TOWARDS 2030

EXPOSING THE
8 MEGATRENDS
THAT WILL DOMINATE THE
COMING DECADE

By Michael McQueen

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Celebrated author and political theorist David Rothkopf once observed that the ability to anticipate what the future holds is something that doesn't come naturally to most of us. He suggests that as humans, we operate with a range of biases and we expect the world to confirm them. As a result, we mishear, misread and misinterpret events around us. We live in a world where 85 per cent of the time today's weather is the same as yesterday's weather and as a result, we tend to let the immediate past shape our expectations of the future.[1]

And yet the future is going to be very different from what any of us have known.

London Business School Professor Gary Hamel puts it well when he observes that "You can't outrun the future if you don't see it coming".

And that's the purpose of this research report, *Towards 2030*. My goal is to help you get a clear sense of what the future will hold so we can start preparing now.

Having spent over 15 years analyzing trends and identifying patterns before they even become disruptions, I'd suggest that the coming decade will be dominated by 8 seismic shifts. These megatrends will reshape our world, recast our economy and redefine everyday life in ways many of us can scarcely imagine.

Here's to preparing now for what's next.

Michael McQueen
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ABOUT MICHAEL

Michael McQueen has his finger on the pulse when it comes to emerging trends shaping society and business and has worked with some of the world's best-known brands. He has written six bestselling books and his work has featured in publications ranging from the UK Daily Mail to Medium.com and the Huffington Post.

Michael is a familiar face on the international conference circuit having shared the stage with the likes of Bill Gates, Dr. John Maxwell and Apple co-founder Steve Wozniak. He has presented to over 500,000 people across 5 continents since 2004 and is known for his high-impact, research-rich and entertaining conference presentations.

Michael was recently named Australia's Keynote Speaker of the Year and was inducted into the Speaker's Hall of Fame.

To find out more or book Michael to speak at your next conference, visit www.michaelmcqueen.net or email info@michaelmcqueen.net.

Trend #1

THE AGE OF ARTIFICIAL INTELLIGENCE

For many of us, the very mention of Artificial Intelligence (AI) conjures up futuristic notions of Skynet and the malevolent robots that rose up to destroy humankind in the *Terminator* film series.

In reality however, Artificial Intelligence is already here and it's not out to kill us. In fact, AI is saving lives and revolutionising the world of healthcare - and that's just the beginning.

To see the impact AI is already having in the medical arena, consider Toronto-based company Cloud DX which is leveraging the power of large data sets and machine learning to identify tuberculosis, pneumonia and bronchitis by teaching AI to detect subtle differences in the way a cough sounds.[2]

While some express concerns about the reliability of AI-powered diagnosis, Japanese researchers recently demonstrated a computer-assisted system capable of identifying and analyzing polyps found during a colonoscopy in less than a second with 86% accuracy.[3]

Beyond the world of diagnostics, AI-powered automation is proving to be a game changer in surgical wards too. A full 40 per cent of robots currently sold worldwide are designed for surgical purposes. Every year the number of robotic surgeries is increasing by 30 per cent and at the time of writing more than 1 million Americans have undergone robotic surgery.[4]

A full 40 per cent of robots currently sold worldwide are designed for surgical purposes.

The da Vinci robot is proving to be an enduring success story in automated surgery. When I was working with a key player in the medical device sector recently, they told me that as many as 80 per cent of prostate surgeries today are performed using some form of intervention by a robotic technology such as the da Vinci.[5]

INVESTMENT ADVICE FROM AN ALGORITHM

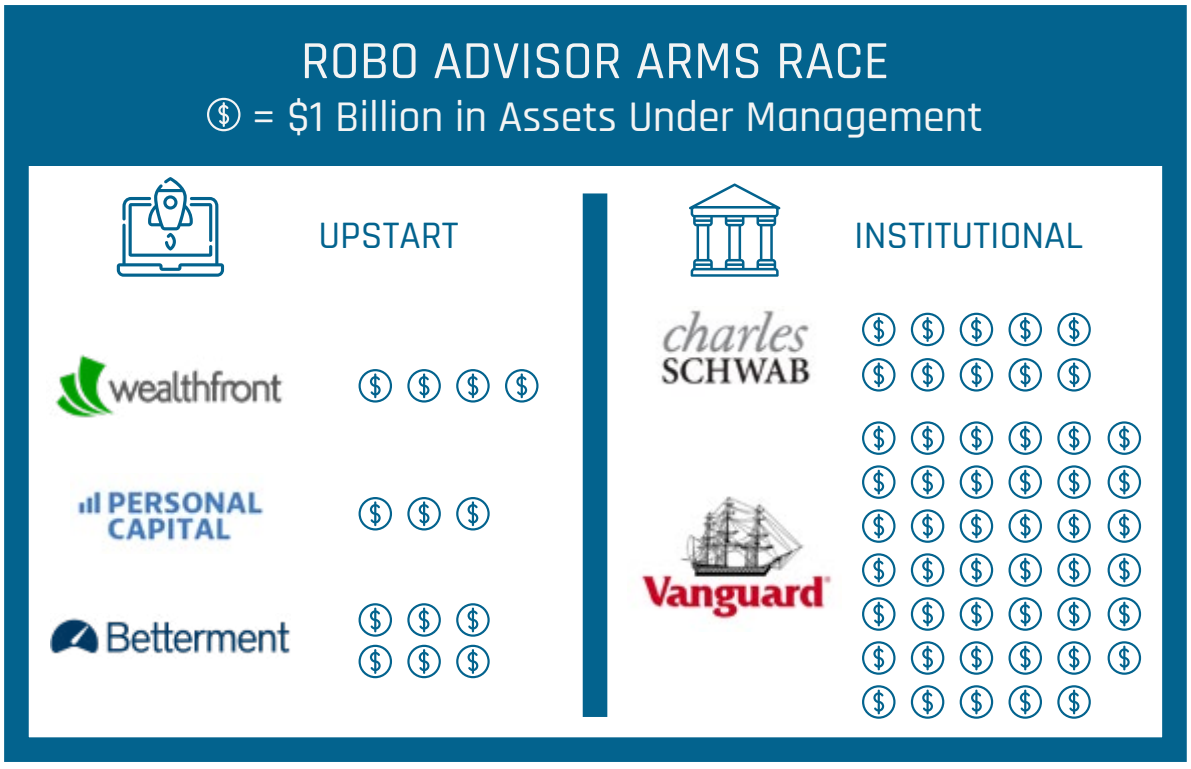
Although AI is ushering in a new age of efficiency and accuracy in healthcare, in many other industries it's impact could be far more disruptive and disconcerting.

Consider the financial planning and advice business for instance. Traditionally a high-trust business, financial advice has been rocked by a series of scandals in recent years, leaving many clients asking whether human advisers and the fees they command are actually a necessary part of the wealth management process.

While advisers who are expert financial strategists with extraordinary people skills will remain in high demand for many years to come, those advisers who are stuck in transaction mode will likely find their clients gravitating toward automated 'robo advisers'.

These automated investment advice algorithms incorporate a client's goals and risk profile in order to make intelligent wealth management recommendations at a fraction of the cost of a traditional adviser or funds manager. [6]

Carolyn Colley, chief executive of software firm Decimal, says the range of automated advice platforms is likely to grow significantly in the coming years and that by mid 2017 they were already managing $19 billion of investments in the United States alone. [7]



source – www.visualcapitalist.com

In the related field of accounting, similar moves towards automation have been underway for some time now. Automated bank feeds and cloud-based accounting software have all but removed the need for bookkeepers — and accountants themselves could be next in the firing line.

For instance, KPMG recently announced a goal of having 30 per cent of client audits completed by AI-powered robots within a few short years. That's the bread-and-butter work of a lot of accountants instantly disappearing.

While artificially intelligent diagnostic services and investment managers represent big changes, it is the impact AI is set to have on communication and customer service that could most revolutionise our daily lives.

Firstly, we are going to find ourselves communicating fluidly with robots in ways that may have seemed unimaginable just a few short years ago. Amazon's Alexa-enabled Echo, along with Google Home and, most recently, Apple's HomePod, are set to transform the way we interact with and rely upon technology.[8]

Amazon's Alexa is gaining knowledge at a rapid rate, making it ever more useful, reliable and easy to interact with. As of mid 2018, the voice assistant had gained more than 30, 000 'skills'.[9]

While many of us are increasingly comfortable with chatting to smart speakers in our homes, the reality is that you and I have been communicating with and relying on robots conversationally for a while now without even knowing it.

