Ethical
CORPORATION

Rise of the robots

Can we turn AI into a force for good?

www.ethicalcorp.com

The 2nd Responsible Business Summit West

November 12 -14, 2018 | Sheraton Mission Valley, San Diego, USA

Ethics and Responsibility in digital business

'Our promised digital utopia has minefields'

- Sen. John Neely Kennedy at the Facebook Senate hearing.

Dennis Yu
Chief Technology Officer
blitzmetrics

Megan Bell
Chief Privacy Officer
HUMAN API

Mike Pinkerton
Chief Operating Officer
MODSQUAD

Olivia Jeffers
CEO
COMPASSIONATE TECHNOLOGIES

Annukka Dickens
Director, Human Rights and Supply Chain Responsibility
hp

Nancy Sutley
Chief Sustainability Officer
LADWP Los Angeles Department of Water & Power

Steve White
Chief Security Officer
FORGEROCK

Jon Drimmer
Chief Compliance Officer, Deputy General Counsel
BARRICK

Mike Johnson
General Counsel
digicert

Malcolm Harkins
Chief Security and Trust Officer
CYLANCE

3 CONFERENCES 1 EVENT!

Exclusive insights on the three core pillars of responsible digital business. Deep dive on one topic or customize your experience with sessions from each stream.

DIGITAL
- Manage data ethically to protect reputation
- Go beyond compliance with a privacy-led culture
- Find new streams for datamonetization

SOCIETY
- Prove that social purpose drives sales
- Drive digital and social inclusion in Silicon Valley
- Understand human rights impacts of big data and AI

CLIMATE
- Advance climate leadership through technology
- Deliver a fully circular business model
- Build the connected, clean and smart city

400+ CEOS, HEADS OF BUSINESS, GENERAL COUNSEL, PRIVACY, COMMS AND SUSTAINABILITY EXECS TO ADVANCE ETHICAL LEADERSHIP. SAMPLE ATTENDEES INCLUDE:

Google · f · ebay · PayPal · virgin atlantic · BLACKROCK · Walgreens

salesforce · Target · Levi's · NEXTera ENERGY RESOURCES · patagonia · IBM · vf · citi · SC Johnson

SAP · flex · Timberland · IRON MOUNTAIN · Nestlé Waters · PHILIPS · zendesk · THOMSON REUTERS · GM

vmware · hp · VISA · A · experian · Microsoft · UPS · FedEx · SIEMENS

Secure your place at ethicalcorp.com/rbs-west

#RBSWEST

Contents

4
Boxing clever
Why humans have to get a grip

Artificial intelligence briefing

20
Streets ahead
What AI could mean for cities

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

PHONLAMAI PHOTO/SHUTTERSTOCK

Must we be slaves to the algorithms?

By Martin Wright

Artificial intelligence is poised to fundamentally change how we live and work. Whether it will be salvation or curse will depend on the extent to which we get to grips with it now

It is the dawn of a new age, when everything from climate change and the state of our cities to our personal health and wellbeing will experience dramatic improvements at a speed and scale beyond anything achieved to date.

It is a looming apocalypse, morphing beyond all human control, that could wipe out civilisation as we know it within our lifetimes.

It is humanity's redundancy notice, poised to wipe out vast numbers of jobs.

It will generate vast numbers of new jobs and business opportunities, while freeing people from the drudgery of hazardous or boring work.

Depending who you talk to, "it" could be all of these things, or at least toned down versions of them.

We are talking, of course, about artificial intelligence: the rapidly growing ability of computers to imitate, and improve upon, many of the core functions of the human brain.

And to echo an earlier slogan of one of the companies involved, it changes everything.

We've seen the rise of 'black box' decision-making, where AI machines reach conclusions that may have far-reaching effects on our lives without us knowing

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full
event brochure here

AI's power is amplified by the way it combines with – and in many cases enables – innovations such as cloud computing, the internet of things and automation, and its ability to harness the vast amount of data now available on everything from energy use to individual tastes.

This has the potential to revolutionise industries as varied as finance, retail, healthcare and agriculture. It can speed the automation of whole swathes of the economy, from insurance to transport, controversially stripping out the need for human involvement in a wide range of processes. And it holds out the promise of reducing waste and pollution, and accelerating the shift to renewable energy and the circular economy.

Among the applications are self-driving cars, automated factories, super-sophisticated personal healthcare, fraud detection and prevention, and remote, precise monitoring of everything from deforestation and pollution to pests and diseases.

And there are the darker sides. The threat of mass unemployment; the obliteration of personal privacy; and the proliferation of fake news and the infamous "bubble", as content providers become ever better at telling us only the things we want to hear – or those that might trigger us to spend money to their benefit.

30 SECOND READ

- AI's power lies in the fact it enables innovations such as cloud computing, the IoT and automation, and can harness the vast amount of data now available on everything from energy use to individual tastes.

- It holds out the promise of reducing waste and pollution, and accelerating the shift to renewable energy and the circular economy

- Dark sides include the threat of mass unemployment, obliteration of personal privacy, the proliferation of fake news, and fear of autonomous weapons systems waging war beyond our control

- Tech industry investment in AI R&D was $30bn in 2016, but far-sighted business leaders are now grasping its potential to disrupt business models in all sectors.

- It will be 30 or 40 years or more before some of the more extreme manifestations of AI will be felt

- We are at a stage in the journey where we can still choose the route we take and shape of its destination – provided we realise we are on the train in the first place

Black box decision-making

Then there is the remorseless rise of "black box" decision-making, where AI machines reach conclusions that may have far-reaching effects on our lives – whether we're shortlisted for a job, offered a loan, or allowed into a country, say – without us being able to understand why, or even discover how they were arrived at. Such a process can unwittingly incorporate all sorts of bias; there have already been several well-publicised instances in the US.

And most alarming of all, the fear of autonomous weapons systems waging war beyond our control; and of the rise of an artificial "super intelligence",

'They think they're born for this. If the point of business leaders is to manage times of disruption, then this is it in spades'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

which may not have humanity's best interests at heart.

Salvation or curse, the tech industry as a whole is betting big on AI. According to McKinsey, it spent up to $30bn on R&D in 2016 alone. Now the ripples are spreading beyond the tech loop. Far-sighted business leaders, observes Lucy Parker, partner at the Brunswick Group, are just beginning to grasp both the scale of this potential, and its power to disrupt existing business models. Parker recently interviewed 16 CEOs for the British Academy's Future of the Corporation initiative, and was struck by their near-unanimous sense that something momentous was under way.

BRUNSWICK GROUP

Lucy Parker, partner at the Brunswick Group

"They would say, 'before we talk about anything, you need to understand that this is more change than we've seen in our lifetime. … It's changing the business model, it's changing the employment model, it's changing the customer model – and we are simply trying to harness it and work out what to do.'"

So how do they respond – with panic or excitement? Both, says Parker. "There is a sense of rising panic on one hand, but on the other, definitely excitement. They think they're born for this. It releases the animal spirits. If the point of business leaders is to manage times of disruption, then this is it in spades."

Some of those disruptions are happening right now, all around us. As Kate Rutherford of the AI Now Institute, based at New York University, observes: "Early-stage AI systems are being introduced simultaneously across multiple areas, including healthcare, finance, law, education, and the workplace. These systems are increasingly being used to predict everything from our taste in music, to our likelihood of experiencing mental illness, to our fitness for a job or a loan." Consumer applications abound, from Alexa and Siri to Shazzam and Netflix – and, of course, the wider world of Google and Facebook.

Further developments in AI are coming fast down the line, but not all are imminent. And some of the more extreme possibilities that are part of feverish speculation now may not even begin to manifest for 30, 40 years or more. As

'It's still early days. We've yet to see full industrialised production of this technology. There's plenty going on in the sandbox, but it's not scaled yet'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

CHOMBOSAN/SHUTTERSTOCK INC.

Self-driving cars are already here, but wilder manifestations of AI are much further in the future

PWC's AI lead, Rob McCargow, says, "It's still early days. We've yet to see full industrialised production of this technology. There's plenty going on in the sandbox, but it's not scaled yet."

To coin a phrase used by several of the experts I spoke to for this feature, one thing is certain: the train has left the station, and there's no going back. However – to extend the metaphor - it hasn't gone all that far down the track. And this isn't – yet – a runaway train, out of our control. Rather, we are at the stage of the journey where we can still, to a large extent, choose the route we take, and shape its destination. Assuming, that is, that we realise we're on the train in the first place. That we are aware, in other words, of the momentous journey we've embarked upon, and the changes it will bring.

In short, we have a window of opportunity to shape AI for good. But first we need to understand what it is, how it works, what are the risks and where are the opportunities. And then we need to decide how best to govern and control it.

For anyone involved in business and sustainability, these should be priority tasks. It might be tempting to ignore them in favour of more pressing concerns, not least because AI can – especially when sensationalised by the media – sound like so much sci-fi. But that would mean both taking our eye off some pretty hefty risks, and missing out on some tremendous opportunities for a step change on the path to a sustainable future.

In the following pages we explore what those risks and opportunities are. ■

Martin Wright (@ martinfutures) is a writer, adviser and public speaker specialising in environmental solutions and sustainable futures. He is a former Director of Forum for the Future.

