2019, Huawei and Samsung separately unveiled their latest projects – foldable phones.

Both phones were shown off at Mobile World Congress in Barcelona, an annual mobile event. Samsung unveiled the Galaxy Fold days before Huawei showed off the Mate X.

Max Parker of Trusted Reviews said: "Samsung struggled to make a strong case for [foldable phones] with the Galaxy Fold, with that device seemingly sacrificing a decent phone experience to achieve the new design. With the Mate X that doesn't seem to be an issue and this looks like it'll be fantastic whether it's folded down into a phone or unfurled into a tablet."

The Samsung Galaxy Fold (pictured above) cost £1,799. The foldable screen allegedly can be opened 200,000 times before the hinge mechanism breaks.

This equates to folding and unfolding your phone more than 100 times a day for five years, which is pretty long-life considering some of the current phones on the market.

This phone has been a decade in the making, and will release to the general public on 26th April in the U.S. and 3rd May in Europe.

The big screen is on the inside, opening like a book for tablet mode.

The smartphone mode screen is 4.58 inches, and the tablet mode screen is 7.3 inches. It also has 12GB of RAM and 512GB of storage.

Another impressive feature of the phone is its six cameras; three on the back, two on the tablet screen and one on the front smartphone screen.

"This looks like it'll be fantastic whether it's folded down into a phone or unfurled into a tablet."

The Huawei Mate X (pictured on the right) costs considerably more at £1,997 and has the tablet screen wrapped around the outside, so for this one you fold the phone outward to use the big screen.

The smartphone screen is 6.6 inches, over two inches bigger than the Galaxy Fold.

The Mate X is 11mm thick when folded, and has a strip on one edge that sits flush with the phone while folded.

When unfolded, the strip as a handle and it also contains a quadruple Leica camera system, and a fingerprint sensor built into the power button.

However, as the screen is on the outside it is constantly exposed to the world and is at a neverending risk of being scratched

or broken.

One of the major issues with foldable phones is that the screens are made out of plastic polymer, as it is next to impossible to fold glass completely in half. These plastic screens scratch easier and show fingerprints more obviously, and will slowly crease over time where the hinge is.

So, there you have it. Next time you moan about the size of your phone screen just know that in the future it's going to be even bigger. The handsets are pricey but as this is new, innovative tech for a specialist audience, it is to be expected.

It will probably be a while before everyone has a foldable phone, but perhaps one day these phones will be the norm.



THE iPhone



BATTERY ISSUE

Apple has released a new iPhone at least once a year since 2007. The iPhone was a revolutionary piece of tech, although not the first smartphone on the market (The Simon Personal Communicator was created by IBM in 1992) it was certainly revolutionary.

We are now 21 models deep into Apple's iPhone, yet customers still feel like there's something missing: good battery life.

Apple's software system iOS frequently needs to be updated, essentially bricking your phone for hours. However, users have noticed some significant changes to their iPhones after updating to the latest iOS: their battery life has decreased.

Apple admitted to slowing down older iPhones, which is intended to protect against problems caused by aging batteries.

The iPhone 6 was the first model this downgrade was implemented on, and many customers have been left disgruntled after their losing hours worth of battery life.

Tony Sherman bought an iPhone 8 in 2017 for a whopping £700 and after less than a year it began to crash and shut down unexpectedly: "Originally, the only issue I had with my phone was a small scratch on the screen. I got a notification one day saying I had to update to the latest iOS, and as soon as it finished my phone just felt different."

The day Tony got the update notification was also the same day that Apple announced the release of the latest model - the iPhone XS and iPhone XS Max.

Tony continues: "Whenever I tried to send a text the typing went really weird and laggy, and the screen would glitch and shut off at random times. It was such an inconvenience, and it makes you think that you need a new phone, when in reality your old one was working fine until Apple messed with it."

Many believe that Apple's original statement is a lie and that the company is deliberately slowing down old phones, as a ploy to get customers to buy the latest model.

"Whenever I tried to send a text the typing went really weird and laggy, and the screen would glitch and shut off at random times."

However, Apple denies this, and states that it's normal for the phone to be a bit slow after updating. It told customers that their phones would return to normal shortly afterwards.

This was not the case for Tony, as they ended up selling their faulty iPhone and opted for the Google Pixel 3: "I honestly never thought I'd ever have a phone that wasn't from Apple, but after changing over I'm a bit embarrassed as to why I ever had that view. Apple isn't all it's hyped up to be."

"Of course, it's not a perfect phone, but in my opinion it is miles better than the iPhone 8. At least I don't have that nagging feeling that Google is trying to scam me into spending more money."

All in all, it is deeply flawed that Apple's software updates ruin older models.

It is hard to understand why this is still an issue when the company is capable of inventing such unique and intuitive phones.

If worse comes to the absolute worst you can buy a new battery from Apple for £79. Or, you can invest in another phone that won't slow down after every update. The choice is yours.



WHAT IS A SMART HOME?

Smart Homes. At first glance they seem futuristic, scary, and a bit HAL 9000.

However, as it turns out that's just paranoid artificial dystopia. A smart home is essentially a house that has a communication network that connects different appliances. These appliances can then be remotely controlled, monitored and accessed.

So, instead of turning appliances on and off when you get back from work, you can have them all pre-set beforehand, with simple controls on your phone. The colour of your lights can be changed, music can be turned on and doors can be locked just at the tap of your phone.

Michael Richman works at a high-end tech store on Regent Street, London, and owns some smart home appliances himself. However, he isn't sure if the smart home hype will catch on for everyone: "The idea of having something always listening can be seen as an unsettling concept by some people. Although some things without microphones that can be controlled through apps are very common now. Some electricity suppliers are now only installing smart boilers and thermostats."



Apple, Google and Amazon aim to make the smart home dream a reality, with smart speakers, ecosystems and voice assistants making the transition a doddle.

Smart home kits can work with multiple ecosystems - so all you need is one major platform which will then sync with various devices. All you need to look for is the 'works with...' sticker on the side of the smart home appliance box you want.

As long as the device can access Wi-Fi, it can be connected to the ecosystem and accessed via phone.

Michael told us a little more about the Apple HomeKit: "Apple's HomeKit means that some companies making smart appliances are able to get direct access to the software involved in making their product integrate right into the smart home system."

"The smart thermostat is definitely one of my favourite parts about a smart home."

The smart thermostat can quickly automate the heating and cooling of a home, reducing the owners' electric bill and making the home more environmentally friendly. All settings are optimised for maximum energy efficiency.

Michael told us he was a fan of his smart thermostat: "The smart thermostat is definitely one of my favourite parts about a smart home. Being able to warm up your house on your way home from work on a cold night is just the best thing. It makes me never want to go back to the normal thermostats!"

A smart doorbell from SkyBell, a security camera from NEST, and an outdoor light from Philips can also help secure your home as you can keep an eye on who comes and goes, and the hi-tech gadgets can scare off any potential burglars.

Smart tech like the Petwant cat feeder, can automatically feed your pets a selected amount when you aren't home, and can let you know when maintenance is required on appliances. It can alert you even for little things like emptying the lint filter in a smart dryer.

Smart homes allow you to customise and control your home to a T, and help make your house become greener.

Well, it's not all sunny.

Smart products tend to be far more expensive than their non-smart counterparts, for example; a cheap smart doorbell starts at £80, whereas a normal doorbell costs less than £20.

There's a lot of tech that comes with smart homes, so if you're not incredibly tech-savvy it can be difficult to wrap your head around.

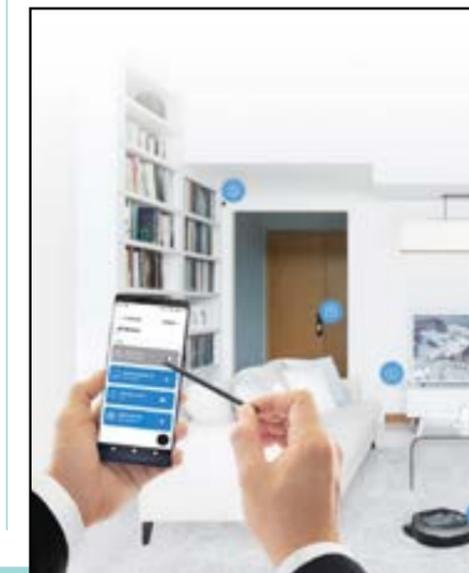
Despite loving some aspects of his smart home, Michael admits: "A lot of it is really pointless. At the end of the day none of the tech is really that revolutionary yet and most of it can be lived without."