CHATTING TO THE CHATBOTS

If you've interacted with any large company online or even over the phone in recent months, there is every chance you were actually speaking with a chatbot rather than a real person.

Technology research leader Gartner estimates that AI-powered chatbots will be responsible for a full 85 per cent of customer service interactions within a decade.[10] It's easy to see why companies are rushing to implement this automated customer service technology — after all, it costs a fraction of what human service assistants do. It is also far more efficient.

According to Juniper Research, healthcare and banking providers using chatbots are seeing average service interactions being cut by just over four minutes per enquiry — equating to average cost savings in the range of $0.50 to $0.70 per interaction. The research's author, Lauren Foye, suggests, 'As Artificial Intelligence advances, reducing reliance on human representatives undoubtedly spells job losses.'[11]

> Chatbots will be responsible for a full 85 per cent of customer service interactions within a decade

While much of the emphasis in using AI-powered chatbots has centred on companies employing this technology to engage with customers, something very significant occurred at a recent Google event. For the first time, Google demonstrated what happens when chatbots actually become the customer.

This new technology, Google Duplex, allows customers to instruct their Google Assistant to make phone calls on their behalf and engage with human beings in an uncannily lifelike manner. Live on stage at the 2018 Google I/O conference, a demonstration was given of the Google Assistant calling a salon to book a haircut - even throwing in the odd "mmhmm" for realism. [12]

> Chatbots have seen technology pass The Turing Test with flying colours in recent years

While the ability for Google Duplex to respond to the nuances and complexities of human interaction was impressive, what was more striking was how increasingly difficult it is to tell if you are actually speaking to a computer rather than a human being.

In 1950, the famed computer scientist Alan Turing proposed that if one-third of a group of humans could not distinguish a human from a machine conversation, that would mean the machine is capable of 'thinking' – a notion that became known as The Turing Test.[13] If one thing is clear, it's that chatbots have seen technology pass The Turing Test with flying colours in recent years and the potential of what lies ahead for AI technology is truly extraordinary.

Anything we can do,
AI can do better

According to researchers from Future of Humanity Institute at Oxford University, this timeline predicts how long it will take until computers are better at doing everyday tasks than humans:[99]

- By 2022 they will be better than us at folding laundry.
- By 2024 they will be better at transcribing speech. Mark Zuckerberg and Jeff Bezos even believe even that by 2024 computers will be able to understand everything written in Wikipedia and not just translate it.[100]
- By 2025 they will be better at assembling Lego
- By 2026 they will be better at writing high school essays
- By 2030 they will be better than any retail salesperson
- By 2049 they will be able to write an entire NY times bestseller
- By 2050 they will be able to perform surgery unassisted

Trend #2

THE DEMISE OF DRIVING

While autonomous cars have received a fair amount of media attention in recent years, it may surprise you to learn that innovating the driver out of the driver's seat has been something automakers have been working on for a really long time.

Back in 1939 at the World's Fair in New York, General Motors unveiled the concept of radio-guided cars and less than 20 years later they released a test model called the Firebird, which was designed to travel along tracks wired with electrical cables (much the same technology used by cable cars in San Francisco). [14]

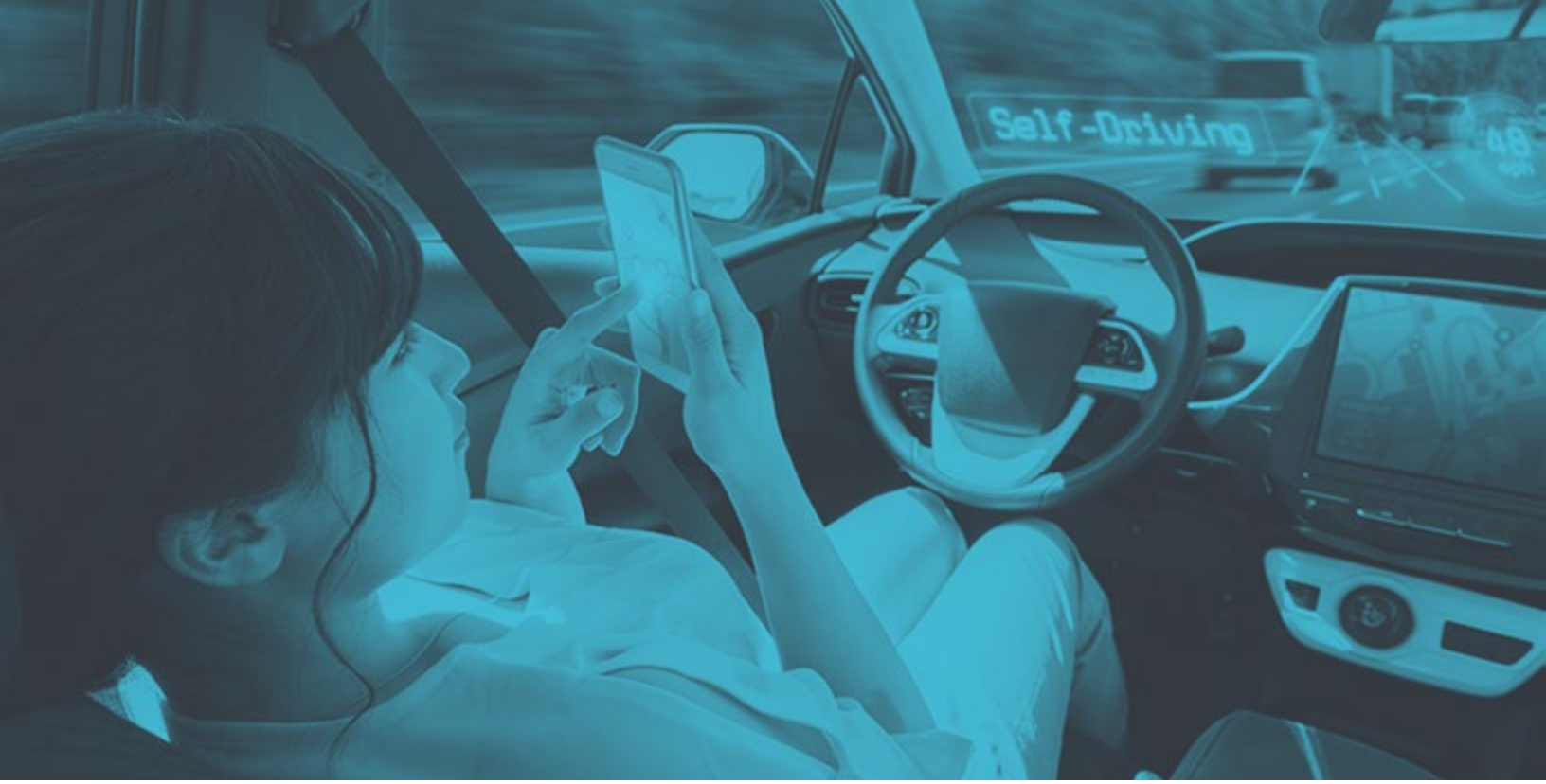
As you can well imagine, thought bubbles and slightly off-kilter inventions like this never got traction. However, the notion of self-driving cars is well and truly back on the agenda in a big way because the technology is finally good enough. As processing power has improved, data-generating sensors have become more powerful and less expensive, and AI has become functional, automated cars have become a distinct possibility.