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

CREDIT SARAN POROONG/SHUTTERSTOCK

View online

The inhuman touch: why robots have the edge

Put simply, AI refers to technologies that try to replicate core human functions. Peet van Biljon, formerly of McKinsey and now one of the leading innovation specialists engaging with the topic, sums it up neatly: "It's about computers doing things ever smarter than we used to expect of machines, and ever closer to what we thought only humans could do." The resemblance to human intelligence is no coincidence, he says, as "recent advances all involve some sort of neural network, which is modelled on how we think the human brain works."

At the heart of the excitement over AI is the concept of machine learning: computers working things out for themselves without being explicitly programmed to do so. Instead, they progress by processing and analysing huge amounts of data, identifying patterns and improving their performance as they do so.

The classic example is the AlphaGo system, developed by Google-owned DeepMind, which in 2017 beat the reigning (human) world champion of the game Go. Impressive in itself, this became more so when a second machine, AlphaGo Zero, which had merely been programmed with the game's rules, trained itself to play without any human prompting at all, and within six weeks had learned to beat AlphaGo – by 100 games to nil. AI had enabled it to become the best Go player in the world, well beyond the level of human performance, even though this had been honed over the little matter of 2,500 years of the game's history. A further AlphaGo version is now teaching humans how to play the game better.

It isn't just games where AI has the edge on humans. DeepMind's CaseCruncher Alpha beat a team of UK lawyers in a competition to predict the outcomes of court cases. And AI-enabled machines are starting to outperform specialist radiographers at detecting early signs of cancer.

For the tech industry, AI is the future. As Google CEO Sundar Pichai commented in 2016: "Machine learning is a core, transformative way by which we are rethinking how we're doing

everything." It's an approach shared by Ginni Rometty, IBM CEO, who said that it will form the basis for the company's future strategy.
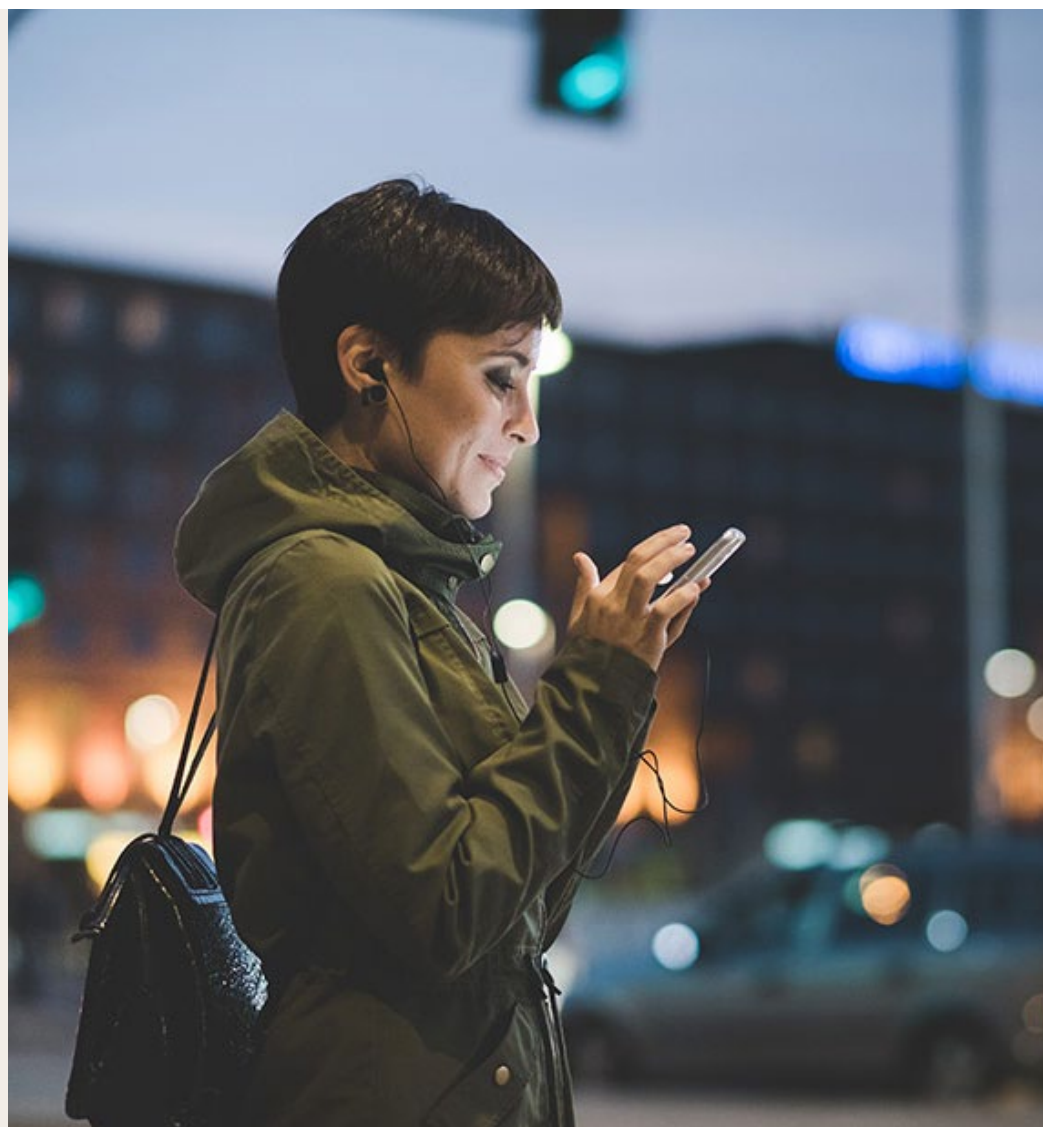
Strictly speaking, it isn't AI alone that is causing such seismic upheaval, but rather its impact in combination with the rapid evolution of other technologies. This, says PwC, amounts to nothing short of a "fourth industrial revolution" (4IR). It defines this as "the current explosion of technological innovations characterised by connectivity, speed, breadth and depth of transformation ... The rapid advances in AI [along with] the internet of things, robots, autonomous vehicles, the cloud and big data, to name but a few, are rapidly transforming industries and societies across the world."

AI feeds on data from our connected lives

The tech industry's ability to capture and store massive amounts of data is crucial to AI's success. It feeds on data; the more it has to work with, the better it performs. So it's just as well that our increasingly connected lives are generating the stuff as never before – everything from video uploads to GPS records to the vast trail of social media updates that we leave behind us. More than 90% of the data floating around the cloud has been generated in the last two years alone. And as the Royal Society observes in Machine learning: the power and promise of computers that learn by example, data is "the new oil; holding incredible economic potential, but requiring refinement in order to realise this."

Much of it is available in crude form for commercial use (thanks in part to all those "I agree" boxes we tick without thinking when downloading a new app). And it's starting to be applied. You know those personalised recommendations? Those nudges to buy this, that or the other depending where you are and what you bought yesterday? That's early-stage AI in action.

As Oliver Rowlands, software innovation specialist and Studio Director for WIPRO's BuildIt division comments: "Facebook has so much data on me that it probably knows who I am better than I do." And in that data lie vast potential riches for those who can mine it. Ever wonder why so much of the net remains free to use? AI's why.

Martin Wright

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

View online

HUMPHREY/SHUTTERSTOCK INC.

Rise of the sewbots: Asian factory workers feel chill winds of automation

By Martin Wright

With Foxconn replacing 60,000 workers in China and Nike looking to relocate production to automated factories in Mexico, half the total jobs in parts of Asia could be at risk, warns the ILO

In the public mind, one of the most pressing concerns around AI is the prospect of mass automation; of robots cutting a swathe through the jobs market. And it's not without foundation. As software gets ever more sophisticated, machines will be able to take on an ever-wider range of functions.

The entrepreneur Elon Musk is among those warning of the potential consequences. "Robots will do everything better than us … They will take your jobs [and the] government will have to pay your wage."

Depending on the speed of AI rollout, the consultancy McKinsey claims that as many as 700 million jobs could go by 2030. PwC suggests that 30% of those in the UK could be automated by around the same time, compared to 38% in the US and 21% in Japan.

Some of the hardest-hit could be developing countries that have recently industrialised and enjoyed a boom thanks to low-cost labour. Research by Oxford University economists concluded that no fewer than 77% of Chinese

Foxconn, which manufactures components for major brands, including Apple, has recently replaced around 60,000 Chinese workers with robots

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

jobs were at risk. Foxconn, for example, which manufactures components for major brands, including Apple, has recently replaced around 60,000 Chinese workers with robots.

With automation poised to sweep through the apparel industry, millions of jobs in factories across south and east Asia could vanish. AI-powered 3D printing and other technologies could speed the nascent "reshoring" trend, relocating manufacturing closer to consumer markets. After all, when a "sewbot" can produce a fully finished t-shirt in 22 seconds flat, how can a human machinist compete? The International Labour Organisation suggests that more than half the total jobs in Cambodia, Vietnam, Thailand, Indonesia and the Philippines are at risk.