If you don't have a stable internet connection this can jeopardise your entire smart home as it is completely reliant on your Wi-Fi.

There are no global industry standards for the home automation system, which means some protocols used in smart electronics may not be compatible with each other.

Another issue with smart home products is if product uses the system of a company that fails, once the servers are taken down your smart tech is rendered useless.

So, all in all a smart home has its advantages and disadvantages. Although it seems a bit scary that we're becoming so dependent on technology, it is nice that there are ways in which we can reduce our carbon footprint and live an easier life.



WHAT MAKES UP A SMART HOME?

Smart Solar Panel



SmartFlower Solar Panel
£12,993 on SmartFlower

Some companies have started to embed electronics into the PV modules of the solar panels. These electronics can compensate for shading effects, so if a shadow falls across part of the solar panel, it only affects part of the output, as opposed to all of it. One system, called the SmartFlower, unfolds every morning and directs its solar panels towards the sun for optimum rays.

LED Lights



LED lights use up to 90 percent less energy than incandescent lighting, and 60 percent less than fluorescent lighting. They have an average lifespan of 50,000 hours, produce no heat, and have no toxic components. LEDs can be controlled through a mobile apps, allowing the user to be able to change the colour and intensity of the lights.

Smart LED lights
£10.50 on Amazon

Smart Door Lock



Keyless Smart Door Lock
£99.98 on Yale

Smart door locks allow you to lock and unlock the deadbolt on your front door. They tend to be battery powered, and can be connected to via Bluetooth. Bluetooth, however, only works within a certain range, so if you're not near your lock you won't be able to lock or unlock it. There are separate hubs you can use like Z-Wave to extend the range though. Some smart locks are keyless, but some also have a key option. Smart locks are convenient but no more secure than a normal lock as they use the same deadbolt.

Smart Thermostat



Worcester Smart Thermostat
£174.41 on CityPlumbing

A smart thermostat plugs directly into your HVAC system, which then communicates to your phone. This allows you to adjust home temperatures from any location, as long as you have internet access. It allows for improved energy savings as you are able to set different temperatures for different days, all year round. They can save you up to 20% on heating and cooling costs, and are simpler to use compared to programmable thermostats.

Smart Speaker

A smart speaker (think Amazon Echo, Google Home) is one that has voice-control built into. They tend to be single-unit wireless speakers with artificial intelligence enabled. They can play music, turn down lights, turn up heating, book Ubers or tell you a joke. Smart speakers have specific wake words, such as 'OK Google' or 'Alexa' which will activate the speaker, allowing you to say your command.

Google Home
£69 on Google



Amazon Alexa
£65 on Amazon



Smart Home Hub

A smart home hub is the hardware or software that connects all smart home devices, and controls the communications between them. This can come in the form of a smart speaker, like Alexa, or a software like Z-Wave. These hubs come with an accompanying app, but some can also be used with voice control.

Smart Fridge

Smart refrigerators have a touchscreen interface and the ability to connect to the internet through Wi-Fi. They also include internal cameras, more flexible user-controlled cooling options, and the ability to interact with its features through your smartphone. Although features vary brand to brand, the touchscreen can be used to look up recipes and read them out while you cook!

Samsung Family Hub
£2,729 on Samsung



Smart Toilet

Smart toilets claim to use water in the most hygienic way. Most come with a remote with several options on it, ranging from adjusting the toilet seat temperature to washing and drying your private parts. The lid can be remotely accessed and it flushes automatically.

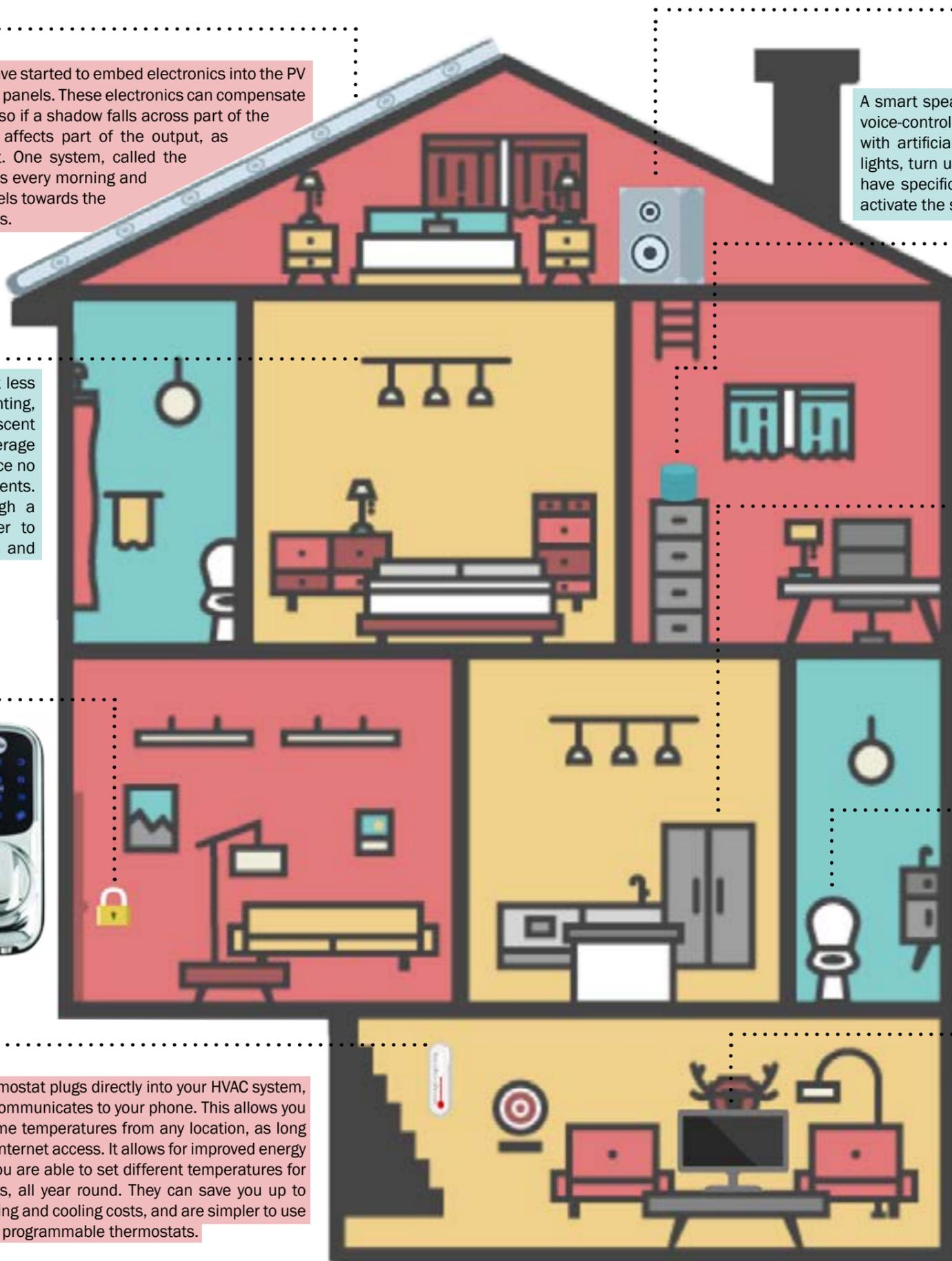
In-Wash Inspira
£1,598 on Bathroom Planet



Smart TV

A smart TV offers a number of internet connected services that a normal TV can't offer. It has the equivalent of a computer built in, offering apps, media streaming, web browsing and games. All smart TVs accept an ethernet cable at the back, but some also support a wireless connection.

Blaupunkt Smart TV
£214 on Currys



HOW TO BUILD:



Ever fancied making your own mechanical keyboard? If so, we have the article for you.

Jack Chandler-Massaró, 18, has decided to make his own mechanical keyboard from scratch for his product design A-level.

For those who don't know keyboard lingo, a mechanical keyboard is one where each key contains a complete switch underneath. Regular keyboards normally use rubber domed switches, whereas mechanical keyboards use an actual switch to determine when pressed, which then sends a signal to the computer. The switch has a housing, a spring and a stem.

Jack said: "Mechanical keyboards give you a more audible and tactile feedback when you press a key. Rubber domed ones are quieter and spill resistant, but less nice to use."

They have an expected lifespan of 50 million clicks per switch, so you can definitely do plenty of typing with one of these.



Making a mechanical keyboard seems like quite an ask, especially when compared to Jack's classmates, who have opted to build coffee tables and cupboards.