And now we stand at a point of critical mass. With automakers across the board all working to create a future where drivers are no longer necessary, just how far away is the reality of a driverless world? In the words of Toyota Corporation's CEO, Akio Toyoda, "The automotive industry is at a once-in-a-century transformation."[15]

> "The automotive industry is at a once-in-a-century transformation."
> - Akio Toyoda, CEO, Toyota Corporation

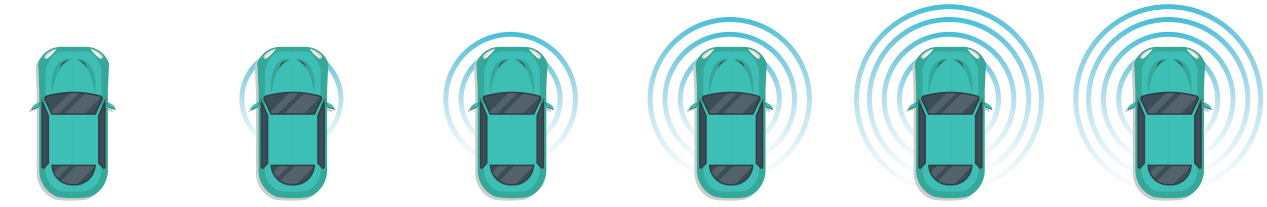
In characteristically ambitious fashion, Tesla founder Elon Musk suggests we will see true autonomous driving available to the public by the early 2020s.[16] *Quartz* magazine's Zack Kanter is equally optimistic, predicting that autonomous cars will be commonplace by 2025 and have a near monopoly by 2030.[17]

To consider how significantly disruptive autonomous transportation will be consider that it will likely see the end of taxi services entirely. A Columbia University study suggested that with a fleet of just 9000 autonomous cars, ride-sharing services such as Uber could replace every taxi cab in New York City and that passengers would wait an average of 36



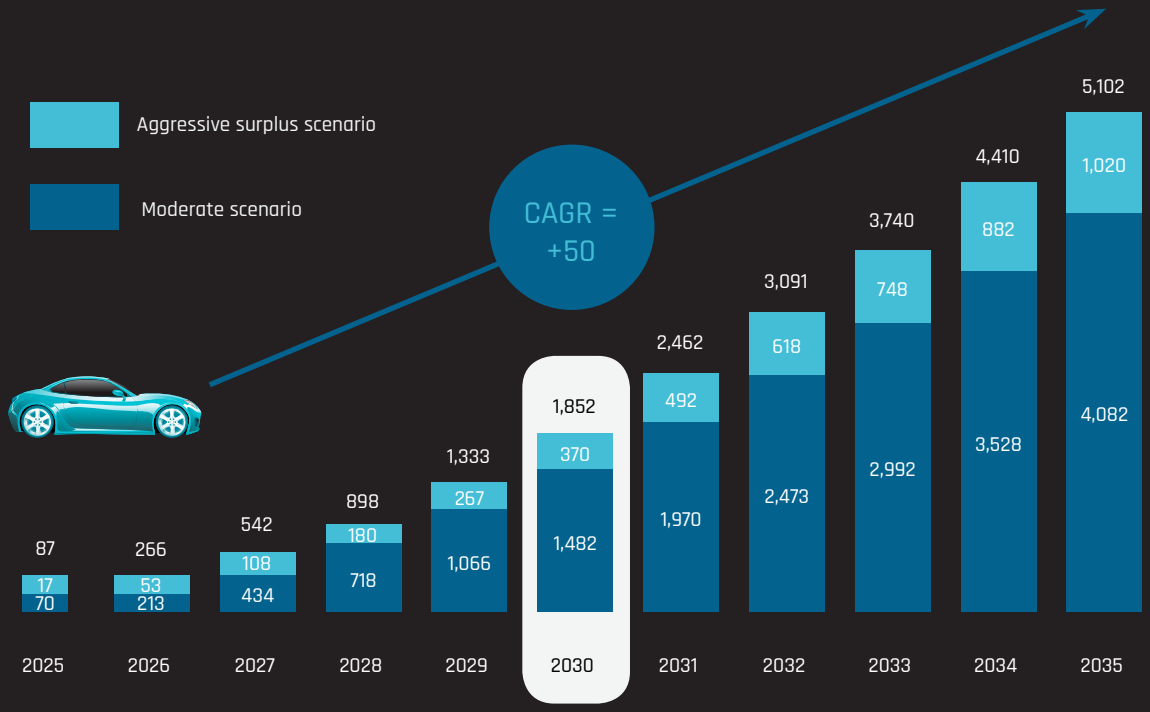
seconds for a ride that costs about $0.50 per mile.[18] As you would imagine, ride-sharing companies are champing at the bit for driverless car services to become a possibility. Former Uber CEO Travis Kalanick pointed to the enormous cost savings of removing drivers from the ride-sharing equation.[19]

The 5 levels of vehicle automation



0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy: the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

Global self-driving minutes* (billion)



source: A. T. Kearney analysis

Key players in the development of self-driving vehicles

KPMG estimate that as much as 80 per cent of auto insurer's revenues could evaporate in coming decades

The auto insurance industry is also set for a massive shakeup as driverless cars become mainstream. After all, if you do happen to be unlucky enough to have an accident in an infinitely safer driverless vehicle, who will actually be at fault? By extension, what would the purpose of car insurance be? KPMG estimate that as much as 80 per cent of auto insurer's revenues could evaporate in coming decades.[20]

'Change is coming and we need to get ahead of it', said Allstate Chief Executive Tom Wilson in a recent interview. 'It isn't going to happen tomorrow but it is going to happen soon.' [21]

LOOKING TO THE SKIES

While the demise of drivers in cars and trucks is hard enough to get our heads around, another application of autonomous transportation technology that is set to radically change everyday life is in the form of passenger drones.

In mid 2018, Uber announced ambitious plans to start testing driverless passenger drones in key cities around the world commencing in 2020. Their plan is to have these ready for launch in 2023. Uber's vision is to have these services cut commuting times in some of the world's most congested cities by up to 80% - and all for the price of a typical Uber X ride. It's not hard to imagine the impact this trend would have on the viability of and demand for ground-based transportation. While regulatory hurdles will be enormous, Uber Air could well prove the next game-changed for transportation and usher in a new age of mobility.

It's worth noting too that Uber Air are not the first ones to be working on this technology. Driverless flying drone experiments and test flights have been running in Dubai since early 2017[22] and a New Zealand-based startup backed by Google co-founder Larry Page is also making significant headway.[23]

Trend #3

THE TRIUMPH OF THE TINY

While it's easy to be dazzled by large-scale trends such as driverless cars and passenger drones, some of the most exciting breakthroughs that will shape the coming decade are happening at a much, much smaller scale.

Defined as the branch of technology that deals with the manipulation of individual atoms and molecules, nanotechnology has long been a source of fascination for scientists and futurists alike. It is estimated that currently 3-4 new nanotech products are hitting the market every week and they're having a significant impact on product design and functionality. Some have gone as far as suggesting that nanotechnology could equal and even exceed the digital revolution in terms of technology breakthroughs, investment, and societal importance.[24]

> Currently 3-4 new nanotech products are hitting the market every week

It is in the field of medical treatments where applications of nanotechnology hold perhaps the most significant and unique potential. For instance, take the invention of nanoparticles that detect cancer cells in blood.[25] Or the invention of 'Smart Dust' which is a clever name for an array of microscopic computers that can organise themselves inside the human body to perform a wide range of functions.

> In the coming years, Smart Dust will enable doctors to essentially get inside your body without traditional surgical procedures at all

The applications of Smart Dust are almost unfathomable. Imagine swarms of these nano-devices, called motes, attacking early cancer or bringing pain relief to a wound. In the coming years, Smart Dust will enable doctors to essentially get inside your body without traditional surgical procedures at all.[26]

Looking more broadly than the medical arena, nanotechnology is seeing some amazing applications in the design and functionality of everyday objects.

For instance, nanotechnology is already allowing tennis balls to last longer, wounds to heal more quickly due to bandages infused with silver nanoparticles, and specially-designed socks that actively fight odour and regulate temperature. [27] We're also seeing metals with memory that alter their original shape as well as ceramics and crystals that turn pressure into energy. Researchers have also recently developed an elastic-like yarn made up of nanotube coils that weave together to create a wearable electricity-generating fabric called 'twistron'. [28]

NANOTECHNOLOGY'S MARCH TO THE MAINSTREAM[29]

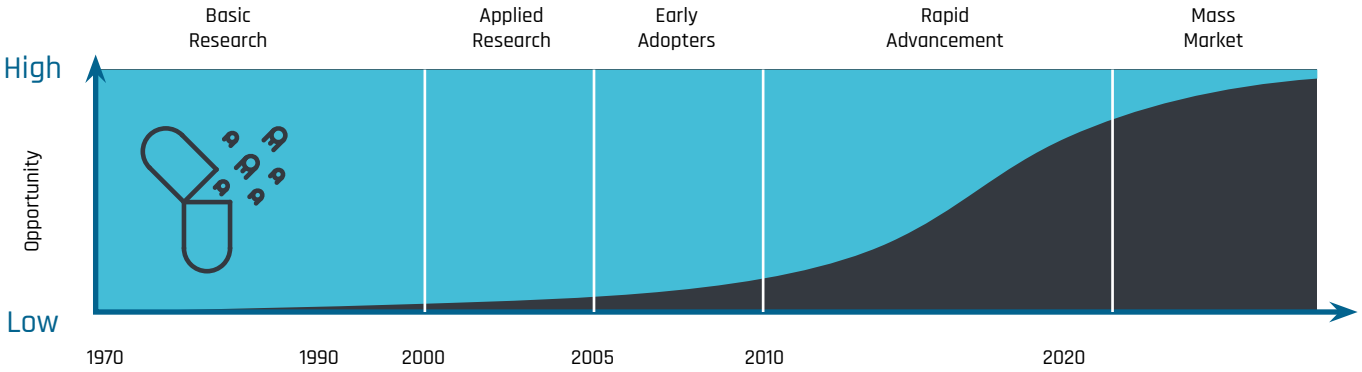
Researchers at the Indian Institute of Technology Madras recently announced a nano-particle-based filtering technology that can provide clean water for a family of five at a cost of $16 per year. Nano-filters may soon be able to desalinate sea water. [30]