There is something of an irony here. Companies like Nike drew flak back in the 1990s for allegedly using child labour in its Asian factories. In response, it invested a lot of time and money in cleaning up its act, and

30 SECOND READ

- An Oxford University study concluded that 77% of Chinese jobs are at risk from automation

- Nike is working with Flex on a new automated system in a Mexican factory that can drive down costs and allow for rapid introduction of fast-fashion premium designs

- Human-heavy factories in Asia could lose out, there's no obvious sign of that happening just yet

- Deloitte reckons that 39% of legal roles could be automated within a decade. Another study suggested 95% of accountants could lose their jobs to an AI equivalent.

- Jobs requiring a human touch – teachers, nurses, carers, social workers, therapists, artists – are least likely to be replaced with robots.

won plaudits for doing so. Now it faces another potential wave of criticism – not for poor treatment of its workers, but for having no workers at all. (Or a lot fewer of them, anyway.) The extent to which that will happen is uncertain. Nike is working with high tech manufacturing company Flex (see The problem isn't job losses) on a new automated system in a Mexican factory that can both drive down costs – not least on labour – and allow for rapid introduction of fast-fashion premium designs, so driving up profits.

The appeal to investors is obvious. At an investor presentation in October 2017, a succession of Nike executives, including chief operating officer Eric Sprunk, enthused about new production methods that will require substantially less labour - with reductions of between 30% and 60% cited, depending on the product.

Nike did not agree to requests for an interview for this article, but issued a statement insisting that: "We are not looking to eliminate labour from our current source base. We will continue to work with our factory partners, and as more innovative and efficient manufacturing solutions enter the supply chain, the profile of the labour force will evolve over time. It will require a more skilled workforce as we make way for new methods of making products to support a more sustainable and long-term supply chain."

'Just because it is technically feasible to replace a human worker with a robot, doesn't mean it's economically attractive to do so'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

TESTING/SHUTTERSTOCK INC.

Nike is looking to shift production from Asia to automated factories in Mexico.

Sprunk was previously quoted in the Financial Times as claiming that automation would not mean a net loss of jobs in its supply chain overall, but that "certain countries will see a change in the labour base".

Put all these comments together, and it does rather sound as though the human-heavy factories in Asia could lose out – although in fairness, there's no obvious sign of that happening just yet.

As to the developed world, it's not just the obvious candidates – factory workers, truck drivers and supermarket staff – who are vulnerable, says PwC. While transport, manufacturing and retail could shed half their current jobs, some of the early losses could be in sectors like finance, insurance, law and accountancy, where AI can take over relatively routine tasks such as risk and data analysis.

In insurance, for example, AI software can sort through all the vast range of personal data – from social media updates to selfies to the view of your house on Google Earth – and make a personalised risk assessment for everything from medical to theft cover within seconds. Software could revolutionise legal work, too. A consultancy called Ownet has developed an AI tool that can scan 10,000 contracts in 50 seconds, extracting key information relevant to any

Men are more at risk of losing their jobs than women, and those with few educational qualifications

particular case. It would take a human 3,300 hours to do the same task.

Deloitte reckons that 39% of legal roles could be automated within a decade. Another study, based on data from Oxford University, suggested that an astonishing 95% of account-ants could lose their jobs to an AI equivalent. So much for account-ancy's reputation as the boring but safe profession.

Further down the line, auto-mation could seep into some unlikely-sounding sectors. A poll of 140 AI experts by McAfee concluded that surgeons, radiog-raphers and air traffic controllers could all be for the chop. Other studies pick out everyone from construction workers to farm labourers, and even – heaven forfend – journalists. Already, some simple news updates, mainly on sport and finance, are generated without a human touch on a keyboard, although those specialising in longer analytical pieces (like, er, this one) might be safe – at least for now.

Fiction authors, too, can sleep easy for a while longer, if the unintentionally hilarious attempt of an AI machine to write a Harry Potter sequel is anything to go by. Composers, though, are a different matter: computer-generated music is already "a thing", with Amper claiming to be able to produce professional sounding tracks within seconds. The first AI-generated single, "Break Free", was released in August.

Overall, says PWC, men are more at risk of losing their jobs than women, and those with few educational qualifications, unsurprisingly perhaps, more vulnerable than PhD-touting scientists. Jobs requiring a human touch – teachers, nurses, carers, social workers, therapists, artists – are least likely to be replaced with robots. Ironically, these include some of the lowest status jobs – security guards, say, or caretakers. Apart from the inherent advantage of having a human in such roles, Van Biljon points out, they are also likely to be cheaper than an automated replacement. Hawksworth agrees: "Just because it is technically feasible to replace a human worker with a robot, doesn't mean it's economically attractive to do so." ■
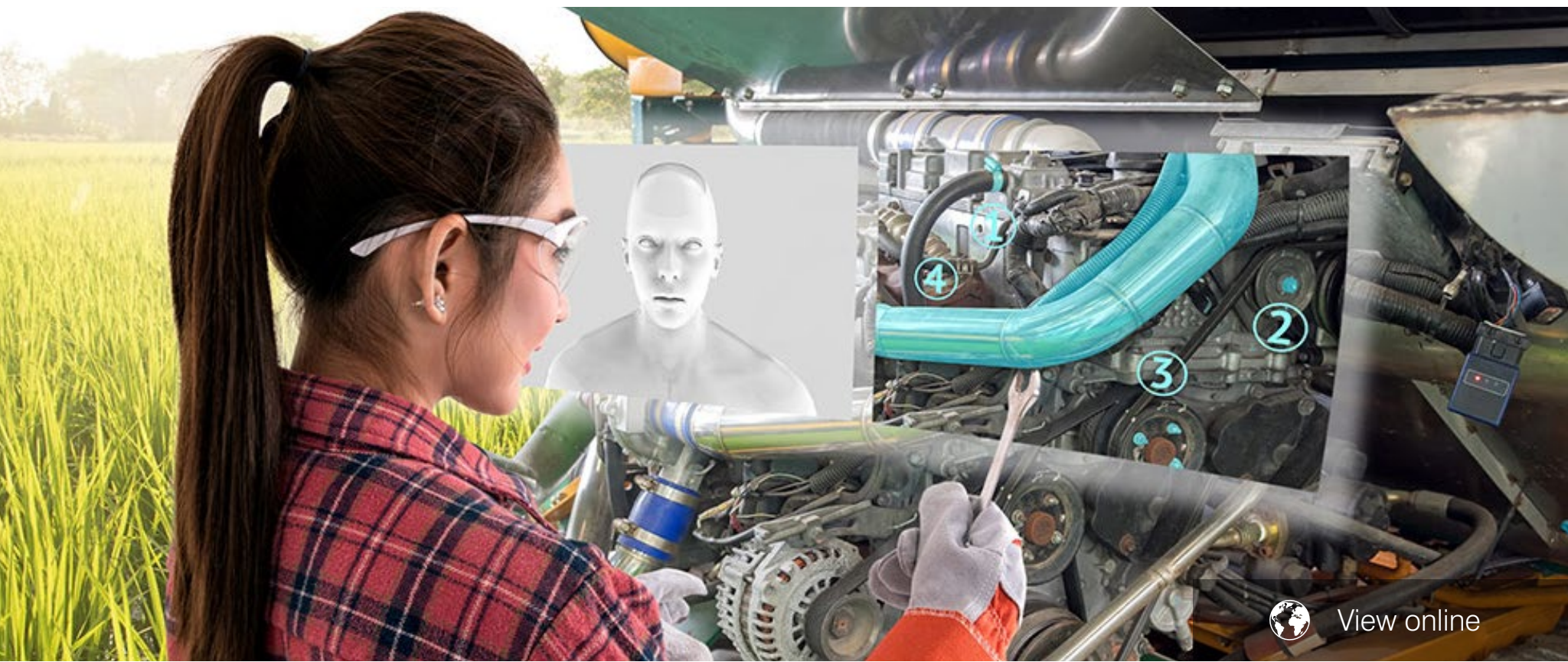

ELNUR/SHUTTERSTOCK INC.

Surgeons and radiographers could see their roles automated in the future

Jobs requiring a human touch such as teachers and nurses are least likely to be replaced with robots

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

ZAPP2PHOTO/SHUTTERSTOCK

View online

'The problem isn't job losses, but finding people to fill the new jobs'

By Martin Wright

Automation will create a whole raft of new highly skilled positions, posing a retraining challenge for governments and companies

Job losses are undoubtedly one side of the AI coin, but AI has the potential to create jobs, too – lots of them. Indeed, it's already doing so. According to the Royal Society, 58,000 data science jobs are being created every year in the UK alone, and it's difficult to find qualified people to fill them.

Bruce Klafter is vice president, CSR at Flex, the hi-tech manufacturing company that is introducing automation in Nike's supply chain (see Rise of the sewbots). He says: "If we don't create a workforce with enough skills, we'll all be scrambling for qualified staff." So, rather than struggling to support people replaced by robots, we may be struggling to find people with the skills to manage them.

Whether such jobs will be on offer to Asian factory workers at risk of redundancy-by-robot is a moot point, of course. Klafter acknowledges that some disruption is possible, but insists that, when automation is under way in Flex's own factories, "We always look at the social impact, along with manufacturing savings, and try to ensure our model allows for the costs of redeployment,

Those who have witnessed poorly paid workers sifting through hazardous waste in an Asian "recycling" might argue that automation can't come soon enough

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

retraining and upskilling", and even "anxiety costs" among the workforce.