So, why did he decide to challenge himself? He said: "Last year I made a turntable which was one of the worst experiences of my life."

"I'm not good at woodwork so I picked an engineering project... and I need a new keyboard."

"It was so difficult! So, when I was thinking of what to make this year, I thought a mechanical keyboard would be easier. I'm not very good at woodwork so it made sense to do something to do with engineering. It looked fun as well, and I need a new keyboard."

This particular one that Jack is making is a 60 percent keyboard, meaning it has 61 keys instead of 104. This means there will be no function keys, number pad or arrow keys.

Jack has decided to 3D print the key caps, which is the process in which material is joined or solidified under computer control to make a three-dimensional object.

This high-tech software has caused several grievances for Jack: "3D printing keycaps is very annoying because generally it's meant for prototyping. Each print can vary even if you don't change anything, so it's very frustrating when someone works then on the second print it doesn't.

"If my school had a better-quality printer the keys would look better, but luckily on a whole they still look good, and I'm relatively happy with the results."

Although Jack seems to know what he's doing, he admits that it has taken a while to get to where he is: "This is my first time 3D printing so I've had to do lots of trial and error to find the best way of doing things, such as altering the layer thickness or extruder temperature."

"Laser cutting the keyboard plate is also pretty stressful because I can't laser cut metal myself. I have to get a company to do it for me, and can't really afford to mess it up so it's crucial to get it right the first time."

Other things to 3D print!

All files on [Thingiverse.com](https://www.thingiverse.com)

1. Headphone Stand
2. A Salt Shaker
3. A Red Rose
3. Stackable Hex Drawers
4. Marble Machine
5. Hodor Doorstop
6. Gothic Lantern
7. Curved Honeycomb Vase
8. Letter Board
9. Tealight Holder
10. Floating Photo Frame



Jack's 5 step guide to building a mechanical keyboard

1



3D print the key caps

The keys are going to be DSA profile, which means they have a uniform profile, allowing it to work well with odd layouts. These keys resemble a laptop keyboard as they are wider and easier to place your fingers on. I've designed the models myself using a script-based 3D modelling program called OpenSCAD. The models are fully customisable making printing different sized keycaps very easy. The keycaps will be printed on PLA plastic.

Computer Numerical Control route a case

Using a computer-controlled router, I will partially hollow out a keyboard sized plank so that the wiring can fit in. The case will have feet on the bottom, made out of walnut wood, to angle it a few degrees so it's more ergonomic, making the typing experience more pleasant.



2

3



Laser cut an aluminium plate

I'm getting a company to laser cut a 1.5mm sheet of aluminium into a keyboard plate, which is where the switches slot into. Switches are what the key caps sit on top of. The plate will sit flush with the top of the case, above the hollowed-out section.

Solder the switches together

All the switches need to be put onto the plate and wired together into columns and rows. I will then connect the rows and columns to a processor – a Teensy 2.0. Using Easy AVR, a keyboard firmware for custom boards, I will alter the function of each key. Additionally, I can create my own keyboard shortcuts to make up for the lack of some features such as the arrow keys.



4

5



Final bits

Drill a hole into the back of the case for the wire to come out of, put standoffs at the bottoms of the case to secure the plate, and that's it! Your own functioning mechanical keyboard.

Introducing Liquid Retina.

The new display on iPhone XR is the most advanced LCD in the industry. An innovative backlight design allows the screen to stretch into the corners. So you see true-to-life colour from one beautiful edge to the other.



iPhone XR
6.1" display¹

The largest LCD ever on an iPhone

Industry-leading colour accuracy

Wide colour gamut

True Tone

Tap to wake

WHAT'S IN YOUR



EWAN NEAL - CINEMATOGRAPHER



A bit about Ewan:

"I'm a videographer at Keyhole Creative. Basically, I travel around filming cool projects. We vary from very corporate induction videos, 30-second social media campaigns to short documentaries working with ITV sport and travel videos all over the world. I have travelled all around Europe with Keyhole, filming recruitment videos for a large wealth management company.

Over the past 3 and half years I have worked myself up to Head Videographer at Keyhole and gone on to win "Rising Star" at the Doncaster Chamber Awards (which has a pretty wicked award) for my work and efforts to try help younger student who want to work in film."



1. Sony fs7 Grip

I attach it to the camera to allow it to sit comfortably on my shoulder. This allows me to get the shot anywhere.

2. Canon 17-55mm Lens

This lens is my go-to wide lens. It is very sharp and has a large range, so I can be very flexible with it to get the shot I want.

3. Canon 100mm Prime Lens

This lens creates a beautifully sharp image with a deep depth of field which creates a very cinematic look.

4. Sony fs7

This is a professional documentary camera which allows for stunning 4k images, the quality standard for film and TV. It is also capable of 180 fps at 1080p which is a super cinematic slow-motion image. Everything needed is in camera making it incredibly easy to use as a run and gun camera.

5. Lowepro Camera Bag

I have used this bag all around the world on different shoots. It has compartments for all equipment, including a laptop pocket, padded lens areas, and larger compartment to hold a small to medium size camera. It's light which means I can travel far with all the gear I need.

6. iPhone Charger

For when my phone runs out of battery!

7. Headphones

For editing on the go

8. Sony XQD Cards

The Sony fs7 requires these cards since it has a super-fast memory which is required with the quality produced.

9. XGD USB Adapter for G Series

I do a lot of editing on the go so I need an adapter to transfer the footage onto a computer.

10. MacBook Pro Adapter

It is needed to attach my hard drives and other accessories to my laptop.

11. Spare Sony Battery

I always bring a spare battery as a lot of the shoots I am on last most the day, meaning I will need extra power.

12. Air Blower

I use this to clean the dust off the camera sensor so that the footage I capture is high-quality.

13. Lacie 1TB Hard Drive

A large, fast hard drive is needed to back my footage up at the end of shoots. This allows me to edit out of the office and out of work hours.

14. Apple MacBook Pro

I use this laptop as it is light and powerful giving me easy editing speeds on the go.

15. Laptop Charger

To charge my laptop while editing on the go.

WHAT'S IN YOUR



WHAT'S IN YOUR



MIKE MASSARO - PHOTOGRAPHER

A bit about Mike:

"I went to Westminster University when I was 22 to study Photographic Arts - the oldest photography course in the world! I studied part time so I could work as a freelance photographer in my spare time, and started out shooting club nights in Brick Lane. Through that I met some bands and started taking portraits of them, along with some rap groups I knew from school. Since then all I've been doing is taking photographs at festivals, for magazines and everything inbetween!"

**1. MacBook Pro Retina 15**

Not the latest MacBook but it works great still for editing on the road and checking images on location. Probably the last Mac I'll buy as the new ones are too expensive and PCs are getting much better. I have a hand-built PC desktop in my office on which most of my editing happens.

2. Pelican 1560 case

This is a brilliant case which is just small enough to carry on as hand luggage. It's a fully armoured box which keeps everything inside super safe, plus you can stand on it to get a bit of extra height, or sit on it while waiting for a plane/train/DJ set.

3. Seagate Backup Plus Slim 2TB

Big hardrive for saving photographs

4. Fuji 800 Press 35mm film

SanDisk Extreme Pro 64GB SD

6. Sony 128gb XQD

More SD cards

7. Nikon EN EL15a

Spare Nikon camera batteries

8. Black Rapid Curve Breathe

Camera strap

9. Nikon 20mm 1.8G**10. Nikon 24-70mm 2.8G**

This is possibly my most used and definitely my oldest lens! I've been through about 5 different cameras while still holding onto this lens, which the ideal general-purpose mid-range zoom. It goes wide, it goes a bit long and it focuses like a rocket. Not the most interesting or creative lens but definitely the most useful.

11. Nikon 70-200mm 4G**12. Nikon 105mm 1.4E****13. Nikon 60mm Micro-Nikkor 2.8G****14. Sigma 50mm 1.4 ART**

When Sigma started a new line of lenses in 2013 their aim was to create ultra-sharp lenses for high megapixel cameras. They also sold for much cheaper than the Nikon/

Canon alternatives. The 50mm is a bit longer and it's good for cropped in close ups and half body portraits.

15. Sigma 35mm 1.4 ART

I use the 35mm for documentary and events as it's similar to the field of view of the human eye.

16. Nikon D850

This is my newest camera, it has an amazing 50mp sensor paired with lightning fast autofocus and a solid magnesium body. Perhaps the last great Nikon DSLR before everything becomes mirrorless.

17. Nikon D750

This camera is a tiny but long in the tooth now but still a very capable camera. It has a full frame sensor in a tiny, lightweight body.