Scientists at the Hong Kong Polytechnic University have even developed nano-thin particles of titanium dioxide fabric which will use natural or ultraviolet light to self-clean clothes without the need for detergents and automaker Nissan has even invented a new nanotech-powered paint that enables a self-cleaning car. [31] Looking to the future, engineers are even working on nanotech adhesives inspired by geckos which will allow us to scale buildings.[32]

Within a decade, the global market of products that contain nanotechnology will be over $1.5 trillion

Over 1000 products in the market today contain nanotechnology including sports equipment, computers, textiles, pharmaceuticals and cars. Within a decade, the global market of products that contain nanotechnology will be over $1.5 trillion according to James Canton. One of the technology's chief advantages is the ability to create materials that have properties never before seen in nature.[33]

The growth of nanotechnology



Source: Nanotechnology in the real world: Redeveloping the nanomaterial consumer products inventory.

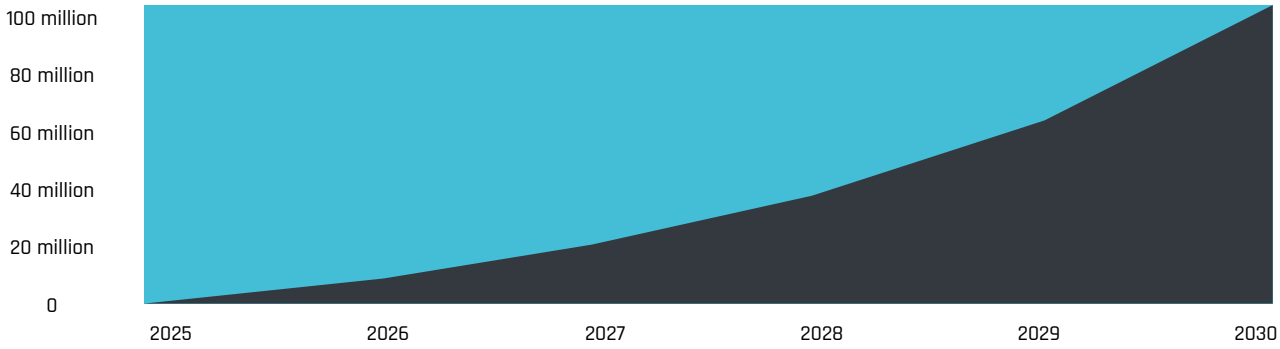
Trend #4

THE PRINTABLE WORLD

While 3D printing has been a fringe technology for decades, the numbers give some indication of how quickly it is moving towards the mainstream. Between 2014 and 2017, the number of desktop 3D printers nearly tripled with estimates that annual sales will exceed 100 million units by 2030. Driving this march towards the mainstream, Siemens predicts that 3D printing will become 50 per cent cheaper and up to 400 per cent faster in the coming decade.[34]

Desktop 3D printer sales forecast

CAGR: 50%



Samuel Adams - Data from Context , extended by "3D Printing Industry".

As the materials available for use in 3D printers have expanded, so have possibilities and applications for the technology. Gone are the days of being restricted to printing with resin-type plastics. Today, 3D printers can manufacture items using stainless steel, ceramics and even advanced alloys. [35]

The current market leader in small-scale residential 3D printers, MakerBot, are leading the charge in creating low-priced and easy-to-use 3D printers for residential purposes. Better yet, MakerBot are helping create an entire ecosystem of downloadable designs that will make personal printer ownership both viable and attractive. [36]

Beyond domestic applications, 3D printing has shown great promise in the medical arena with significant breakthroughs resulting in the 'bioprinting' of skin, [37] bone,[38] heart and vascular tissue. Doctors have even discovered how to print liver cells that can be used to create transplant organs.[39] It is truly amazing technology that presents such exciting possibilities when you consider that an average of 21 people die each day waiting for organ transplants.[40] Better still, the 3D printed organ replacement using a patient's own cells eliminates the danger of rejection after transplant.[41] Researchers at University of Toronto made headlines recently with their invention of a handheld 3D printer for skin grafts using a patient's own stem cells.[42]

The US Food and Drug Administration recently approved the first 3D-printed drug

In the world pf pharmaceuticals, 3D printing is poised to change the game too. The US Food and Drug Administration recently approved the first 3D-printed drug with a view to make a wide range of pharmaceuticals printable in the years to come.[43] Considering how lucrative and heavily regulated the pharmaceutical industry is, the ramifications of this change could be enormous.

To see how 3D printing could change the game and tip the scales of power toward consumers, consider recent advancements in the printing of consumer goods such as shoes.

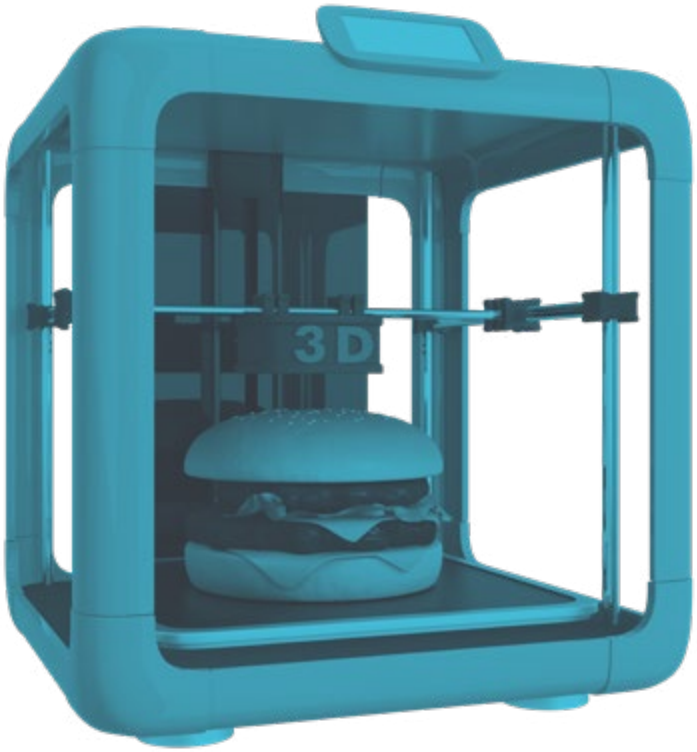
In the past few years, all the major shoe manufacturers, including Nike, Adidas and New Balance, have taken significant steps toward 3D printing.

To date, many of these advancements have centered on the creation of printed insoles and orthotics designed to prevent or eliminate foot pain. However, printing insoles is just the beginning. Soon we'll be printing the whole shoe.

New Balance CEO Robert DeMartini recently admitted that his company was working on a design for 3D-printed running shoes. "It's really just the beginning', DeMartini said. 'As personalisation takes the next step, and as the 3D ecosystem gains steam, we're envisioning being able to print these in consumers' homes."[44]

PRINTING TONIGHT'S DINNER

Despite the potential that 3D printing offers, the fact remains that the technology has struggled to become mainstream in recent years owing to high hardware costs and limited availability of print designs. In the words of Hod Lipson in his book *Fabricated*, what 3D printing needs is a 'killer app' — the one capability that will cause it to become an irresistibly attractive option for everyday households.



3D-printed food is poised to enable more personalised on-demand eating experiences.

According to Lipson, this killer app may well come in an unexpected form: food.

While food printers are already creating designer cookies, pastries and chocolates, the significant shift will occur when restaurants and households can use these printers to create entire meals using 3D printing technology.[45]

The main value of 3D food printing lies in convenience and customisation. As specialised diets become more commonplace, 3D-printed food is poised to enable more personalised on-demand eating experiences. Spanish company Natural Machines predicts its Foodini 3D food printer will become as common as home microwaves within the decade.