Right now, he insists, the problem is more one of a labour shortage than a surplus, at least in Flex's operating areas. "Even in a place like China, where you might assume the workforce is virtually unlimited, it can be hard to find factory workers. Many young people want other types of jobs."

It's not just Chinese factories that are suffering a shortage of workers. Take agriculture, where fruit and vegetables are being left to rot for lack of pickers across the developed world (a phenomenon that threatens to become acute in the UK post-Brexit). Cue the rise of start-ups like Abundant Robotics, whose robot picker tech has attracted investment from a wide range of VC funds.

Looking ahead, trends such as the circular economy could boost employment prospects, too, Klafter says. "If we're redesigning process flows, recapturing a lot more material, undertaking more refurbishment, more re-use – all that could have a beneficial effect on jobs … Think about Apple's aim to manufacture its products entirely from reused material. Think about the amount of stuff required to make its 200 million devices or so annually. That will create a tremendous amount of jobs – harvesting the raw material, refurbishing it, upgrading." Such trends could provide healthier alternatives to present employment patterns, where you have "impoverished people tearing apart old equipment in a thoroughly unsafe manner".

Those of us who have witnessed poorly paid workers sifting through hazardous waste in an Asian "recycling" plant, or seen the ship breaking yards in Bangladesh, might argue that automation couldn't come soon enough. Always assuming, of course, that there is alternative work – and the workforce is trained to do it.

The retraining challenge will be immense, but if society is to avoid the turbulence that goes with mass unemployment, it's an essential one to crack. History teaches us the consequences of such turbulence: the rise of fascism coincided with the depression of the 1920s, while on a milder level, the elec-

30 SECOND READ

- AI will create lots of new jobs. According to the Royal Society, 58,000 data science jobs are being created every year in the UK alone, and it's hard to find qualified people to fill them

- PwC estimates that AI could add $15.7trn to the global economy by 2030 – more than the current output of India and China combined – resulting in a rise of 14% in global GDP, resulting in a greater demand for services that can only be provided by humans

- Some jobs are more likely to be enhanced by robots: cue the rise of the "cobots" – the robot companions who do the dirty, boring work, allowing their human partners to focus on more strategic tasks. Other jobs that will feature in the 2030s haven't been invented yet

- The net effect might be positive, if governments are prepared to intervene, working with business and education providers and others to provide retraining, and providing a social safety net to help people who can't adjust

'Even in China, it can be hard to find factory workers. Many young people want other types of jobs.'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

APPLE

Apple is using robots to recycle its products, but human jobs will be created too

tion of Trump was in part rooted in the anger of the rustbelt. Trade unions are at the forefront of calls to cushion AI's impact on jobs. Sharan Burrow, general secretary of the International Trade Union Confederation, is quick to deny any hint of a Luddite tendency: "We're not frightened of the technology; we think it can bring major benefits." But, she insists, "We need a just transition for workers and their communities." For older workers facing early retirement, that means securing decent pensions; for younger ones "providing the necessary skills and retraining – and some income support if needed during a transition period."

For the most part, this is a challenge yet to be embraced. "Very few companies are undertaking the total reskilling required for a digital age," observes Brunswick's Lucy Parker. Honourable exceptions include Aviva and AT&T (see Managing AI), which has made "a massive commitment to retraining, saying very clearly that we don't have the skills for tomorrow."

Many of those skills – or at least the jobs they embody – don't even have names yet, says PWC's chief economist, John Hawksworth. "If, back in the 1980s, when I was leaving university, someone had told me they were going to be a web designer, I wouldn't have known what on Earth they were talking about because that job didn't exist." Similarly, he says, we might reasonably expect the 2030s to feature whole swathes of jobs yet to be invented.

'We're not frightened of the technology; we think it can bring major benefits. But we need a just transition for workers and their communities'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

And it's not just tech jobs that this latest industrial revolution could create. One of the less trumpeted consequences of AI is its potential to boost productivity and economic growth. PwC estimates that AI could add $15.7trn to the global economy by 2030 – more than the current output of India and China combined – resulting in an increase of 14% in global GDP. This in turn will help create a demand for all kinds of goods and services, some of which can only be supplied by humans. Hawksworth envisages a growing appetite for "non-tradeable services" – yoga teachers, elderly carers, "and everything in between".

PRESSLAB/SHUTTERSTOCK

There will be a growing appetite for services such as yoga teachers

Meanwhile, some jobs are more likely to be enhanced by robots than destroyed by them: cue the rise of the "cobots", the robot companions who do the dirty, boring work, allowing their human partner to focus on more strategic tasks.

So will the net effect be positive? For most experts, the answer would seem to be "yes, but…." Hawksworth sees a parallel with the first industrial revolution at the start of the 19th century. "If you were a skilled hand loom weaver, you were quite right to worry about your personal livelihood. The fact that, further down the line, the textile factories generated huge incomes for society and led to all sorts of new jobs of various kinds, that there were lots of winners and average incomes went up – that wasn't much compensation for you if your lifetime career was adversely affected."

The difference this time, he says, is that governments are "much larger and more interventionist. So there is a role for them, working with business and education providers and others, to try to spin the process through with training, and with an enhanced social safety net of some kind, to help people who can't adjust." And if AI does indeed deliver the promised economic dividend, with the concomitant rise in the tax take, then the government might just be able to afford to fund it all. ■

If, back in the 1980s, someone had told me they were going to be a web designer, I wouldn't have known what on Earth they were talking about

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full
event brochure here

PAVEL CHAGOCHKIN/SHUTTERSTOCK

🌐 View online

Apocalypse soon? Fears rise of 'AI arms race'

Scare stories have always held a particular sexiness for the media, and AI is no exception. Essentially, they take two forms: one, that a weaponised AI – particularly if harnessed by unsavoury regimes or terrorists – will unleash a wave of death and destruction; and two, that the technology itself will rapidly evolve into a "super-intelligence" far beyond the scope of humans to understand, let alone control. Ultimately, it might even decide that we are just a messy nuisance to be disposed of.

It would be tempting to dismiss both scenarios as the product of a febrile media, if it weren't for the fact that some of the people who might be expected to be AI's biggest cheerleaders are among the Cassandras. Take Tesla's Elon Musk and Stephen Hawking. They joined other scientists in an open letter warning of the dangers of so-called LAWS (Lethal Autonomous Weapons Systems), widely seen as an early application of AI. Russian manufacturer Kalashnikov has already announced it is developing a series of AI "combat modules" (killer robots, basically), and China and the US are working on their own LAWS programmes too.

'Summoning the demon'

"Autonomous weapons are ideal for tasks such as assassinations, destabilising nations, subduing populations and selectively killing a particular ethnic group," wrote Musk et al. "Starting a military AI arms race is a bad idea, and should be prevented by a ban on offensive autonomous weapons beyond meaningful human control." Brave talk, but the history of previous attempts to ban weapons of mass destruction hardly fills one with confidence that such a sanction could be agreed, let alone enforced.

And if the killer bots don't get you, the super-intelligence might. Musk characterises the quest to develop it as "summoning the demon", while Hawking warns bluntly that "the development of [AI] could spell the end of the human race … It would take off on its own and

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

👆 **Download the full**
event brochure here

redesign itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete, and would be superseded." Although if that happens, we shouldn't take it personally. "The real risk with AI," Hawking goes on, "isn't malice but competence. A super-intelligent AI will be extremely good at accomplishing its goals, and if those goals aren't aligned with ours, we're in trouble."

Less apocalyptic, but no less alarming, scenarios abound. Cyberterrorists hacking AI-enabled driverless trucks to send them crashing into crowds (and with no human at the wheel, there would be no one to be stopped with a well-aimed shot). It need not even be a high-tech hack: researchers in the US demonstrated that applying small stickers to a stop sign could fool a driverless car into interpreting it as a 45 mph one.

With such storm clouds on the horizon, it's small wonder that many of those closest to AI have been at the forefront of calls to bubblewrap it in standards and regulations.

But not every tech supremo has signed up to the nightmare. Facebook's Mark Zuckerberg declares himself "really optimistic" about the potential of AI to make the world a better place, and says that those

PHONLAMAI PHOTO

Doomsayers warn AI could spell the end of the human race

who constantly conjure up visions of doomsday are "really negative, and in some ways, pretty irresponsible."

Peet van Biljon, head of innovation at McKinsey, also thinks the apocalypse has been overstated: "We're really not on the cusp of super-intelligent killer robots taking over the world," he says, and adds that there is no inevitability about ceding control to the machine. "We are making these things. They are our creatures. We are the authors of whatever happens." He suggests substituting "extended" for "artificial" intelligence, to emphasise the point that this is about augmenting human capabilities, not replacing them. Despite its apparent sophistication, says Van Biljon, AI is still at a relatively primitive stage: "We've already developed the brute [computing] power of a mouse brain, but we cannot simulate a mouse – we cannot make AI that's as smart as a mouse."

Those who predict disaster are getting ahead of reality, he suggests. "Everybody watched Star Trek, and I like it too, but people can extrapolate too much."

Martin Wright

ZAPP2PHOTO/SHUTTERSTOCK

View online

A world where polluters will have nowhere to hide

By Martin Wright

From cleaning up city transport systems to bringing transparency to supply chains, AI and deep learning have the potential to transform sustainability

If killer robots and mass unemployment represent a dystopian future for an AI world, then speeding sustainability is a much more palatable one. And there is no shortage of opportunities on the menu.