18. Nikon F100

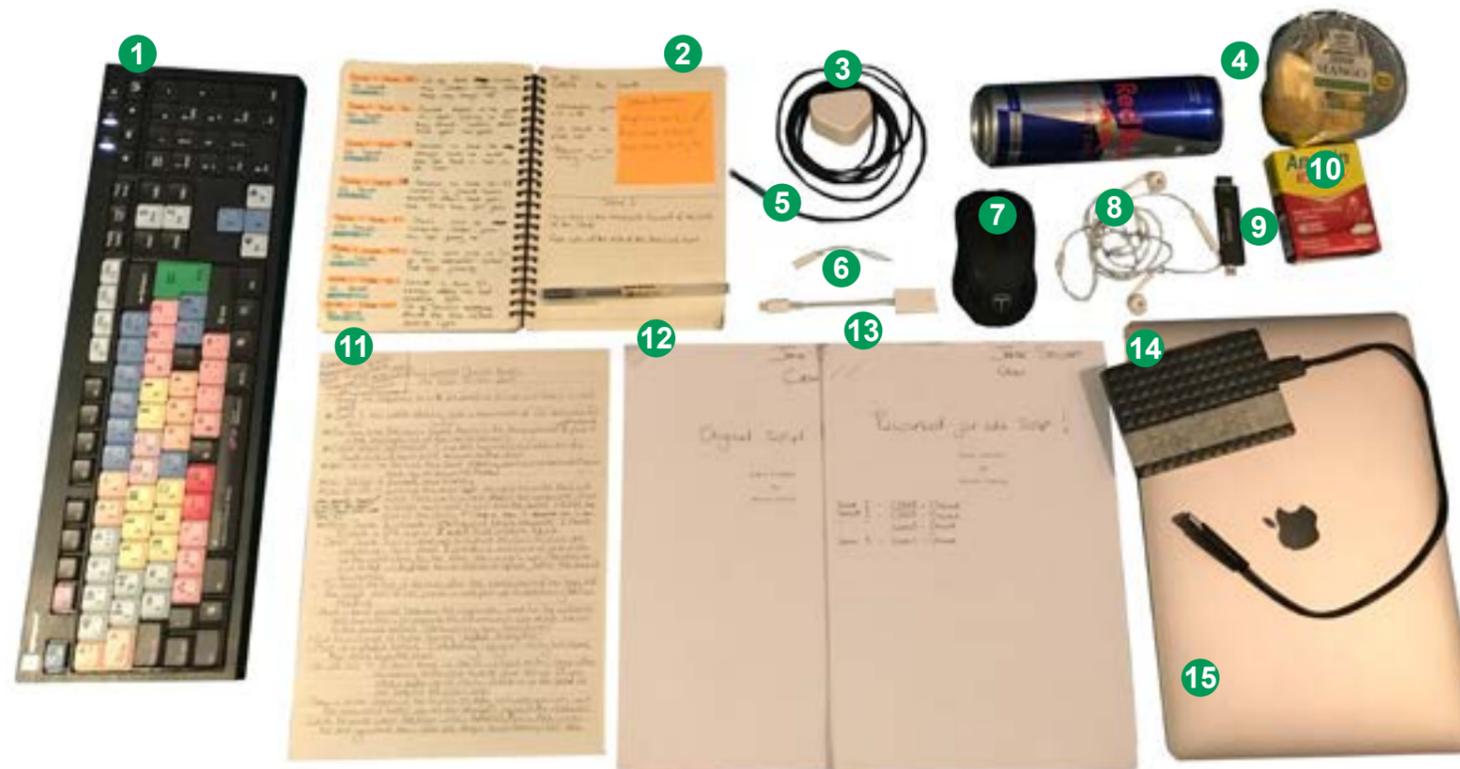
The F100 is a Nikon film SLR launched back in 1999. Handles very similarly to modern DSLRs but shoots 35m.

JAMIE STEWART - FILM EDITOR

A bit about Jamie:

"I study BA Media Production at the University of Lincoln, and my favourite module is Film Production. In this module our group task is to create a short film or documentary. My group decided to make a sci-fi themed short film, and I was assigned the role of film editor and data wrangler.

A data wrangler backs up the footage from SD cards on set to make sure that the scenes aren't lost. Once we wrap on the shoot, I'm in the edit suites for twelve hours every day editing the film! My backpack and its contents are incredibly important as it helps me become more efficient in completing my many tasks!"

**1. Avid Media Composer Keyboard**

I use this keyboard to edit as it has all the keyboard shortcuts on it that I need for Avid Media Composer.

2. Muji Notebook

I use this to write down my shot log. This describes every single slate, what it contains, and finally if tells me if it's a useable shot.

3. iPhone Charger

This charges my phone when I'm low on battery - it's important as my Director might need to contact me.

4. Food and Drink

With my tight deadlines I'm often in the edit suite all day and all night, so often need an energy drink and some fruit to keep me going!

5. Apple Headphone Adapter

I use this to plug my headphones into my MacBook as it doesn't have the correct outputs.

6. Standard USB to USB-C Adapter

I use this for faster transferring speed from a harddrive to my MacBook.

7. Spare Mouse

I have a spare mouse for when I'm editing on my laptop as I find the touchpad too restrictive.

8. Apple Headphones

I need headphones if I'm editing on set or anywhere that isn't the edit suite.

9. SD to USB-C Adapter

I use this while data wrangling to transfer footage off the SD card and onto a secure harddrive.

10. Anadin Extra

I carry painkillers as staring at a screen for hours on end can result in headaches!

11. Directors Notes

After a draft of the edit has been viewed by the Director, he will make

notes on any changes he wants made.

12. Original Script

This is the original script I had on set. I made notes on it if a line had been cut in production.

13. Reworked for Edit Script

The script I edit with, which has been reworked by my Director after production. I mark where the slates go in accordance to direction and lines.

14. Seagate Expansion Harddrive

This 1TB harddrive contains all the footage and audio. It also has all the Avid Media Composer files and data wrangling spreadsheet.

15. MacBook Pro 2019

My laptop is crucial in data wrangling as it is what I use to transfer the footage. I sometimes use it to edit scenes too.

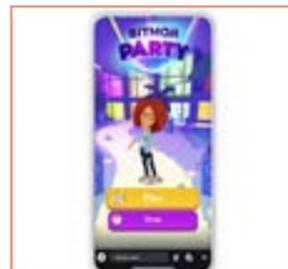
SOCIAL NEWS

1
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Facebook has banned a number of controversial high-profile users from its platform, including conspiracy website InfoWars host Alex Jones, UK editor Paul Joseph Watson, ex-Breitbart editor Milo Yiannopoulos and Nation of Islam Leader Louis Farrakhan. They have all been labelled "dangerous individuals" by the platform, which has taken a harder stance on right-wing hate speech since the Cambridge Analytica leaks.



With the launch of Bitmoji Party, Snapchat has confirmed it wants the platform to support video games. The company has been working on video games for over two years now, and intends to launch several first-party titles designed in-house. Snapchat is not the first social media platform to attempt to bypass the iOS and Google Play app store, but instead of waiting on third-party developers to import their games, Snapchat is collaborating with Pretty Great, an Australian studio led by former Fruit Ninja and Jetpack Joyride developers, to build new mobile platforms.



Representatives from Twitter and Facebook were accused by the joint human rights committee of failing to protect female MPs and other figures from violent or misogynistic abuse. Several examples of violent abuse were publicised by MPs, which showed that despite flagging the material, both Facebook and Twitter's moderation team found nothing wrong with the content. Both social media platforms said they were doing more to protect public figures from abuse.



After a rather disastrous 2018 which saw Facebook's stock price drop from \$214 to \$124 in six months, the company has announced a major redesign to its platform. Groups and private messages will be front and centre, reducing the prominence of the News Feed. At the F8 event in San Jose, California, CEO Mark Zuckerberg also promised major performance and design improvements.



Brits have the least trust in social media platforms across the developed world, with 12 percent trusting the platforms and 83 percent who had little to no trust. The Guardian published the figures, which also revealed social media trust was much higher in developing countries. More than 50 percent of people in India, Saudi Arabia and Thailand trusted the platforms.