Trend #5

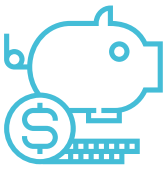
THE END OF OWNERSHIP

My colleague and fellow trend forecaster Steve Sammartino reflects on the significance of this new way of operating. "We are quickly moving to a world of access instead of ownership. Renting is cheaper than owning and so people are choosing to access things instead of owning them." [46]

> "We are quickly moving to a world of access instead of ownership."
> - Steve Sammartino

Picking up on a theme we explored earlier, the rise of the autonomous vehicle will profoundly change the way we use our vehicles in the coming years – even possibly challenging the need for us to own them at all.

Public perceptions of the sharing economy[47]



86%

Agree it makes life more affordable

83%

Agree it makes life more convenient and efficient

76%

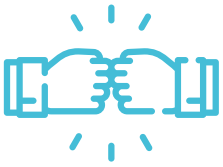
Agree it's better for the environment

78%

Agree it builds a stronger community

63%

Agree it is more fun than engaging with traditional companies



89%

Agree it is based on trust between providers and users

From a disruption standpoint, this possibility is what's keeping the auto industry awake at night — or at least it should be. Barclays Capital analyst Brian Johnson has said vehicle sales will likely decline by 40 per cent by 2040.[48]

Barclays Capital analyst Brian Johnson has said vehicle sales will likely decline by 40 per cent by 2040.

One business analyst recently predicted that owning a car in 30 years' time will be like owning a horse today – something you do if it is a personal interest or hobby but not as your primary means of transportation. If indeed our future communities are serviced by a range of convenient driverless ride-sharing services, owning a car would certainly look increasingly unnecessary – much less financially attractive. According to recent research, cars today are driven just 4% of the year, which is an astonishing waste considering that the average cost of car ownership is nearly $9,000 per year.[49]

Some of the most thorough research, examining how the self-driving age will unfold, has been conducted by Tony Seba and James Arbib of the think tank RethinkX. According to Seba and Arbib, 90% of passenger miles by the late 2020s will be travelled in autonomous vehicles and that many of those vehicles will not be owned by the 'driver'. Instead, this 90 per cent of travel will be done in driverless Uber-style vehicles, which will make up 60 per cent of the vehicles on the road. [50] (Similar forecasts from the Boston Consulting Group predict that Seba and Arbib's predictions are likely to be spot on.)[51]

90% of passenger miles by the late 2020s will be travelled in autonomous vehicles and many of those vehicles will not be owned by the 'driver'

As Seba put it, "People simply won't own cars. The Ubers and GMs of the world will own the cars, and they'll be in use constantly, which will drive down the cost of each ride to a point where it will be economically irresistible to consumers."[52]

The early stages of this move to mobility-as-a-service is being seen in a recently launched initiative called *BOOK by Cadillac*. Likened to a Netflix-style solution for car ownership, this auto subscription service gives members access to a fleet of cars for $1,500 per month – a cost which covers all the costs of car ownership but without the liability of actually owning the asset. There are no mileage restrictions on users and no lock-in contracts for members. While initially only available in the New York metro, the program is set to be rolled out in Los Angeles and other major markets in the near term and represents and radically new approach to car use.[53] Other carmakers such as Volvo have quickly followed suit with their own subscription services.

THE 'AS-A-SERVICE' REVOLUTION

While mobility-as-a-service is a concept getting a lot of attention recently, the as-a-service trend more broadly is one that's taking hold in a variety of industries. At its core is an assumption that there is little benefit or sense in owning an asset which will depreciate, go out of fashion or require money to maintain, when you could simply pay to access that asset when and how you want it.

The earliest stages of this movement were seen in the shift from music ownership to streaming in the late 2000s. When Spotify and Pandora first came onto the scene, they challenged the very idea that we needed to own the music we enjoyed. Instead, they gave consumers the option to pay a small fee per month to essentially rent access to a library of music without ever having to own the physical or digital asset. [54]

There is little benefit or sense in owning an asset which will depreciate, go out of fashion or require money to maintain, when you could simply pay to access that asset when and how you want it.

In the world of fashion similar changes are afoot. Toronto's Boro Clothing company is a case study in what the future of clothing may become. With Boro Clothing, users have instant access to a wide variety of quality garments which they can wear once and then return. The company handles all repairs and dry cleaning while giving owners peace of mind that they will be compensated if garments are destroyed or irreparably damaged. With prices starting at around $30 for a four-day dress rental, it's easy to see the attraction of a service such as this. [55]

Other services such as Rent the Runway offer similar subscription plans for clothing and seem perfectly suited to the Instagram generation who are mindful of how many times they are seen in the same outfit on social media. Being able to access an outfit for a single outing is thus highly attractive.

In the less glamorous world of lighting, Electrical giant Philips have embraced a similar as-a-service approach. With modern LED globes now lasting for up to 50,000 hours (the equivalent of running for 24hrs per day for 10 years), the traditional purchase-and-replace business model is proving much less lucrative and reliable than it once was.

As a result, Philips have begun adopting a lighting-as-a-service model where customers can pay by-the-hour for the lighting they use rather than invest in the hardware up-front.

Access is the new ownership

Returning to PWC's research referenced earlier, the conclusion from their report sums up the core of this 5th trend well. "Access is the new ownership," they declared.[56] While some celebrate this as the best expression of neoliberalism – encouraging free flow of goods and services in the market without government regulation[57] – we must acknowledge the fact that asset ownership underpins the viability of countless industries and professions. This will have significant ramifications for our students as they consider the labour market of the future. While we have long talked about our economy being increasingly service-based, the end of ownership will see this increase exponentially in the years to come.

Trend #6

THE RETHINK OF RETAIL

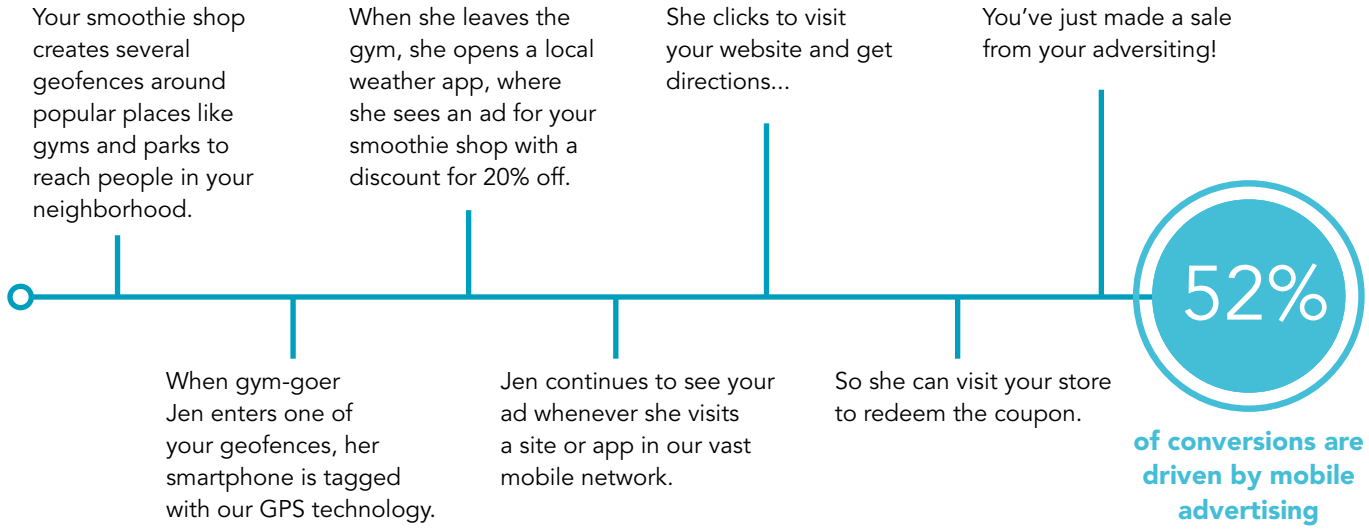
Imagine a world where you enter a retail store and are instantly identified by your mobile phone. Your preferences, credit card details and buying history are immediately recognised along with your identity and, from that moment on, the entire in-store experience is customised to your needs and desires.

You will select products either by scanning a code on your smartphone or by placing items in a physical shopping cart the 'old-school' way.

When you are finished shopping, there are no cash registers, no lining up to pay for your goods: RFID tags in the packaging of every product means your shopping tally is calculated as you walk past sensors near the exit and the amount owing is immediately charged to your default credit card.

Sound fanciful or futuristic? Well this is almost precisely the automated retail experience shoppers are already enjoying in Amazon's brick-and-mortar retail stores, named Amazon Go.