DeepMind has earned its spurs for Google by using machine-learning to cut energy consumption in its cooling centres by up to 40% - and that's starting from a very high base, as Google was already famously energy-efficient. As well as making inroads into Google's own consumption, it will help cut energy use among companies that run on its cloud.

Although other such applications are only just crawling out of the sandbox, experts are excited about the wider potential of AI, as part of the "fourth industrial revolution" (4IR), to make a step-change in sustainability. In its report, Innovation for the Earth, PwC identifies a number of ways in which 4IR tech offers "substantial potential to move towards a zero-net-emissions economy".

Electric driverless vehicles, equipped with intelligent navigation systems, will make congestion and pollution a thing of the past

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

**Download the full
event brochure here**

PwC paints a picture of a world in which power supplies are increasingly generated and managed at the micro-level, with a mix of solar, wind and other renewables, combined with sophisticated energy storage. Thanks to the combination of 4IR technologies, these can create a system where tiny amounts of power are forever moving to and fro, keeping the overall grid in balance, and making sure electricity is being used optimally, reducing consumption by ensuring the right amount of energy is available exactly where and when needed. The millions of financial transactions involved would be managed smoothly thanks to secure blockchain connections and the internet of things. In turn, this would make viable a whole range of energy innovations, such as "solar sprays" to turn every exterior surface of a building into a power plant.

This would be a world in which electric driverless vehicles, equipped with intelligent navigation systems, make congestion and pollution a thing of the past, and the roads far safer than today. The capacity to provide affordable transport on demand will do away with much of the need for vehicle ownership, so saving on resources, and space, too.

It would be a world in which cities could be designed so that they were constantly refining the way they worked to keep energy and resource use to a minimum, curb pollution and identify and effect repairs in everything from water supply to road surfaces as soon as a problem appeared.

It would be a world, too, where the health of the environment, virtually down to every field, street and tree, could be monitored and reported on, thanks to a mix of IoT sensors, drones and advanced satellites, all communicating and comparing data. Polluters would have nowhere to hide; business could tell in an instant where every single one of its raw materials came from, all traceable and accountable to the finest degree. Farming, too, would benefit, with remote monitoring spotting any sign of crop disease, anticipating impending droughts, checking soil fertility, and triggering interventions – from irrigation to inputs – as soon as required.

30 SECOND READ

- DeepMind used machine-learning to cut energy consumption in Google's data centres by up to 40% - and that's starting from a very high base, as Google was already famously energy-efficient

- Polluters would have nowhere to hide; business could tell in an instant where the every single one of its raw materials came from, all traceable and accountable to the finest degree

- Cities could be designed so that they were constantly refining the way they worked to keep energy and resource use to a minimum, curb pollution and identify and effect repairs in everything from water supply to road surfaces as soon as a problem appeared.

- Studies suggest the best results arise from collaboration between human and machine, particularly in medicine. One study found that top doctors make erroneous decisions in 3.5% of cases, while state-of-the-art AI has an error rate of 7.5%; combined the error rate can drop to 0.5%

Farming would benefit, with remote monitoring spotting any sign of crop disease, anticipating droughts, checking soil fertility, and triggering interventions

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

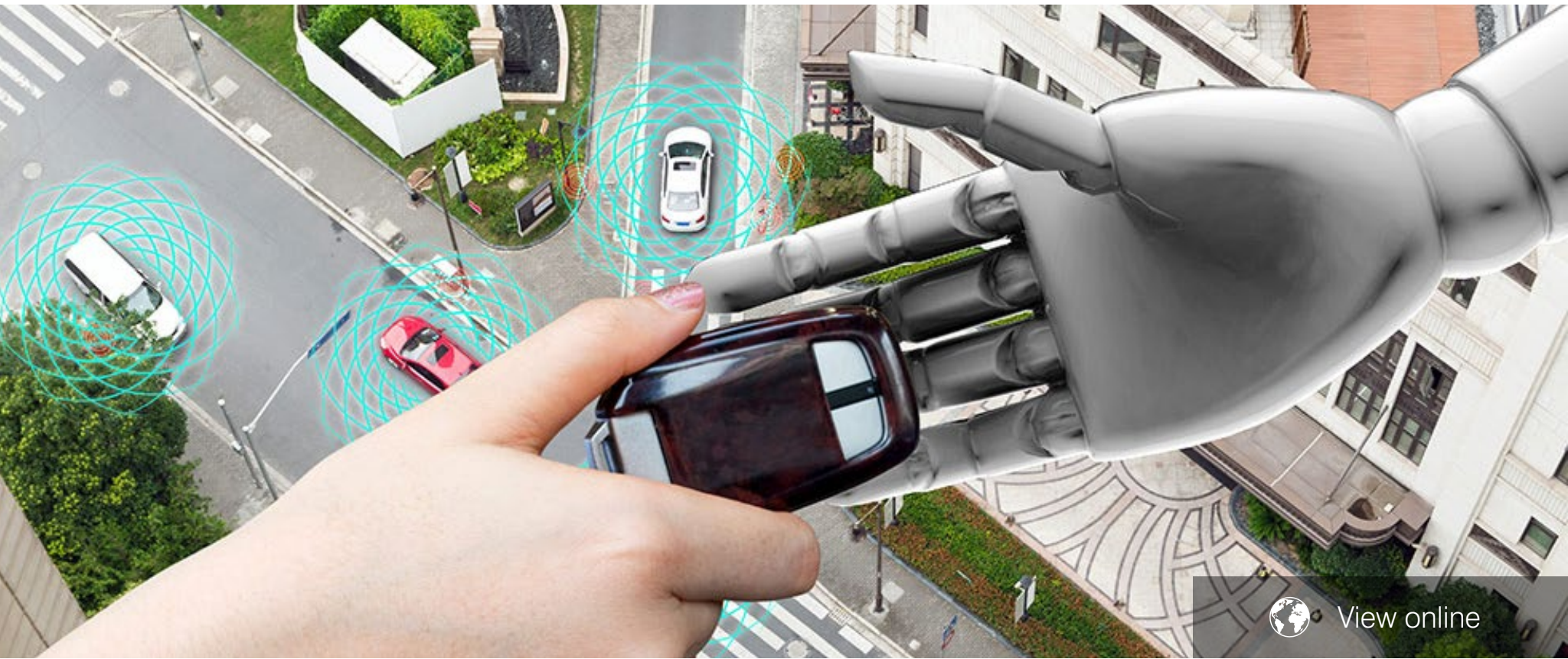**Farmers are already using drones to fertilise crops**

AI's ability to harness the power of big data is particularly promising, says Robert Kirkpatrick of UN Global Pulse, and applications are already under way. "Labs are using big data and deep learning to map discrimination against refugees in Europe, recognise rescue attempts from shipping data in the Mediterranean, detect fires in Indonesian rainforests, predict food prices from Twitter, fight bottlenecks in sanitation services in refugee camps and generate socioeconomic indicators from satellite imagery and flows of postal traffic." Other AI applications already being trialled, meanwhile, include monitoring illegal fishing, detecting nuclear tests and preventing the onset of sepsis in hospitals.

Personal health and wellbeing are also amenable to AI's magic wand. It can ameliorate everything from illiteracy to hearing loss and – thanks to driverless cars and multiple sensors – give blind people the gift of independent mobility and living. Its ability to analyse vast masses of data can massively improve everything from cancer diagnosis to the development and testing of new drugs. Timely and accurate diagnoses and drug therapies don't just save lives – they save health services money, too. Medicine is one field that will be particularly amenable to "cobots", with studies suggesting that some of the best results arise from collaboration between human and machine. One revealed that top doctors make erroneous decisions in 3.5% of cases, while state-of-the-art AI has an error rate of 7.5%. When combined together, however, the error rate can drop to 0.5%.

Last year's AI for Good summit in Geneva, which brought together academics (Stanford, Berkley, Cambridge, etc), tech companies (Google, Facebook, Microsoft and more) and UN agencies, concluded that the technology could play a role in tackling every one of the Sustainable Development Goals. ◼

'Labs are already using big data and deep learning to map discrimination against refugees in Europe, detect fires in Indonesian rainforests, and fight bottlenecks in sanitation services'

SUWIN/SHUTTERSTOCK INC

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

GAUDILABS/SHUTTERSTOCK INC.

Regulators and tech industry scramble to tame the AI tiger

By Martin Wright

We look at the plethora of recent initiatives around the globe to try to avoid unintended consequences from the powerful new technologies

AI and its companion technologies have a huge capacity to transform the world for good, but also a worrying potential for some pretty devastating unintended consequences. When it comes to the question of governance, that poses quite a challenge. The "move fast and break things" culture that has helped drive AI is somewhat at odds with the safety first, precautionary principle approach of sustainability. And the fact that machine learning works best "in the wild" – ie, when it's operating in the real world, not the confined environment of the lab – adds to the challenge.

Small wonder, then, that the last year or so has seen something approaching a frenzy of initiatives involving academics, tech companies and governments, aimed at setting standards and guidelines for AI.