D850



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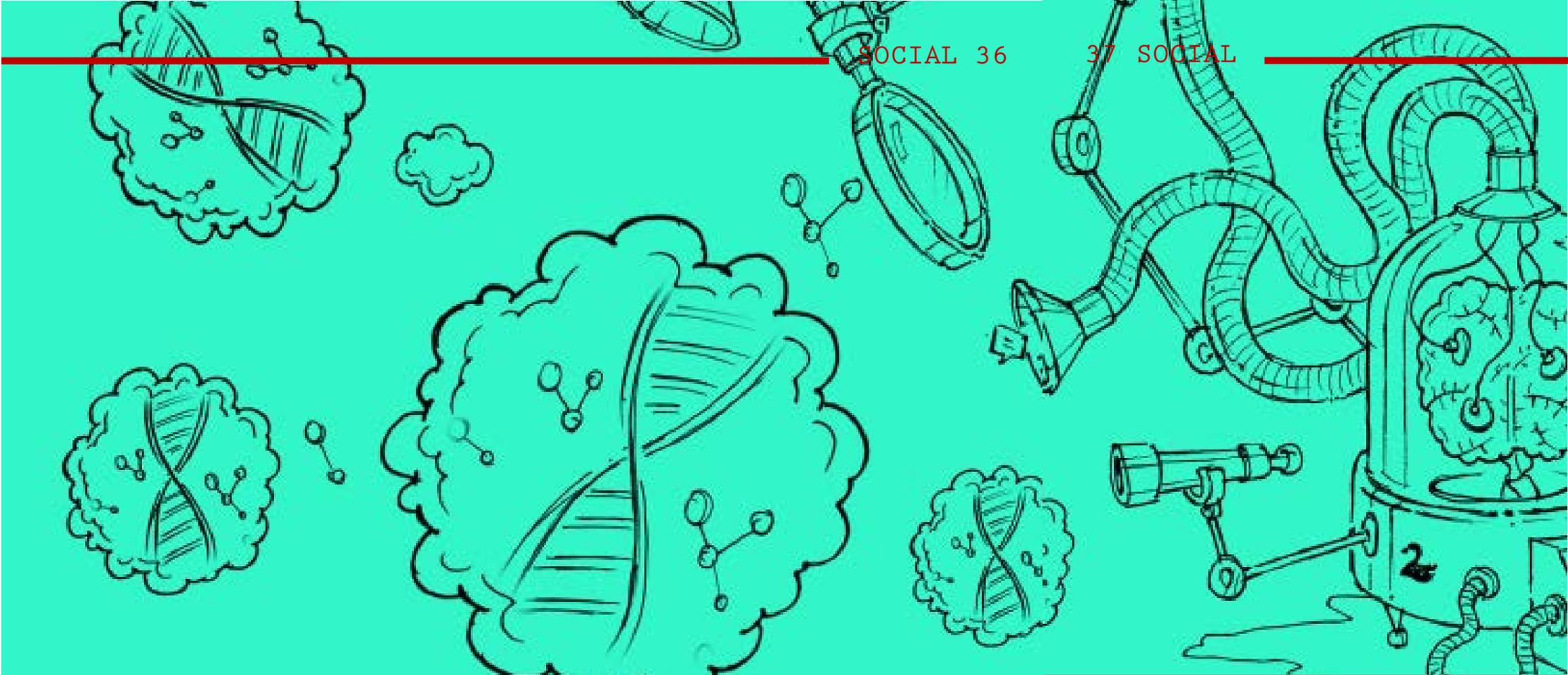
BUY D850 BODY or KIT + AF-S NIKKOR 200-500mm f/5.6E ED VR

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“Why am I seeing this?”

The intentions of Facebook’s algorithms, which aim to create a more user friendly personalised experience seem to be of growing concern to internet users. After facing wide spread criticism about the pervasiveness of growing targeted advertisements which are a product of algorithms, facebook has offered a solution, well, sort of...

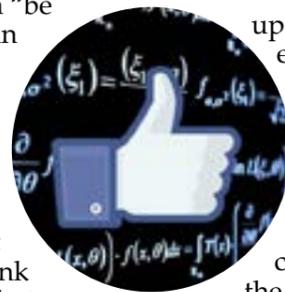
When we go online these days, we know we’re not alone: The internet is looking back at us. Our Clicks give us the information and products we ask for, but at the same time they provide information about us. Algorithms then make use of that data to curate our search results, our social media feeds, and the advertisements we see. The internet ascribes an identity to its users, and projects it back to us.

The research behind the political campaigns run by Cambridge Analytica in 2016 suggested that a few Facebook likes are enough for an algorithm to identify our gender, personality traits, sexual

orientation, religious and political beliefs. “Computer-based personality judgments,” two psychologists and a computer scientist claimed in a research paper in 2015, can “be more accurate than those made by humans.” The algorithms can end up knowing us better than our spouses do. If that’s true—not all researchers think it is—what does that mean for our own understanding of who we are?

The question is particularly relevant in the wake of Facebook’s

April 1 announcement that it will soon boost “algorithmic transparency” for users with a “Why am I seeing this post?” button—an



update of a feature that already exists for ads, and a new feature for all other posts on a person’s timeline. Most of us have little understanding of how the algorithms in charge of our internet experience work, and have no control over them other than the information we provide, many times involuntarily.

The button would be one of a few small windows into how the internet decides what to show

Netflix says its personalized recommendations are based on what we’ve already watched: “The more you watch, the better Netflix gets at recommending TV shows and movies you’ll love,” the company claims. Facebook’s new feature promises to uncover part of the identity that Facebook’s algorithms have assigned us, essentially letting us in on the personality quiz we unwittingly participate in each day—a good thing, right?

Ad-targeting algorithms, it turns out, can function very similarly to personality quizzes, right down to affecting our sense of self. In 2016, three researchers tested the effect and published the results in the Journal of Consumer Research. “The data shows that participants evaluated themselves as more sophisticated after receiving an ad [for a high-end watch brand] that they thought was individually targeted to them, compared to when they thought the same ad was not targeted,” they wrote. “In other words, participants saw the targeted ads as reflective of their own characteristics.”

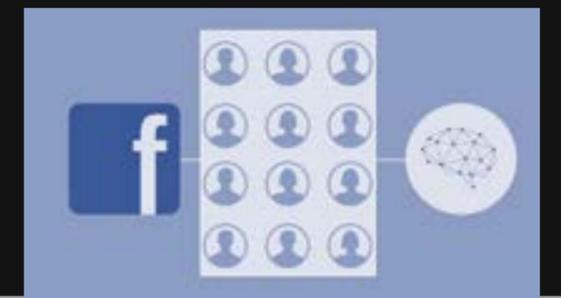
That, in turn, alters behaviour—and not just upping the probability that individuals purchase the advertised product, as the advertisers want. Participants in another experiment the researchers ran, who were shown ads for an environmentally friendly product they thought was targeted at them, were not only more likely to buy the product, but also more likely to donate to an environmental charity soon after.

Again, it didn’t matter whether the targeted ads were actually based on participants’ past behaviour—just that participants believed they were.

According to these findings, then, the actual effect of Facebook’s “Why am I seeing this?” button could be rather unnerving: a placating show of transparency that only enhances the hold the behemoth has on our minds.

The glimpse into who Facebook thinks we are could affect how we see ourselves. Although this may seem a daunting prospect, the illusiveness of Facebook’s algorithms are not to be feared too much.

The very fact that we now possess an awareness of what they’re about is the one way we can beat the system and attempt to use Facebook solely for its social communicative abilities that were once upon a time at the heart of its focus, all the while ignoring the flurries of adverts and product suggestions designed to tap into our wildest consumer dreams.



Top 10 Most useful Apps of 2019

A shortlist of apps that can make your day that little bit easier...

If you own a smartphone you should be aware of the big four: Facebook, Twitter, Instagram and Snapchat. These four platforms have become must have apps, especially younger generations. However, ever wondered what other revolutionary apps are out there, just waiting for you to notice them? We've compiled a list of our favourite free useful apps that you need to be using.



1 MyFitnesspal is one of our most loved apps. With its calorie and macros tracking mechanism, as well as its progress planner, the fitness app offers cutting edge nutrition technology to assist you in your efforts of getting into the best shape possible.

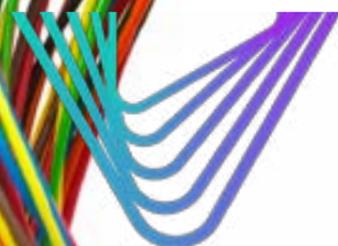
The app is a handy tool for people of any fitness calibre. It could be used as a calorie tracker for those curious about nutrition in food or, if you're a hardcore athlete, MyFitnesspal uses your vital statistics to create a personalised diet plan, designed to progress and improve your current physical condition. The app also lets you scan the bar code of any packaged food product for nutrition details. Once you've scanned an item of food, you can log it in a daily diary. MyFitnesspal will use these statistics to tell you if you're on track or not.