How geofencing works in the consumer journey[58]



Payment giant Square have also developed and released technology that will identify you upon entry to a store. Their Pay By Name system detects when a known mobile phone is in range, identifies the buyer, and displays his or her face on a screen so that the person behind the register can simply tap the picture to complete the transaction. [59]

While each of these current technologies relies on customers' smartphones as the primary interface for retail automation, we are not far off removing the need for phones in the process as well. Before long, biometric technology will recognise our voices, fingerprints or retinas as we walk into a store and kickstart the automation process. Chinese payment giant Alipay even unveiled technology called 'Smile to Pay' in September 2017 which allows customers to verify their identity and 'pay' for a meal via facial recognition.[60]

Perhaps no other company has changed the retail landscape as comprehensively as Amazon - it appears that the online retailer is only just getting started.

AUGMENTED REALITY - A REALITY THAT CAN'T BE IGNORED

One of the few remaining advantages bricks-and-mortar retailers have enjoyed over their online counterparts has been the ability to genuinely try before you buy. That advantage ended in June 2017 when Amazon released its Prime Wardrobe service allowing online customers to try items on before making a purchase. Amazon Prime customers can now order up to 15 items and keep only what they want (providing they return the unwanted items within 7 days). To incentivise customers to keep additional items, the fewer items they return, the greater the discount they receive of their entire order.[61]

Looking further ahead, two recent patents secured by Amazon hint at the retail giant's ambitions to use augmented reality to transform the online buying experience - thus making it a genuine alternative to in-store shopping. The first patent, would see Amazon generate highly realistic augmented reality images of products such as jewelry, glasses, watches, and furniture. Cameras and sensors will track the shopper's movement and their environment to create the experience of actually wearing or using the object. To make the images seem as realistic as possible, the patent even described replicating reflective surfaces in the room.

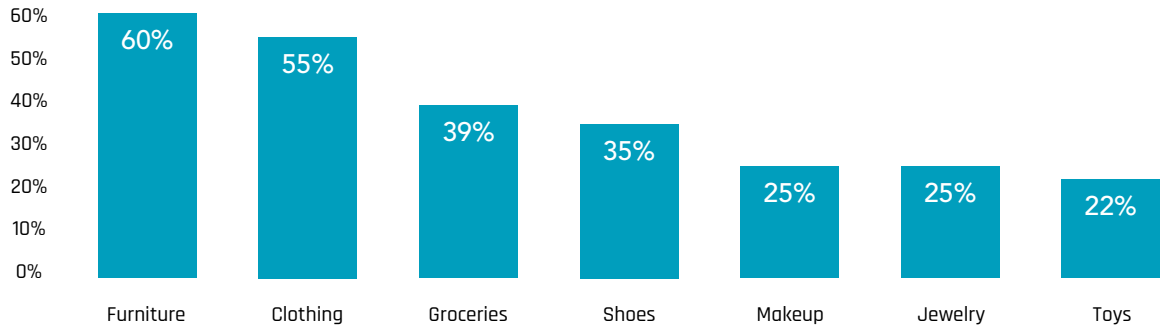
The second patent revolved around technology that would project images of products into a room so shoppers could see how furniture or other items look in-situ before making a purchase.[62]

> An estimated 100 million consumers are forecast to shop via augmented reality within a decade

More than anything else, patents such as these give an indication of how seriously Amazon is looking to

use technology to offer online consumers the benefits of an in-store shopping experience. Further still, it appears that they'll be far from the only ones pursuing this goal with other solutions such as Zeekit[63] and Magic Mirror[64] showing real promise. An estimated 100 million consumers are forecast to shop via augmented reality within a decade.[65]

Product types for which online shoppers want to shop using Augmented Reality



(source, Centric Digital, 2017)

THE END OF RETAILING AS WE KNOW IT?

While there are some who suggest this technology could spell doom for traditional bricks-and-mortar retailers, the reality is that it will probably just change the form retail stores take.

At the very least, retail customer service will need to go beyond simply satisfying shoppers' needs, answering their questions and executing a transaction. Retailers will need to create a multisensory experience that is worth raving about. This will mean making customers feel valued, loved and special. In an age of ever-increasing expectations, a customer's most recent exceptional experience will become their new base standard — so delivering remarkable service experiences will be a never-ending pursuit.

Beyond enhancing the customer experience, retailers will likely see the form and function of stores change. Rather than having shops packed with inventory, retailers in the years to come will have shopfronts that may have only one item of each style and size for customers to try on. Once shoppers have made a purchasing decision, the item will be dispatched from a third-party location and delivered to their home or office within hours.

Thus, the store becomes a showroom rather than a storeroom on display.

Trend #7

THE REIGN OF BLOCKCHAIN

Recent years have seen cryptocurrencies like Bitcoin and Etherium attract enormous attention and fascination. While early investors in these currencies made small fortunes overnight, what the fever-pitched excitement over cryptocurrencies overshadowed was the more important technological transformation being driven by blockchain.

Blockchain technology is complex, but the idea is simple. For the uninitiated or unaware, blockchain is a global distributed ledger or database running on millions of devices and open to anyone. On the blockchain, trust is established not by traditional intermediaries like banks, governments or technology companies, but through mass collaboration and clever code. Blockchains radically improve transparency thus ensuring integrity and trust between strangers.[66]

As a platform for exchange, blockchain has two major advantages. Firstly, because the ledger is shared by many parties, it is therefore incredibly secure and reliable. Transactions are verified in one location and the verification is shared to all parties.[67] The second main advantage is efficiency. Because traditional intermediaries are cut out, information and assets can be transferred at faster speed and with lower costs than ever before. [68]

According to the latest research, the global blockchain technology market is expected to be worth US$20 billion by the end of 2024 (as compared to US$315.9 million in 2015).[69]

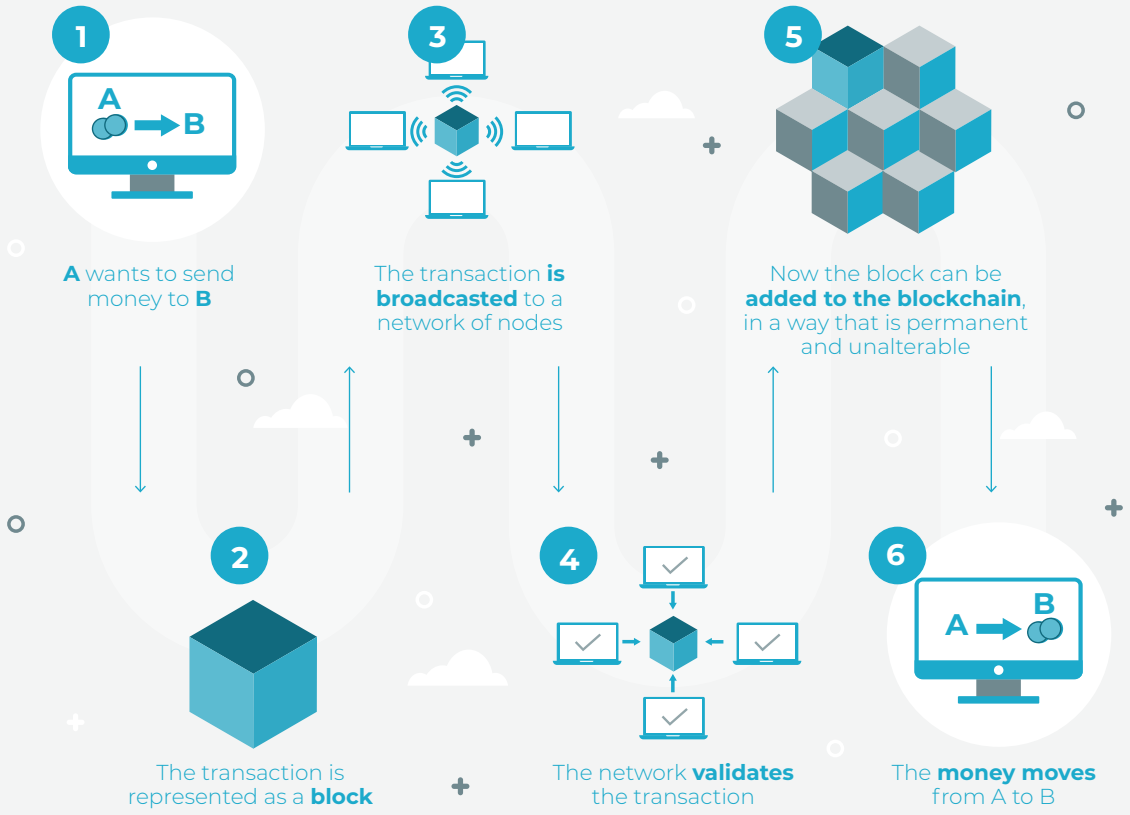
BLOCKCHAIN AND BANKING – FRIEND OR FOE?