They vary in breadth and focus, but most come up with strikingly similar sets of recommendations, which largely boil down to calls for the technology to be harnessed for the benefit of all of humanity, while minimising the risks inherent in its exploitation. Effectively – although without saying as much – they all start

'We need to have a mechanism to redress whatever goes wrong, some kind of ombudsman. It's only the government that can do that.'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

from the same premise as the Hippocratic Oath ("first, do no harm"): indeed, that might be a helpful preamble to all such guidelines.

Among them are the Future of Life Institute's AI Safety Principles, which cover an impressively wide range of issues, from transparency and responsibility through to measures aimed at ensuring humans control AI, not the other way around, and that it brings "shared benefit and shared prosperity". It also calls for an end to an "AI arms race" (see AI-pocalypse Soon?)

Recommendations developed by the AI Now Institute of New York University focus on transparency, in particular on overcoming the "black box" problem (see Must we be slaves to the algorithms?), and ensuring that AI doesn't incorporate longstanding biases that might discriminate against disadvantaged groups. They stress the importance of diversity, too – involving women and minorities in AI development and decision-making, and also people from outside the usual disciplines of IT and engineering. The NGO BSR, formerly Business for Social Responsibility, is exploring ways to incorporate UN Human Rights principles into AI development guidelines.

The EU's new General Data Protection Regulation is also concerned with privacy and the "black box", enshrining the principle that everyone has a right to understand how data is being used to make any judgements that affect them. Critics point out that it lacks teeth, and can only be invoked after a decision has been already made.

One set of principles winning increasing respect is the Global Initiative on Ethics of Autonomous and Intelligent Systems, hosted by the Institute of Electrical and Electronics Engineers. It sees itself as an "incubation space for new standards and solutions, certifications and codes of conduct" and is compiling a series of standards, under the classification IEEE P7000, focusing on different aspects of AI. The latest set cover issues such as ensuring AI is used to further human well-being, fail-safe systems to shut off operations that are at risk of causing harm, and the ethical use of AI to achieve behaviour change via "nudging".

30 SECOND READ

- One set of principles winning increasing respect is the Global Initiative on Ethics of Autonomous and Intelligent Systems, hosted by the Institute of Electrical and Electronics Engineers

- DeepMind has an ambitious Ethics and Society initiative while Google has partnered with Microsoft, Facebook, Amazon, IBM and Apple to set up a Partnership on Artificial Intelligence to Benefit People and Society.

- The EU's new General Data Protection Regulation enshrines the principle that everyone has a right to understand how data is being used to make any judgements that affect them. Critics say it lacks teeth

- The UK's Industrial Strategy commissioned an independent review into AI, which calls for more investment in research and training, programmes to win public trust, and ensure more diversity, and the development of "data trusts"

- The Confederation of British Industry wants the government to convene a joint commission of business, academics and employee representatives to study the impact on people and jobs.

The move fast and break things culture that has helped drive AI is somewhat at odds with the precautionary principle approach of sustainability

Most recently, the Institute for Business Ethics published its ARTIFICIAL framework for the use of artificial intelligence by business. (See 'We can't leave ethics issues to Silicon Valley')

Most of the tech giants involved in AI are starting to develop their own thinking on the issue, with DeepMind's Ethics and Society initiative perhaps the most ambitious, committing itself to "deep research into ethical and social questions, the inclusion of many voices, and ongoing critical reflection". Google has partnered with Microsoft, Facebook, Amazon, IBM and Apple – effectively the Big Six of Tech – to set up a Partnership on Artificial Intelligence to Benefit People and Society, which aims to advance public understanding, and provide a "trusted and expert point of contact" on the issues involved.

DEEPMIND HEALTH

DeepMind has committed to "deep research into ethical and social questions"

Need for regulation

All this is very well, but some believe governments need to get involved, and get tough. The Oxford Internet Institute has called for a European AI watchdog to police the way the technology is implemented. Its authors suggest sending independent investigators into organisations to scrutinise how their AI systems operate, and propose certifying "how they are used in critical arenas such as medicine, criminal justice and driverless cars… We need transparency as far as it is achievable", says the Institute's Luciano Floridi, "but above all we need to have a mechanism to redress whatever goes wrong, some kind of ombudsman. It's only the government that can do that."

Governments are beginning to respond, but only just. Germany is drafting a set of ethical guidelines for driverless cars. The UK's latest Industrial Strategy identified AI as an area of great potential, and commissioned an independent review led by Dame Wendy Hall, professor of computer science at the University of Southampton, and Jérôme Pesenti, chief executive of BenevolentTech. This came up with a range of more or less familiar recommendations, calling for more investment in research and training, programmes to win public trust and support, and ensure more diversity in the industry. One distinctive feature was the call for the development of "data trusts only" to encourage the

'People die and governments change because of stuff that happens with software. It's got to be more regulated'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

sharing of data to everyone's benefit. Data and diversity were the focus of recommendations to government by the Royal Society, too.

The Confederation of British Industry, while joining the call for responsible AI, wants the government to convene a joint commission of business, academics and employee representatives to study the impact on people and jobs. And along with virtually everyone involved in the debate, it calls for more investment in skills and research.

Many experts think more robust government involvement is essential. "AI is too powerful not to have government be part of the solution," says Craig Fagan, policy director at Tim Berners-Lee's Web Foundation. Joanna Bryson, an AI researcher at the University of Bath, summed up the case neatly in an interview in The Guardian. "People die and governments change because of stuff that happens with software. It's got to be more regulated," she said.

So where does this leave the sustainability and CSR professionals, some of whom are probably even now contemplating a wodge of worries over AI landing in their in-tray? Well, not necessarily at square one. AI itself may be full of new, bewildering stuff, but anyone who's been involved with sustainability over the last 20 years will find that at least some at least of the key issues are starting to look strikingly familiar. After all, at the core of the sustainability quest is the search to minimise the negative consequences of human ingenuity (on the planet, and other people) while maximising human potential. Pretty much the same can be said of AI.

Which means that a sustainability lens can be a very helpful way of framing the debate. As Harriet Kingaby of Bora.com, a consultancy exploring this very topic, points out, "people are looking at individual issues around AI [such as privacy, or risk], when what we need is much more of a systemic approach. And that's where all the lessons of systems thinking, which is at the heart of sustainability, can be so valuable."

So when it comes to integrating a response to AI on the one hand with the whole sustainability structure on the other, we're not starting from scratch. We don't need to completely reinvent the wheel, in other words – even if it is attached to a driverless car. ■

Google has partnered with big tech companies to study AI

'People are looking at individual issues like privacy or risk, but what's needed is a systematic approach'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

View online

Machine learning: How firms from Danone to Sodexo are integrating AI

By Stuart Buckman

Some companies are automating without cutting jobs; others are retraining their entire workforces. We look at emerging best practice

Many firms say staff are their greatest asset. But will this hold in the brave new world of AI? In its recent The Future of Sustainable Business report, the NGO BSR cited AI and automation as key drivers of disruptive change in the workplace in the future, and said companies should take measures now to mitigate their impact.

Susan Winterberg, BSR's associate director for inclusive economy, said: "The main one [recommendation from the report] is early notification. A lot of the challenges and problems that people face when they are laid off from work have to do with having a period of unemployment because savings levels are so low."

Help from companies to ease disruption in the workplace will be crucial, she said. "Companies are in the driver's seat on controlling that, especially in countries where there isn't a lot of regulation around layoffs and dismissals, like in the United States."But handling even these known unknowns is fraught, Winterberg says. "This is not an easy topic for a lot of companies to talk about. They may be doing things but because the topic itself is so sensitive sometimes you learn about it after the fact."

'Companies are both the creators of these technologies and they are also the primary implementers. So, they are very central to everything that has to happen here'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full
event brochure here

She added: "There are two things we have to remember about businesses: they are both the creators of these technologies and they are also the primary implementers. So, they are very central to everything that has to happen here. Any approach that doesn't bring business to the centre of it probably will not be very successful, but at the same time there does need to be a balanced stakeholder approach."

As a model, she points to the major transition programme carried out by Nokia in 2011, when it changed its phone operating system to Microsoft Windows, closing phone R&D centres and factories in 13 countries, with layoffs that would eventually affect 18,000 employees.

The company developed a "Bridge" programme, a comprehensive approach to helping employees find new jobs and to replacing jobs in communities where Nokia had been a major employer.

Tim Page, author of a TUC discussion document on AI, is optimistic that, managed responsibly by government, unions and society, AI will create jobs and prosperity (see 'The problem isn't job losses'). He says unions should play a full part in shaping an AI mission for the UK, creating good jobs and connecting people with society. The report points out that there's less fear about job losses in Germany, where unions are more active, though it acknowledges that workforce participation in the UK is among the weakest in Europe.

30 SECOND READ

- When Nokia changed its phone operating system in 2011, closing phone R&D centres and factories in 13 countries, it developed a comprehensive approach to helping employees find new jobs and to replacing jobs in communities where it had been a major employer.

- A responsible approach must include human resources taking a more involved role than previously, and redesign new jobs to optimise existing staff skills

- While a big company like KPMG has almost 200,000 staff and a small contingent workforce today, that could reverse in future, as platforms like ProFinda allow companies to locate the talent they need easily, either internally or externally.