2 Audible sells digital audiobooks, radio and TV programs, and audio versions of magazines and newspapers. Through its production arm, Audible Studios, it has also become the world's largest producer of downloadable audiobooks. Its features include bookmarking, wireless distribution, author interviews, free downloads and weekly suggestions. For people who don't have time or space for books, Audible can be a handy addition to your smartphone. It is especially useful for long flights and train journeys.

3 A free AI-driven app that offers a period tracking system, a tracking category for logging intake of alcohol, cigarettes and other substances and research-based blurbs. Clue boasts an impress 10 million active users in nearly 200 countries. This app is very useful for every woman wanting to offload the stresses that surround periods onto this reliable tracking app.

4 This app is a must have for amateur photographers. With Instagram now boasting 500 million users, Huji provides a new outlet to capture life's greatest events to ultimately stick on the 'Gram'. The app offers a very distinct aesthetic, attempting to simulate a disposable camera. When you enter the app you have to tilt your phone onto its side and peer down a lens. The outcome is a retro 90's feel, bringing the analog film days back.

5 Vampr is the Tinder for bands. It uses location tracking to connect you with all the local musicians in your area. From there, you can set up meetings, create bands or collaborate on music. A very useful tool as home recording trends continues to flourish. It was featured in Apple's "Best of 2017" list and received seed funding from Nick Feldman of the 1970s band Wang Chung.



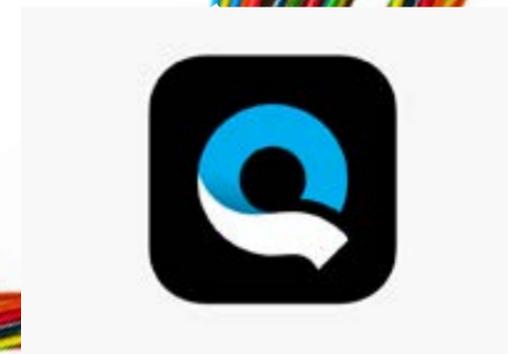
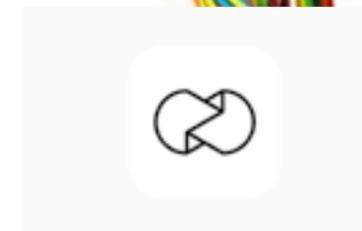
6 Drink Free Days is an alcohol intake monitor. It can be used to curb bad drinking habits by reminding you not to drink on certain days and provide a healthy reminder how many calories you're avoiding and how much money you're saving. All of this is personalised once you disclose how much you're currently drinking (time to face the music!). The app tracks your progress and holds you to the pledges made, to avoid a late-night trip to the wine cupboard. It's helpful for those looking to keep an eye on their current consumption to those looking to avoid alcohol altogether.

7 Dashlane is a password manager app and secure digital wallet. The app is available on Mac, Windows, iOS and Android. For those who spend hours tearing out their hair when they can't remember their login details written on a piece of missing scrap paper, this app is here to put an end to your flustered frustration by placing all important details in a secure digital vault.

8 Instagram Stories is one of the most popular features on the photo sharing app, with 300 million daily active users. With that many stories, you want to ensure yours stands out from the crowd. Enter Unfold, the app is focused on improving your Instagram Story, with a range of slick designs to make your video, boomerang or image look professional.

9 With many younger people leaving social media platforms due to their addictive nature, making plans with friends can seem harder than ever. PlanSnap is the solution, developed by Louise Doherty, 32, who came up with it after struggling to organise a 30-person camping trip, due to the lack of tech to get friends together. It works even if friends aren't on the app, and makes organising simple, by sending an invitation through multiple platforms and letting everyone quickly decide on the who, what, where and when.

10 Developed by GoPro, Quik is one of the few free video-editing apps available on iOS and Android. The app combines videos into a collage, which can be cropped and edited. Additional effects are available for those wanting to add some flair. It doesn't have the feature set of Final Cut Pro or Adobe Premiere Pro, but can easily handle most video edits.



Is **Reddit** the front page of the internet?



If you ask someone to list examples of social media platforms, the likelihood is they'll start with Facebook, then recall Twitter, Instagram and Snapchat.

If you ask someone to list examples of social media platforms, the likelihood is they'll start with Facebook, then recall Twitter, Instagram and Snapchat.

All correct, however, it's easy to forget that social media is made up of more than just those four platforms. Most people forget to mention or simply haven't heard of social media's independent underdog – Reddit.

As of 2019, Reddit has 542 million monthly active users and is still the site that 'provides you with everything you ever wanted to know about anything but were afraid to ask.'

This isn't an exaggeration either, since reddit's inception in 2005 you can find almost anything on the forum, from the latest memes, to fan pages, political forums, subreddits devoted to posting pictures that capture life's most 'WTF moments', a page for people who want to count 'really high' and even a page dedicated to sharing sexy pictures of toasters. The list goes on.

However, putting Reddit's more satirical side to bed, the website also harnesses immense academic and informational qualities that the likes of Facebook and Twitter don't provide.

In this sense, Reddit is essentially a newspaper written by the masses.

If you've got an independent social media platform comprised solely of vast comprehensive user-generated content, it

seems to result in a great many things.

A strong contribution to popular culture is one of them.

Popular culture has always existed, but online pop culture is a modern phenomenon.

Social media has allowed popular culture to no longer be limited to one place, as styles, ideas and trends can be shared across multiple platforms, viewed by millions of people around the world, creating a massive social influence hub.

"Its allure is similar to Facebook in the sense that you don't go there looking for anything specific, rather, you go to be entertained."

This is what Reddit does best.

27-year-old Joseph Hinkwell is an administrator of a Reddit forum and has been a user of the site since the beginning and believes its greatness is often overlooked, and that it is a more powerful form of social media than Twitter and Facebook combined:

"I've spent a fair amount of time on Reddit. Probably more than I care to admit. As with any pseudo-addiction, the "why do you do it" can be hard to

articulate:

"Its allure is similar to Facebook in the sense that you don't go there looking for anything specific, rather, you go to be entertained. It's not dissimilar from the way you turn on the TV without knowing what you're going to end up watching, you just look around and see what's on. Except instead of a few hundred channels to choose from, it's a massive forum spanning every sub-genre of internet culture.

"If you want to find something out more serious, reddit usually provides the answer, as there are more than likely a lot of people with the same question to which others have given an answer. It's great for finding things out, no matter how bizarre. This is why everyone should be on it, you can learn so much – far more than you can on Facebook."

Reddit has 1.2 million subreddits. Within subreddits there can be thousands of threads (discussions) and within the threads there are often thousands of comments.

These comments aren't limited in the same way as Twitter or Instagram, allowing you to post as much as you like.

To put it into perspective, visiting this enormous online superstructure is like getting off at London Waterloo station, you have 26 platforms to choose from which all lead to different places, and by the time you're done travelling and exploring these places you're about 2 hours down the line, completely up to date on current affairs and 100 miles away from where you started.

Unlike Facebook and Twitter, reddit remains independent and organic, with minimal commercial involvement other than integrated ads which allows for in depth user-to-user discussion, along with encouraging healthy debates, without fear of interruption or being squashed by annoying advertisements.

As Mark Zuckerberg said about Facebook in its early days: "Facebook is cool, adverts are not."

Reddit's communication executive stated in 2013 that "Reddit users are privacy conscious and do not want to be manipulated by brands. They want the site to be a free thinking, creative community void of corporate interference."

Hinkwell says there are two things that keep him coming back to Reddit:

"The fact that more entertaining, topical, "better" content floats to the top, which is brilliant for finding things out quickly. Millions of people scan the furthest reaches of the internet and post things they find interesting, ridiculous or noteworthy, and the community votes to banish things to oblivion or exalt them to the forefront.

"Depending on the day, the front page can make it look like a news site, a humor site, a gamer site or music site. You can't tell me this process wouldn't drive popular culture? It keeps you so in touch with what's cool and relevant."

When Bin Laden was killed, Reddit was the first place to discuss it, removing the limitations of one-way news.

When the Aurora shooting in America happened, the most up-to-date information was on Reddit. When a new meme starts making the rounds on the internet, reddit is most likely where it originated. It is no more or less a serious news source than a purveyor of cat videos.

As another Reddit moderator, Daniel Akin, said:

"You just don't have to wade through

masses of shit to find what you're looking for like you have to with Facebook.

"With reddit, it's the point. We want to find out cool shit, and we get it instantly – advert free."