Blockchain could be a great opportunity for banks and financial institutions to improve customer service and efficiency. As evidence of this, in September 2016 Barclays carried out the world's first trade transaction using blockchain — cutting down the time it took to process the transaction from seven to 10 days to roughly four hours. [70]

On the flipside however, it could well be that blockchain becomes a significant disruption by threatening the very revenue banks and financial institutions earn from facilitating transactions. Bypassing intermediaries in the financial system was, after all, the clear goal of Bitcoin's creator, Satoshi Nakamoto.[71] It is predicted that blockchain will reduce settlement and transaction costs by up to $20 billion (revenue that is currently being gobbled up by traditional banking institutions).[72]

> Blockchain will reduce settlement and transaction costs by up to $20 billion

How blockchain works[73]



80% of banks worldwide are actively developing their own blockchain technology

Despite the potential for revenue loss, around 80% of banks worldwide are actively developing their own blockchain technology[74] and at a financial systems level, blockchain is also set to be a game-changer. In the same way it takes banks days to synchronise their ledgers for currency transfers, when investors want to settle a stock trade it usually takes three business days from the time the order executes to do the payment and transfer legal ownership of the security.

In order to shorten this transfer time, Nasdaq recently launched a blockchain management tool for shares in private companies called Linq and some of the world's largest investment banks are exploring how blockchain could be used to settle and trade bonds without the need a clearing house at all.

In the entertainment world, operators are rapidly working on blockchain solutions to make the sharing of copyright material fairer and more transparent for content creators.

Since the dawn of the internet, many creators of intellectual property were not properly compensated. Everyone from musicians to playwrights, journalists, photographers, artists, and fashion designers had to deal through record labels, publishers, film studios and large corporations – all while grappling with the rise of digital piracy.

In the music industry, pioneering companies such as Mycelia and Ascribe.io are focusing on producing "intelligent songs" supported by blockchain technology which enable artists to sell directly to consumers without going through a label, financial intermediary, or technology company. Spotify, Apple, Sony Music and other massive media companies stand to lose or gain depending on how quickly they embrace this technology. [75]

Looking more broadly than music, blockchain will allow artists to create a registry of their work including certificates of authenticity, condition, and ownership – all while enabling them to earn royalties without going through traditional intermediaries. [76]

THE END OF CASH?

On top of these areas where blockchain will make its presence known, one of the interesting trends that it could accelerate is the demise of cash.

Currency has historically been tied to national sovereignty, with notes and coins bearing the face or insignia of the sovereign. They were also intrinsically linked to the physical world — consider how the very names of currencies such as the peso, shekel and British pound are all derived from terms relating to weight.[77]

However, the emergence of virtual currencies and the blockchain technology that underpins them represents the most significant change to financial services in decades and possibly centuries.

The emergence of virtual currencies represents the most significant change to financial services in decades and possibly centuries.

Blockchain-based cryptocurrencies are a transnational currency. Even more significantly, transactions using cryptocurrencies don't involve any physical money – a purchase of cryptocurrency is merely buying a slot in that cryptocurrency's ledger. Ownership of currency is not verified by anything tangible but rather through a secret 'private key' that divorces personal identity from the ownership.

While this degree of anonymity may sound dangerous at face value, the beauty of blockchain-based currencies is that they are entirely traceable and every transaction is logged forever. Hedge fund owner Charlie Songhurst predicts that the cryptocurrency Bitcoin will be so pervasive in the years to come that the world may end up with only 6 digital currencies: US dollar, euro, yen, pound, renminbi, and Bitcoin.[78]

Regardless of the currency used, there is little doubt that financial transactions will involve less and less money in the traditional sense.

The world may end up with only 6 digital currencies: US dollar, euro, yen, pound, renminbi, and Bitcoin

While blockchain can be difficult to conceptualise, it's hard to overstate how significantly it will impact our economy and society in the future. According to Ernst and Young's technology strategy leader, Paul Brody, blockchain will be the key catalyst that will "drive a productivity revolution across the globe on par with what Henry Ford did with the automobile."

Trend #8

THE REWORKING OF WORK

You've likely read the headlines regarding how many million jobs will be taken by robots, or what percentage of professions will disappear in the coming years. While some of these predictions are deliberately crafted for dramatic effect, they may well be close to the mark.

As many as 47 per cent of total United States employment had a 'high risk of computerisation' by the early 2030s

The most thorough and widely reported research looking at the potential of automation-led job losses in the coming years was conducted by researchers at Oxford University.

These researchers found that as many as 47 per cent of total United States employment had a 'high risk of computerisation' by the early 2030s[79] — more than 64 million jobs in all.[80]

Global consulting giant McKinsey suggest the numbers may not be as dramatic as they appear on the surface. They contend that very few occupations—less than 5 percent—consist entirely of activities that can be automated. However, in about 60 percent of occupations, at least one-third of the constituent activities could be automated, implying substantial workplace transformations and changes for all workers.[81]

Even still, McKinsey's scenarios suggest that by 2030, up to 375 million workers (roughly 14 percent of the global workforce) will need to switch occupational categories.[82]

Half the challenge of predicting the ramifications of automation in the years to come is that it's almost impossible to imagine the impact of technologies that are still in their infancy. Reflecting on this theme in a recent address, Bill Gates stated that 'Automation threatens all manner of workers, from drivers to waiters and nurses. I don't think people have that in their mental model.'[83]

In other words, we have almost no paradigm for imagining the world that will exist in the 2030s and 2040s — much less which of today's professions and industries will even still exist.

PROFESSIONS ON THE PRECIPICE

Digital media futurist Amy Webb predicts at least five career fields are 'ripe for disruption' very soon:[84]

1. retail cashiers
2. marketers
3. customer service and support workers
4. journalists
5. lawyers.

Perhaps this fifth profession comes as a surprise. After all, surely an occupation as highly skilled as law would be safe from automation?

Think again.

AI is already transforming how discovery and research functions in legal cases are being performed. Gone are the days where an attorney would sit in front of a computer monitor scanning a continuous stream of documents (up to eight in an hour) determining if they were 'relevant' or 'not relevant' to a specific case. Now AI-powered software can scan millions of documents in the blink of an eye and determine which are the relevant ones.[85]

Going beyond simple word searches, this technology can isolate relevant legal concepts that may seem unrelated to the search parameters.

NOW FOR THE GOOD NEWS...

I'm mindful that all this talk of countless millions out of work can make for less than inspiring reading. While the trends and possibilities we've explored in the past few pages are melancholy at best, there is some good news.

> AI has the potential to double annual economic growth by 2035

According to Accenture and Frontier Economics, AI has the potential to double annual economic growth by 2035 in 12 key economies that, together, generate more than 50 per cent of the world's economic output.[86] This need not seem entirely surprising when you consider that it takes the average person only 11 hours of labour per week to produce as much as they could produce in 40 hours in 1950, owing to technological advances over that time period.[87]

It's been also estimated that two-thirds of the shift away from automatable tasks will be driven by people changing the *way* they work, not losing their jobs entirely. The upshot of this is that automation will see workers rely more on their brains and personalities than on physical labour. By 2030, machines will likely take over roughly two hours of the repetitive manual tasks we currently do each week. This will allow for a greater focus on the interpersonal, instinct-driven and creative tasks that we humans do best.[88] Research from McKinsey questions the whole notion that AI will eliminate entire professions, but that rather it will simply remove the repetitive and mundane roles within existing jobs.[89]

In a rather sanguine assessment, the author of *Eat People*, Andy Kessler, suggests that "Technology always creates more jobs than it destroys. Steam engines destroyed jobs … but enabled an explosion of manufacturing. Cars killed trolleys but enabled hundreds of millions of new jobs. Vacuums and washing machines destroyed jobs for 'domestic engineers' but freed women to enter the much more productive paid workforce. Yes, some people are left behind. But as society gets wealthier, we can help them catch up."[90]

> By 2030, machines will likely take over roughly two hours of the repetitive manual tasks we currently do each week.