- 90% of businesses sense what these new technologies will bring but perhaps only 5% have a cogent action plan.

- AT&T's Workforce 2020 programme involves pumping $1bn into ensuring the skills of 100,000 employees – nearly a third of the total – don't become obsolete

- Sodexo has run some interesting pilots, including examples of "cobotics", where cafeteria cashiers in China worked alongside tills that scanned and billed diners, and Dutch car park attendants used robots to conduct security checks

Monideepa Tarafdar, professor of information systems at Lancaster University, has been considering the role of human resources in managing the disruption caused by automation. She says a responsible approach must include human resources taking a more involved role than previously, and redesign new jobs to optimise existing staff skills. She says it's a steep learning

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

**Download the full
event brochure here**

curve for the whole company, but leading businesses are grasping the nettle.

So how are companies preparing their workforces for this new reality?

ProFinda

Roger Gorman is CEO and co-founder of ProFinda, a digital platform launched in 2011 that helps companies optimise the expertise and resources in their workforces. The platform keeps track not only of a company's internal talent pool, but contractors and alumni, too. ProFinda's clients and strategic partnerships include professional services firms such as PwC, KPMG and Accenture and Thomson Reuters Elite.

Workforce 2020 aims to ensure skills of employees don't become obsolete

Gorman points out that the automation of repetitive work means that even large operations will require relatively few permanent staff in future. While a big partnership like, say, KPMG, has almost 200,000 staff and a small contingent workforce today, Gorman thinks that could reverse in future, as platforms like his allow companies to locate the talent they need easily, either internally or externally.

Gorman estimates that 90% of businesses sense what these new technologies will bring but perhaps only 5% have a cogent action plan.

Infosys

Infosys, the Indian global IT company, has about 200,000 employees, hiring up to 30,000 a year. It develops innovative automation solutions for clients, including UCAS in the UK and Telestra.

Until moving to Mars Inc last year as chief digital officer, Sandeep Dadlani was Infosys's America's chief. At Ethical Corporation's Responsible Business Summit in New York last year Dadlani described how the need to future-proof its staff impelled Infosys to overhaul its training programmes.

"Since what we are training them for will be automated or made redundant, the first thing we teach them is design thinking and about finding the next problem to solve," Dadlani said. "The second thing is around automation and artificial intelligence, so that they are capable and fully enabled to automate the next thing they are going to learn."

AT&T

A massive re-training operation is also under way at the US telecoms behemoth AT&T. Fortune, which placed the company on its 2017 best employers list, gave kudos for perhaps the most ambitious programme in US busi-

ness history. Workforce 2020 involves pumping $1bn into ensuring the skills of 100,000 employees – nearly a third of the total – don't become obsolete. It also aims to change the mindset of long-serving staff. The Harvard Business Review called it an unprecedented gambit and enormous human resources challenge.

Different factors are at play for a company like Danone. Its new Evian brand bottling plant, which replaced a facility that has been there since 1965, employs about 15% of the population around its Alpine source. The carbon-neutral facility, which opened last September, included multiple upgrades, boosting annual production from 1.5 to 2 billion bottles.

But instead of laying off workers, the headcount actually rose: by 200 to 1200 employees. About half the jobs have changed and workers were reskilled: for example, forklift truck drivers became technicians monitoring shuttles remotely. Experience still counts: 35% of the workforce are over the age of 50.

Evian paved the way for the changes with weekly staff discussions and 28 union consultations, which Evian says were all favourably received. It helped build trust that for 25 years Evian has participated in a symbiotic public-private partnership with local municipalities to protect the locality and the water's source. It also contracted 90 local companies in the construction process.

Microsoft

Job impact may be hard to predict but Microsoft expects that AI will change the company's relationship with its clients. Microsoft Germany's director of manufacturing businesses, Sebastian Seutter, said Microsoft wouldn't be just delivering projects and signing them off. In future it will offer "mega solutions": planning, installation, operation, analysis and maintenance. A project with Tetra Pak is now into its fourth year.

Seutter's experience with clients is that automation isn't about shedding staff. "The majority of companies don't go down that path. Some might say this is not efficient but the majority say 'we want to ensure that with a given workforce we can do more'. That's the paramount scene we see."

Accordingly, staffing impact is considered at the earliest stages. Another client that Microsoft Germany is helping to digitise manufactures bottling equipment in a factory similar to Evian's. "Obviously automation … will have an impact on the shop floor," Seutter says. "However, if you think that this will just reduce [staff numbers], that's not the case. What will happen is that you will shift your employees."

MICROSOFT GERMANY

Sebastian Seutter of Microsoft Germany

'What keeps me awake at night is that the changes and the disruption are going to come at an incredibly fast pace. So, it's a matter of urgency that we seize the opportunity to mitigate the challenges'

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

In fact, Seutter says headcounts often rise during technology transition periods, which can be long-term. This bottling company is recruiting 120 people to analyse the benefits of the new operation. The experience of existing staff still remains valuable. Sectors where the human touch is paramount, like healthcare, catering and cleaning, will be slower to be affected by AI, but they also face profound change.

Sodexo

Sylvia Metayer, of the Sodexo's group executive committee, says 50% or more of its current jobs could change or disappear. The French company has a global workforce of nearly 450,000 and, she says, the service sector is growing, especially in the western world.

She says it's too early to predict numbers of redundancies. Metayer said Sodexo has launched a human resources workforce initiative on the

Nursing is a sector that will be slow to feel effect of AI

skills and profiles it will need under different scenarios, with disruption ranging up to 100% "depending on how fast it goes, because we don't know."

"What keeps me awake at night is that …. everything leads us to believe the changes and the disruption are going to come at an incredibly fast pace …. So, it's a matter of urgency that we seize the opportunity to mitigate the challenges," she says.

"What we are working the most on – this is ethically going to be the heart of the matter – is what will be the essence of service?" She adds that this is "when the humanity of the person who provides the service touches the humanity of the person receiving the service."

Sodexo has run some interesting pilots, including examples of "cobotics", where cafeteria cashiers in China worked alongside tills that scanned and billed diners. She remembers one cashier looked askance. "She said 'when these machines are all in place, who is going to remember that Mr Chen is somebody who likes to be said 'hello' to?' And I said, 'Well, you are.' The essence of the service that you provide is not to punch in the numbers."

Metayer said car park attendants in the Netherlands had welcomed the introduction of robots to conduct security checks, while in Poland, roofers could concentrate on skilled work and clients' needs while drones conducted potentially hazardous routine inspections.

Metayer thinks automating basic services, like office cleaning, might require that staff be more literate. Sensors will detect when offices need servicing and download to cleaners' tablets when the time to do so is convenient for the occupants of the offices. Such innovation benefits everyone, she said. ◾

Stuart Buckman is a writer, journalist and editor in TV, radio and online who has worked for national and international media organisations. sbuckman@blueyonder. co.uk

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

PHONLAMAI PHOTO/SHUTTERSTOCK

'We can't leave ethical questions to Silicon Valley'

Guendalina Dondé of the Institute of Business Ethics explains how the IBE's ARTIFICIAL framework can help companies adopt AI without risking ethical lapses

So, hands up who was woken up by Alexa this morning? Or now has Google Home finding their favourite radio station for them? Or had fun over the holidays trying to get Siri to tell them a joke? AI is now more accessible and becoming mainstream.

The rapid development and evolution of AI technologies, while unleashing opportunities for business and communities across the world, have prompted a number of important overarching questions that go beyond the walls of academia and hi-tech research centres in Silicon Valley.

Governments, business and the public alike are demanding more accountability in the way AI technologies are used, and are trying to find a solution to the legal and ethical issues that will derive from the growing integration of AI in people's daily lives.

AI technologies are not ethical or unethical, per se. The real issue is around the use that business makes of AI, which should never undermine human ethical values.

Governments, business and the public are demanding more accountability for AI technologies

Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

The Institute of Business Ethics, together with organisations and technology experts, has identified the 10 founding values and principles that should form the framework for the use of artificial intelligence in business. This framework, which goes by the acronym ARTIFICIAL, will help to guide decision-making.

Ethics, compliance and sustainability practitioners, boards and senior leadership – anyone responsible for implementing ethics programmes and for upholding corporate ethical values – should also feel able to challenge and guide the development and use of AI within their organisations using this framework.

Companies need to ensure that the AI systems they use produce correct, precise and reliable results. To do so, algorithms need to be free from biases and systematic errors deriving, for example, from an unfair sampling of a population, or from an estimation process that does not give accurate results.

It is worth noting that in some instances, because AI can learn from data gathered from humans, human biases can be reflected in the machine's decision-making. This indicates how, even in the era of artificial intelligence, influencing human behaviour to embed ethical values should remain at the forefront of every conversation about business ethics.