Commentary on Reddit can be as interesting and alluring as the content, which is far from the case with other social media platforms like Facebook and Twitter, where comments under content are regularly trash.

Reddit's rating system means most insightful comments usually rise to the top, although this obviously depends on the sub-reddit.

Political subreddits regularly align with their leader or party, and like most forums, suffer from a severe echo chamber.

Reddit can also be a great place to debunk rumours, fake science stories and other conspiracies.

Every few weeks, there will be a story on the miracle cure for cancer, AIDS or death, and the top comment will almost assuredly be from a specialist in the profession, detailing the issues with the research validity or adding more detailed information on why this could be a genuine breakthrough.

While the developers are pushing new designs and ideas on Reddit, like trending stories, they're spending a lot of time working with the community to get any major changes right.

This stands in stark contrast to Facebook and Twitter, which regularly push out major updates without consulting users.

The pervasive and vapid nature of most social media platforms makes them hard to sell as a way to spend your free time, although we're all guilty of spending too much time on Facebook, Snapchat and Instagram.

While Reddit is not without its flaws and has plenty of ways to aimlessly spend your time, it also has plenty of informative subreddits, one for each interest.





When Should Children Be allowed a smart phone??

Things to consider...

- Limiting access to internet – give them less data meaning little to no access to the internet (5GB of data is considered to be small)

- Monitor what apps are downloaded

- Consider parental controls – certain words can be censored in the phone settings.

- Does environment play a factor? I.e is school far away?

- Are they responsible time keepers? If not, this could be a sign to hold off a bit.

- Giving them a phone with no SIM. This would mean that they could get used to how smart phones operate and the functions they possess.

- Have open and honest conversations with your child about their online world. Find out what they like doing and get involved.

- Tablets are a good first step as they can only access wifi meaning theres no danger of them racking up large data or download bills.

- If you're sticking with a phone, look for devices like the 'Monqi' Kids Smartphone which lets parents set limits for surfing, downloading and texting.

Overall, it's important to point out that the eventually, whether you like it or not your child may become a smart-phone user and will ultimately have to find their own feet. However, it is an important issue that as a parent, you must know when the time is right. So, at the end of the day, it's your say, your do.

It's a question that every parent will inevitably have to address once their child reaches double figures and begins to form the early foundations of their social lives. The conversation itself has become a bit cliché, due to the fact smartphone use in 2019 is ubiquitous, with phones playing a part of almost everyone's day-to-day life.

In this super connected society, the need to possess a smartphone has become increasingly more important, if you want to keep up to date with friends and all the world has to offer, so when should children take the plunge?

Phoning friends and family is still a key reason for getting a smartphone, but there's much more to think about nowadays. Smartphones offer an 'everything under one roof' platform, including access to the internet, a camera and different communication technology.

Research has shown most parents don't let their kids get their hands-on smartphones

until the age of 10. This is a good bit of information to base your own opinion off, so you can gauge whether you think your 10-year-old is suitable or not.

The dangers of the internet are well documented, but when children can be exposed to

these dangers at such ease via apps, problems are likely to arise. This simple step-by-step guide is designed to give guidance and things to consider. If you think your kids' technological savvy is greater than their ability to use it wisely, pay attention to the gap. You may need to say: "No, not yet."



App Watchdog



App store

villains...

In this month's App Watchdog, we tackle a nuisance in the form of a phonecall recording app. 'Tapeacall' has come under fire from phone users who claim it's services are no more than a scam.

As most people know, a lot of modern products/services don't always do what they say on the tin. Companies will hop skip and jump through loopholes to get you to sign up for subscription, that's essentially just an example of an effective business model, right?

However, there's growing concern that more and more phone applications are increasingly 'trapping' subscribers onto payment plans even though they have cancelled their subscription before the trial period has ended. If you cancel before the trial ends you shouldn't be charged, that's how many successful apps work because they don't want to force people to buy their app, they want the user to have control, which usually seems to provide a very user-friendly experience. Unfortunately, not all apps strive for brand continuity, or want to create a handy, useful tool, some appear to just be scams aiming to make a quick buck.

An example taken from my own experience came in December when I downloaded the phone call recorder app 'Tapeacall' so I could record a phone interview I had to undertake. Everything about the app seemed legitimate. It was well presented on the App Store and looked trustworthy. I proceeded to sign up for the trial, used it, went to cancel the app only to discover there was no cancel button. This confused me, and I thought it was just a glitch at first or the version was simply out of date, unfortunately neither of those were the case.

"They ruined my life, worst app ever"

After extensive research online, I found many people had the same problem, the reviews on the apps Facebook page were appalling. Hundreds of negative reviews and angry comments from people who had been wrongfully charged for monthly and even yearly subscriptions because they couldn't find a way to end the free trial (like a lot of applications the app makes

you put your bank details in to enable you to start your free trial) meaning the company has you and your bank account trapped onto a subscription plan you never wanted to be on. Obviously, people were outraged with one person saying "I've tried ringing the customer service number and the line is totally dead. I purchased this app through their website and they basically just stole the money. App never worked and no email, phone number or anything to get my money back!!". He wasn't the only one who had lost money, another person said, "they ruined my life, worst app ever".

Luckily, amongst the chaos, there was a comment that provided a solution. One person had commented saying "you have to log into your iCloud and cancel the subscription via your subscription list." I was lucky I spotted this solution early so I could cancel this toxic app immediately to avoid being charged for a monthly subscription when all I wanted was to use it once during a free trial - which is what they initially

Although it might seem a minor issue in today's world, the stress and anxiety surrounding payment plans are enough to worry anyone, especially apps off the App Store. The great unknown of cyberspace and the internet can be scary for some, as scammers like 'Tapeacall' lurk in the shadows waiting for the next unfortunate less tech savvy individual to invest in their product.

Fortunately, there are ways to avoid being scammed as Sam Brown, a PHD student studying cybercrime at the University of Warwick suggests:

"Check who is the developer. If the name is misspelt, sounds fishy, or isn't capitalized suitably, maybe you should dig a little deeper," he says. "Check what permissions are asked of you. The permissions that the app asks for, must match with its functionality. The apps that ask you for least number of permissions is easier to trust."

And finally:

"Check the ratings. If it has anything less than 3 stars, it's not worth your time. Also, you must check how many ratings it has, getting 5 stars with a handful of ratings is not really reliable."

"Cybercriminals will support their fraudulent apps with a raft of similarly-fake reviews."

Although it may be easier said than done, it's important to do your research before signing up to any digital applications that require an online purchase.

"Look at the apps reviews" adds Brown.

"You should do this for everything you download anyway. But you might skip reviews if you're installing something you know and trust already. You're probably already familiar with WhatsApp or Netflix, for example. That doesn't mean the apps purporting to be WhatsApp and Netflix are genuine.

"In fact, scammers target the best-known names in the hope more people will fall for it. Why bother with an obscure title when a fake Netflix app could trick a few hundred people into submitting their private information?

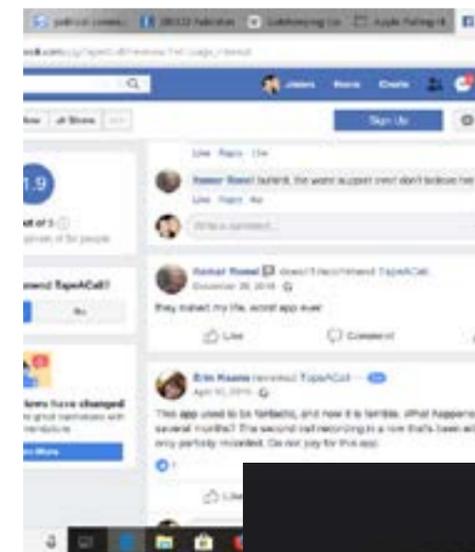
"That's why you need to check the reviews related to the app. If something's

not right, you can be certain many will have complained.

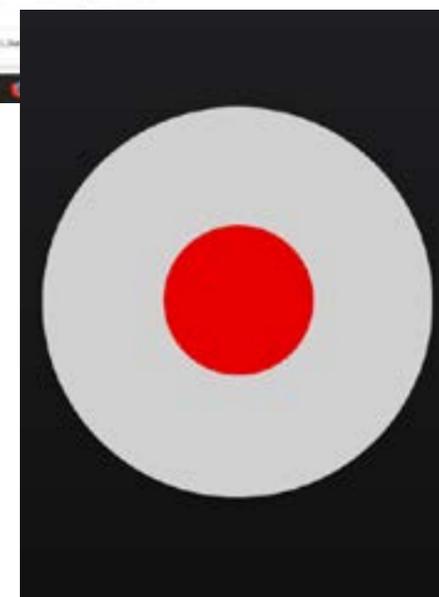
"Even this can be skewed though. Cybercriminals will support their fraudulent apps with a raft of similarly-fake reviews. These will typically be one word or single-line summations awarding it the top rating. Ignore those completely. Look to the lengthier ones and stay sceptical."