To give an idea of just how many opportunities new technology can open up, consider how many new jobs and how much new wealth Apple's App Store has created since its inception in 2008. Within seven years of its launch, the App Store was generating $100 billion in revenues: more than the entire film industry.[91]

THE NEW PROFESSIONS YOU'VE NEVER HEARD OF

It ought not be a big surprise that professions we've never heard of will emerge in the coming years. After all, think of how many common jobs today didn't exist just a decade ago: drone operators, big data analysts, crowdfunding advisers, bloggers, podcasters, social media specialists and even Uber drivers.[92]

So while we've talked a lot of about jobs and professions that will disappear in the coming years, it bears mentioning that scores of new professions will also be birthed — ones with titles we can scarcely imagine today, including:

- 3D organ printer technician
- neural augmentation specialist
- bio-identity manager
- neuromarketing manager
- tele-presence events manager[93]
- virtual worlds entertainment producer[94]
- chief trust officer
- nanobot programmer
- bionic interface designer[95]

A NEW ERA OF EMPLOYMENT

While we've explored how new technologies will see scores of jobs evaporate while new ones emerge, could even the very notion of having a 'job' be something that disappears in the years ahead?

Consider the forecast that by 2025, 45% of the US labour market will be made up of 'contingent' workers - up from approximately 30% in 2018.[96]

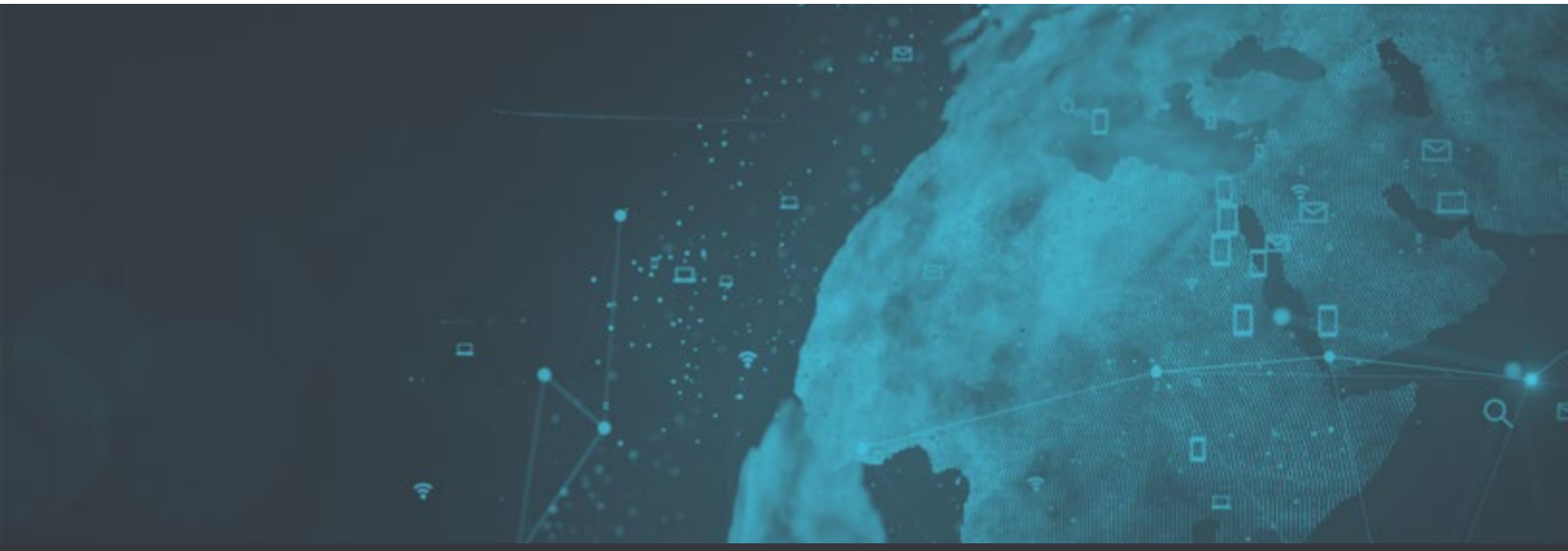
In one sense, this will see our economy come full circle. After all, prior to Industrial Revolution, a very small percentage of people were waged or salaried employees - some estimate as little as 10% of workers. Today these numbers are reversed. But this is changing and will change. In UK, self-employment is now at its highest rate in the past 4 decades at 15%.[97]

> 35% of the skills that workers need – regardless of industry – will have changed within a decade.

Jeremy Rivkin in *The End of Work* suggests a long-term future where only about 20% of the current workforce are in traditional employment.

Many of the other 80% of individuals in the labour market will likely be freelancers who are available to work anywhere in the world on demand. This is sometimes called the human cloud. If you have ever used UpWork, Freelancer or Fiverr, you have benefited from the early stages of this trend.

Regardless of the shape that tomorrow's workplace takes, what's clear is that every participant will need to constantly up-skill and retrain. According to the World Economic Forum, 35% of the skills that workers need — regardless of industry — will have changed within a decade.[98]



HOW TO PREPARE NOW FOR WHAT'S NEXT

Naturally, identifying trends and disruptions is only half the battle. The more important question is how organisations, leaders and individuals can prepare for the changes ahead.

Whether on stage at conferences or in a consulting capacity, my challenge to clients is to ensure they future-proof and bullet-proof themselves and their business models by:

1. DIGGING THE WELL BEFORE YOU GET THIRSTY – Don't wait for change to hit before you adapt. Re-invent yourself before you are forced to because if you wait too long, it'll likely be too late. The status quo may be comfortable, predictable and profitable for now, but visionary leaders recognise that embracing the status quo is a death sentence for any business today.

2. THINKING REVOLUTION, NOT EVOLUTION – When it comes to innovation, many of us make the mistake of adopting an evolutionary approach. While continual process improvement is of some value, it is not going to be enough to prepare for the changes that lie ahead. What's required is revolutionary change – a fundamental re-think of your core assumptions. As legendary business professor Oren Harari once observed, "The electric light never came from the continuous improvement of candles."

3. FAILING FAST, FREQUENTLY AND FRUGALLY – cultivating an appetite and culture for risk and failure is truly vital for any business hoping to stay at the cutting edge. In the words of Nobel Prize winner Frank Wilczek, "If you're not making mistakes, you're not working on hard enough problems." That said, smart innovation is neither reckless nor reactionary. On the contrary, it is an evolutionary process of constantly taking calculated risks, experimenting, testing and iterating.

4. FOSTER HEALTHY PARANOIA – Staying ever vigilant to the disruptive threats just around the corner will cultivate the two essential character traits of enduring organisations: *humility* and *hunger*. The moment arrogance or complacency sets in, the end is near. After all, the moment you think you've made it, you've passed it.

5. FOCUS ON FRICTION – The customer experience is everything today and any process or system that creates friction by causing irritation, confusion and frustration must be dealt with swiftly. Taking customers for granted, even unknowingly, will leave any business especially vulnerable to being disrupted by the next start-up willing to solve a customer pain-point that the incumbents aren't willing to address.

6. SPARE NO SACRED COWS – Bureaucracy, tradition and red tape are the unholy trinity in business today. Leaders must be willing to ruthlessly address the 'way things have always been done' if they hope to foster agility and responsiveness.

CONCLUSION

One of the biggest challenges in pre-empting change is to discern the difference between waves and tides.

> "To even stand still we have to move very fast."
> - John F. Kennedy

Waves are the short-term trends, aberrations and fads that come and go. They tend not to leave a mark and, while they are dramatic and even exciting, can easily be strategic distractions.

Tides, on the other hand, are the broad-based, slower moving and all-pervasive changes that can alter the entire landscape. They are not dramatic and are therefore easy to miss — and that's why so many people do.

The 8 megatrends we have explored here represent the most significant tidal shifts that our economy, workforce and society at large will face in the coming decade. Leaders and organisations ignore the shifting tides at their peril.

John F. Kennedy said in 1963 that 'To even stand still we have to move very fast'. Those words are perhaps truer today than ever before.

Smart leaders and visionary leaders know that preparing for, pre-empting and embracing disruption is the only way to ensure you don't become a victim of it.

While it can be tempting to dismiss, ignore or fight the tides of change, resistance is futile, foolish and could well prove fatal.

To this end, we'd do well to heed a caution first given 2500 years ago by the great Chinese philosopher Lao Tzu. 'Resisting change', he said, 'is like trying to hold your breath. Even if you succeed, it won't end well.'

Such simple, profound and timely wisdom for thriving in this age of disruption.

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