Many organisations include in their code of ethics (or similar document) guidance to support individual decision-making. This could be applied in a similar manner before adopting or using AI.
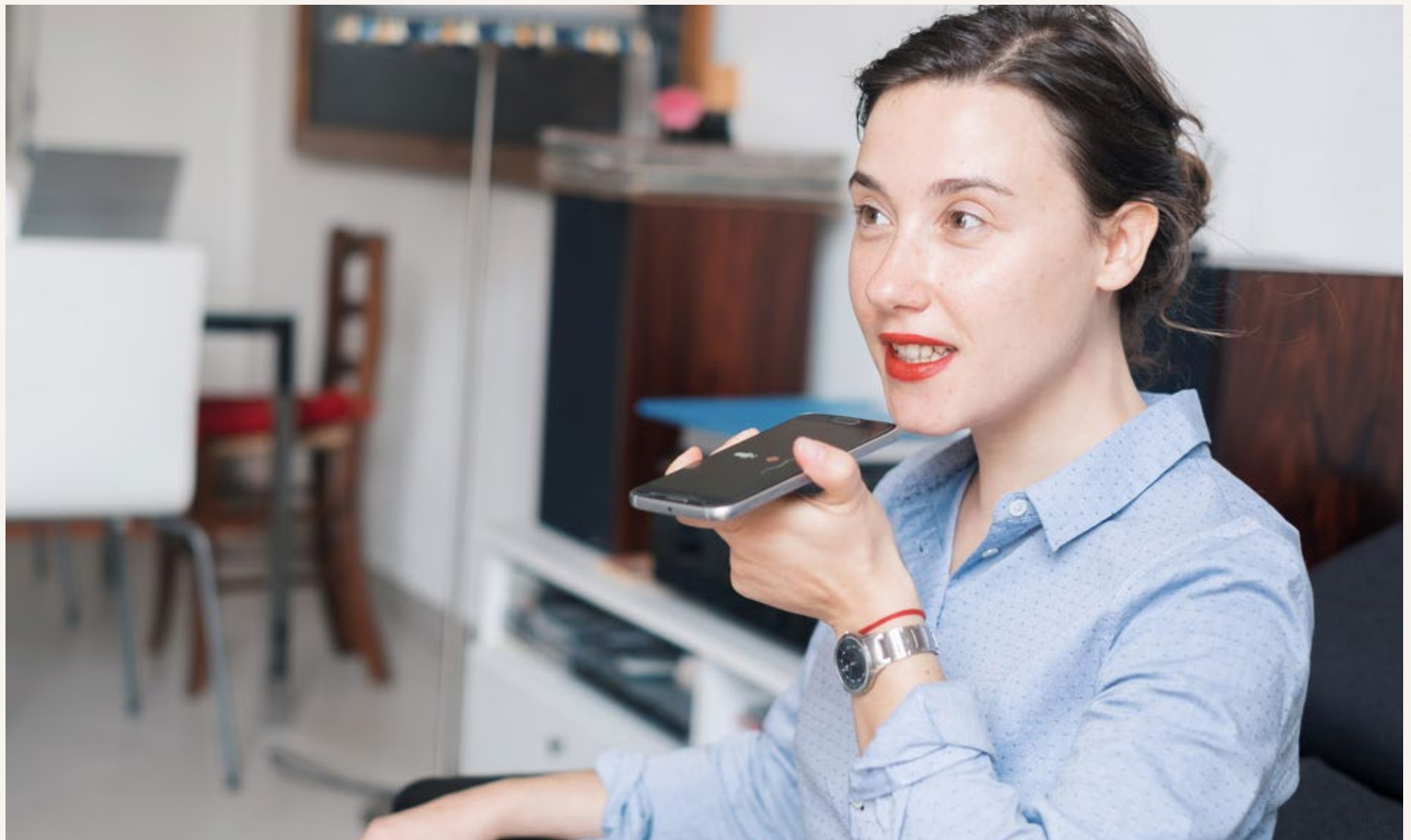
Artificial Intelligence »

The IBE framework of fundamental values and principles for the use of Artificial Intelligence (AI) in business.

- (A) Accuracy »
- (R) Respect of privacy »
- (T) Transparency »
- (I) Interpretability »
- (F) Fairness »
- (I) Integrity »
- (C) Control »
- (I) Impact »
- (A) Accountability »
- (L) Learning »

Companies need to ensure that the AI systems they use produce correct, precise and reliable results

Key questions to ask include:

- What is the purpose of our job and what AI do we need to achieve it?
- Do we understand how these systems work? Are we in control of this technology?
- Who benefits and who carries the risks related to the adoption of the new technology?
- Who bears the costs for it? Would it be considered fair if it became widely known?
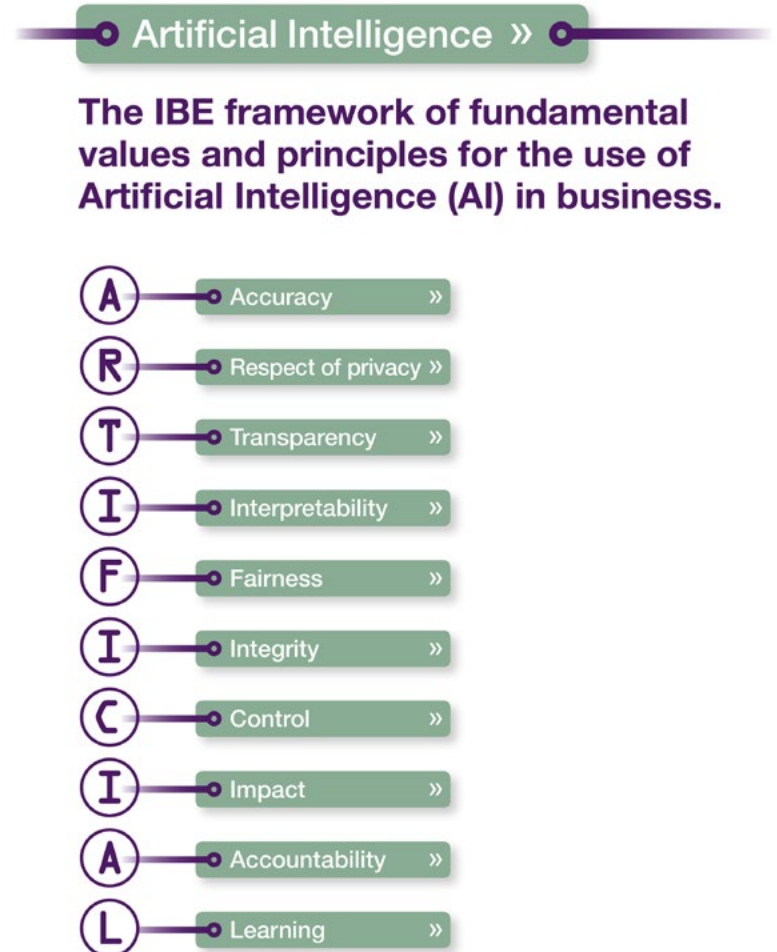
Artifical intelligence will be key component at the
Responsible Business Summit West 2018

Download the full event brochure here

TONMASO79/SHUTTERSTOCK

The growing use of AI in our daily lives raises legal and ethical issues

- What are the ethical dimensions and what values are at stake?
- What might be the unexpected consequences?
- Do we have other options that are less risky?
- What is the governance process for introducing AI?
- Who is responsible for AI?
- How is the impact of AI to be monitored?
- Have the risks of its usage been considered?

To be at the forefront in the use of AI, business decision-makers, employees, customers and the public need to be able to understand and talk about its implications. It is essential that companies know the impact and side effects that new technologies might have on their business and stakeholders.

The topic of AI and its applications and ethical implications for business is broad and requires a complex multi-stakeholder approach. However, there are some measures that organisations can adopt to minimise the risk of ethical lapses due to an improper use of AI technologies:

- Engage with third parties for the design of AI algorithms only if they commit to similar ethical standards: the design of these systems might be outsourced

Even in the era of AI, influencing human behaviour to embed ethical values should be paramount

and it is important to conduct ethical due diligence on business partners. A similar principle applies to clients and customers to whom AI technologies are sold. Testing a third-party algorithm in a specific situation is also important to ensure accuracy.

- Establish a multi-disciplinary ethics research unit to examine the implications of AI research and potential applications; and be proactive in publishing its working papers to internal and external stakeholders.
- Introduce "ethics tests" for AI machines, where they are presented with an ethical dilemma. Measure how they respond in such situations in order to predict likely outcomes in a real-life dilemma, and therefore assume responsibility for what the machines will do.
- Empower people through specific training courses and communication campaigns in order to enable them to use AI systems efficiently, effectively and ethically. These training courses should be directed not only at the technical personnel building the tool, but also at senior business stakeholders who should understand the assumptions, limitations and inner workings of AI technology.

Senior managers should also get training in AI

MONKEY BUSINESS IMAGES/SHUTTERSTOCK

A key element of the IBE's ARTIFICIAL Framework is learning and communication. Employees and other stakeholders need to be empowered to take personal responsibility for the consequences of their use of AI and they need to be provided with the skills to do so. Not only the technical skills to build it or use it, but also an understanding of the potential ethical implications that it can have. It is important that companies improve their communications around AI, so that people feel that they are part of its development and not its passive recipients, or even victims.

Ensuring business leaders are informed about these technologies and how they work is essential to prevent unintentional misuse. However, it is important that businesses engage with external stakeholders as well, including media reporters and the general public, to improve their understanding of the technologies in use and ensure that they can assess more accurately the impact of AI on all our lives. ◾

Guendalina Dondé is senior researcher at the Institute of Business Ethics. IBE's latest briefing Business Ethics and Artificial Intelligence free to download from IBE's website.