So, if I've learnt anything from this it's not to get overly excited when you see an app that seems too good to be true, regardless if you're desperate for a quick tool that could resolve a work issue like I was.

So, ensure you do your research, be diligent, and try and find alternatives before you start splashing the cash on apps that could just turn out to be a wolf in sheep's clothing.



Left: reviews left by furious customers.



Above: The app in question - Tapeacall.

The dangers of deceit.

Illusion politics - are you in an echo chamber?

Over the past few years, global politics has been undeniably shaken up. Donald Trump unexpectedly became the 45th President of the US, to many people's dismay.

The UK unexpectedly voted to leave the European Union, which landed the British government in hot water, as well as hastily pulling the rug out from underneath the feet of confused political experts.

Both of these politically paramount events didn't happen by accident, and they weren't predicted. So why did these events occur?

As the digital population has now reached 4.4 billion, fingers are being pointed towards tech giants such as Facebook and Twitter for their facilitation of misleading information, termed 'fake news' by the media.

In Trump's case, his election marked a severe upset to conventional wisdom, with his startling use of social media drawing particular attention.

Social media has always been blamed for being an enabling platform for nefarious online behaviour.

Cyberbullying, financial fraud and radical indoctrination are all known products of social media.

However, those issues are essentially user orchestrated and carried out by people online.

Now, social media itself has been criticised for interfering with politics in invisible ways.

These ways, according to those who accuse social media platforms, are evidently having a large effect on the outcome of political affairs.



One potential way in which social media may be affecting politics is simply through code developed to enhance your Facebook or Google experience, tailoring and personalising it to the user's online profile.

These algorithms identify your interests and show you more of what the algorithms think you like, whether that be new products or radical news stories.

Although, this may seem brilliant at first glance, some, like Dr Imke Henkel, who specialises in the future of political journalism, said it's the opposite of a miracle:

"As has been proven, social media giants are developing personalised feeds through algorithms. A lot of research has been done to figure out the implications are of this.

"It's this polarisation of the populous that could be the explanation for such radical/unexpected outcomes in political affairs of recent years."

"Studies have shown that these algorithms tend to cause filter bubbles, or echo chambers. This is a very interesting concept. These companies are tailoring search results to mean we are in our own bubble.

"However, it's incredibly hard to measure the effects because demographics have varying levels of access to the internet. This means there could be more going on here causing people to have more polarised views."

Plenty of studies have been conducted on Facebook's personalisation algorithms since Brexit and the US election.

One study conducted by Walter Quattrociocchi showed the effects of echo chambers and filter bubbles, which were a byproduct of Facebook's focus on personalisation.

The research focused on how both Italian and US Facebook users relate to two distinct narratives. Findings showed that:

"At least in the areas studied here, Facebook users are highly polarized. Their polarization creates largely closed, mostly non-interacting communities centred on different narratives – i.e. echo chambers.

"The echo chambers are statistically similar in terms of how communities interact with posts. For both scientific information and conspiracy theories, the more active a user is within an echo chamber, the more that user will interact with others with similar beliefs.

"The spreading of information tends to be confined to communities of like-minded people. We have also found at least indirect evidence of group polarization within those communities.

"It's this polarisation of the populous that could be the explanation for such radical/unexpected outcomes in political affairs of recent years. However, it's important to note that this cannot be blamed solely for such political disruption as it is a relatively new phenomenon to which needs far more research, but it is definitely having some effect."

Worryingly, the wider implications of these findings are scary to say the least.

If the research is true, then there is a great danger that people are becoming increasingly politically isolated without them even knowing it.

This isolation may make it harder for internet users to clue themselves up on candidates or affairs in the run up to future elections.

The next question is, if you are in an echo chamber, how do you get out?

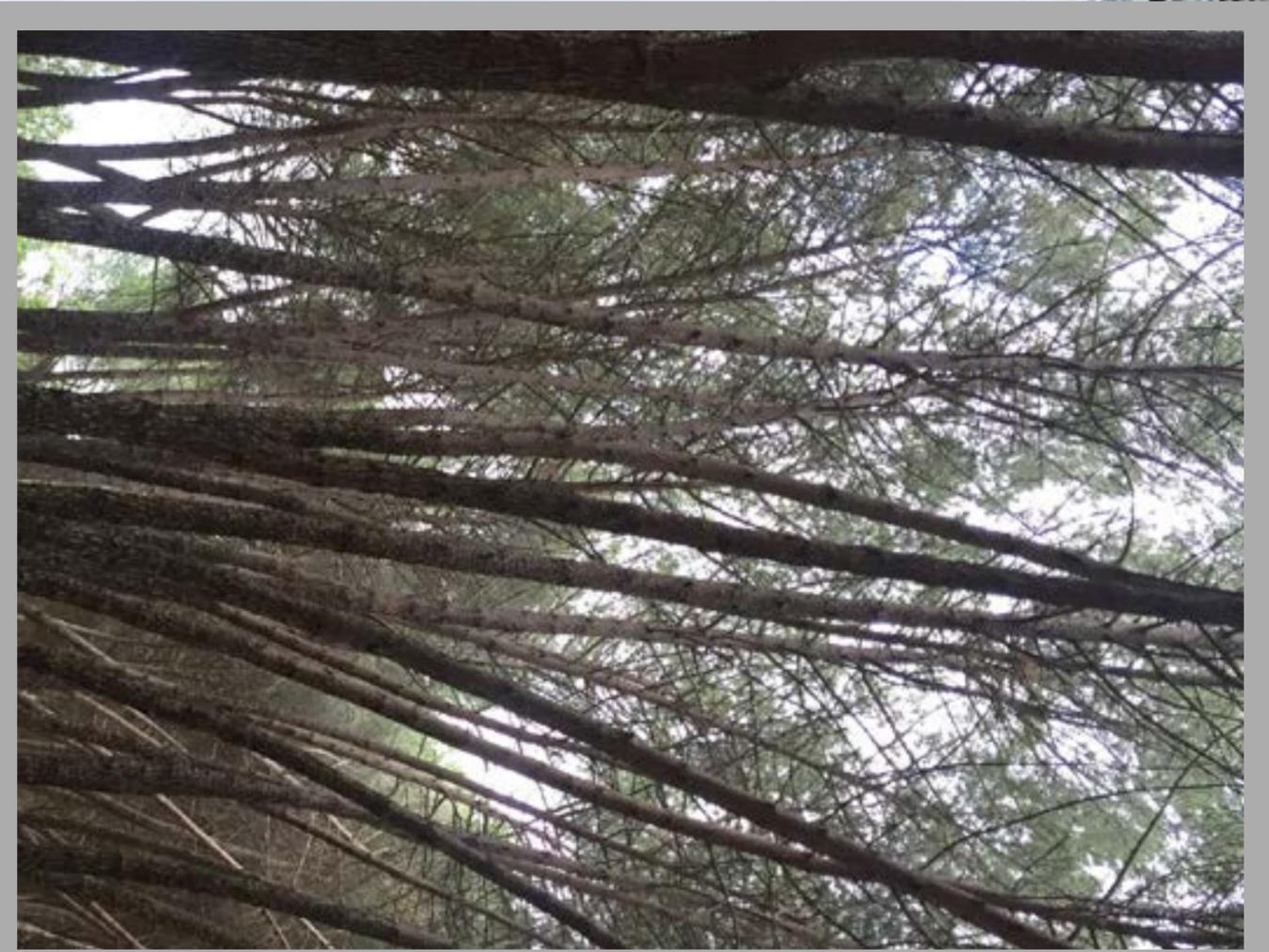
How can you identify misinformation or gather a realisation that what you're reading is totally false? Or scarily one sided?

Try and seek out a variety of sources, take a news story and test it. See what Facebook is recommending for you that concerns a particular news story and then search the internet, conjure up a balanced view and then make a decision about how you feel on the matter.

"We are in a world full of misleading information online, people must attempt to broaden their sources."

Obviously more research is needed to really prove what effects echo chambers are having on politics.

Nevertheless, it shows an inkling of a darker side to our beloved social media, which highlights just how deeply engrained social media platforms are within society.



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