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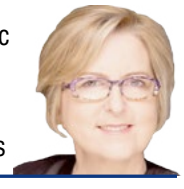

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Welcome to the January 2018 issue

Not only are we at the start of a new year, we are on the threshold of a new era, where rapid advances in artificial intelligence, the internet of things, cloud computing, and automation will transform how we live and work.

This month we devote the magazine to examining how technological change is beginning to change how businesses operate, the risks companies and society face, and how we can harness these new technologies for good.

Martin Wright, who has 25 years' experience writing about environmental solutions and sustainable futures, lays out what AI is, and its potential to become either salvation or curse. Elsewhere he charts how Asian factory workers are already affected, with Foxconn replacing 60,000 workers in China with robots. He also looks at how the fourth industrial revolution is creating thousands of new highly skilled jobs, posing a retraining challenge.

Wright considers the wider potential of AI to speed a more sustainable future, from cleaning up city transport systems to bringing transparency to supply chains. And he looks at the plethora of regulations and guidance being introduced to tame the AI tiger.

Meanwhile, Stuart Buckman looks at what companies that have already introduced automation, including Infosys, Microsoft, Nokia, AT&T, Danone and Sodexo, are doing to minimise disruption to their workforces.

And finally, Guendalina Dondé of the Institute of Business Ethics outlines the IBE's new framework to guide companies in introducing AI in way that leads to ethical outcomes.

This month we have added a new feature in the magazine, called the 30-second read, which highlights the most salient points in our longer features so readers who are time-poor do not miss out on the excellent content we have planned this year. I wish you a happy and sustainable 2018.

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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."

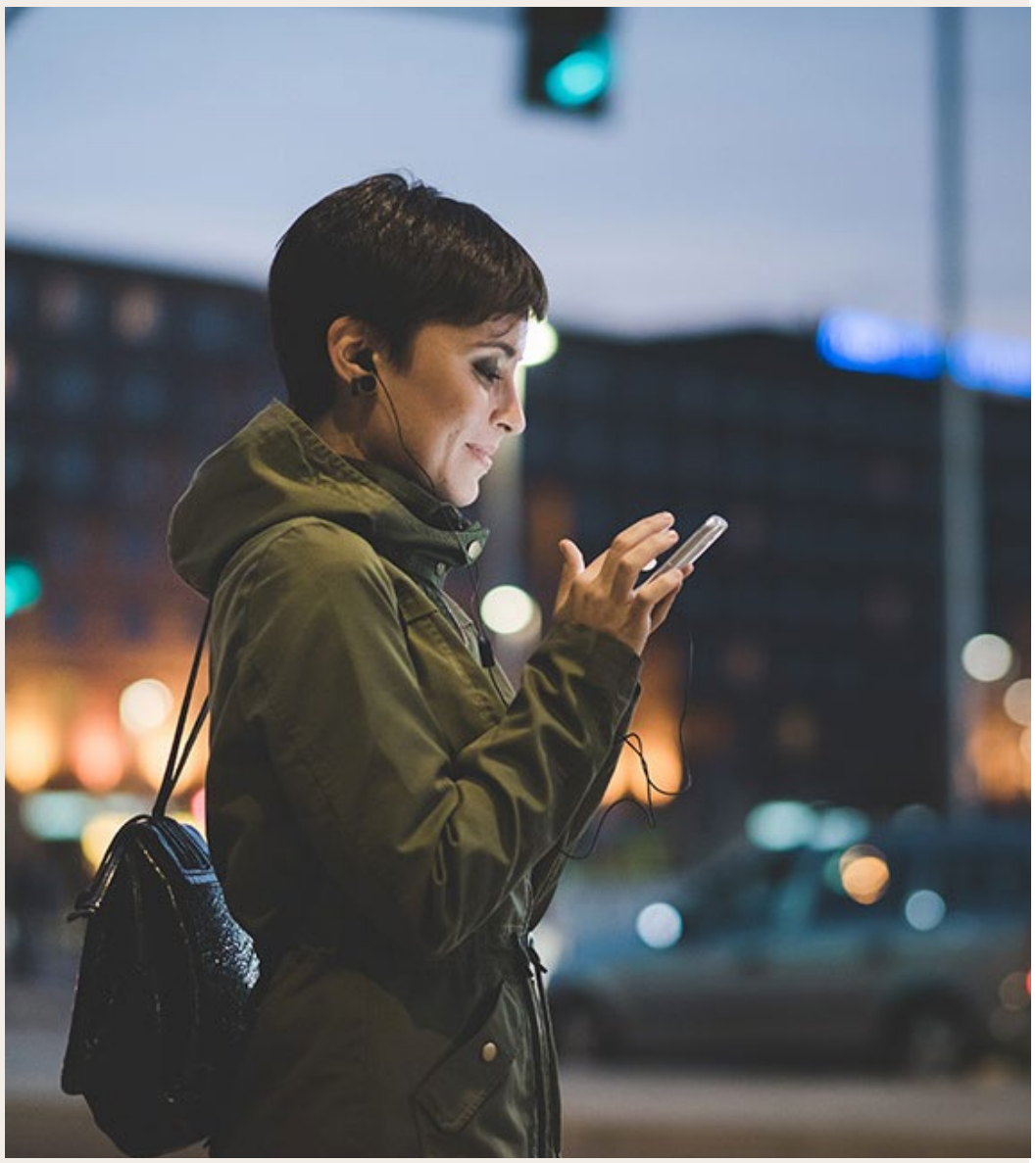
At the heart of the excitement over AI is the concept of machine learning: computers working things out for themselves without being explicitly programmed to do so. Instead, they progress by processing and analysing huge amounts of data, identifying patterns and improving their performance as they do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



EUGENIO MARONGIU/SHUTTERSTOCK

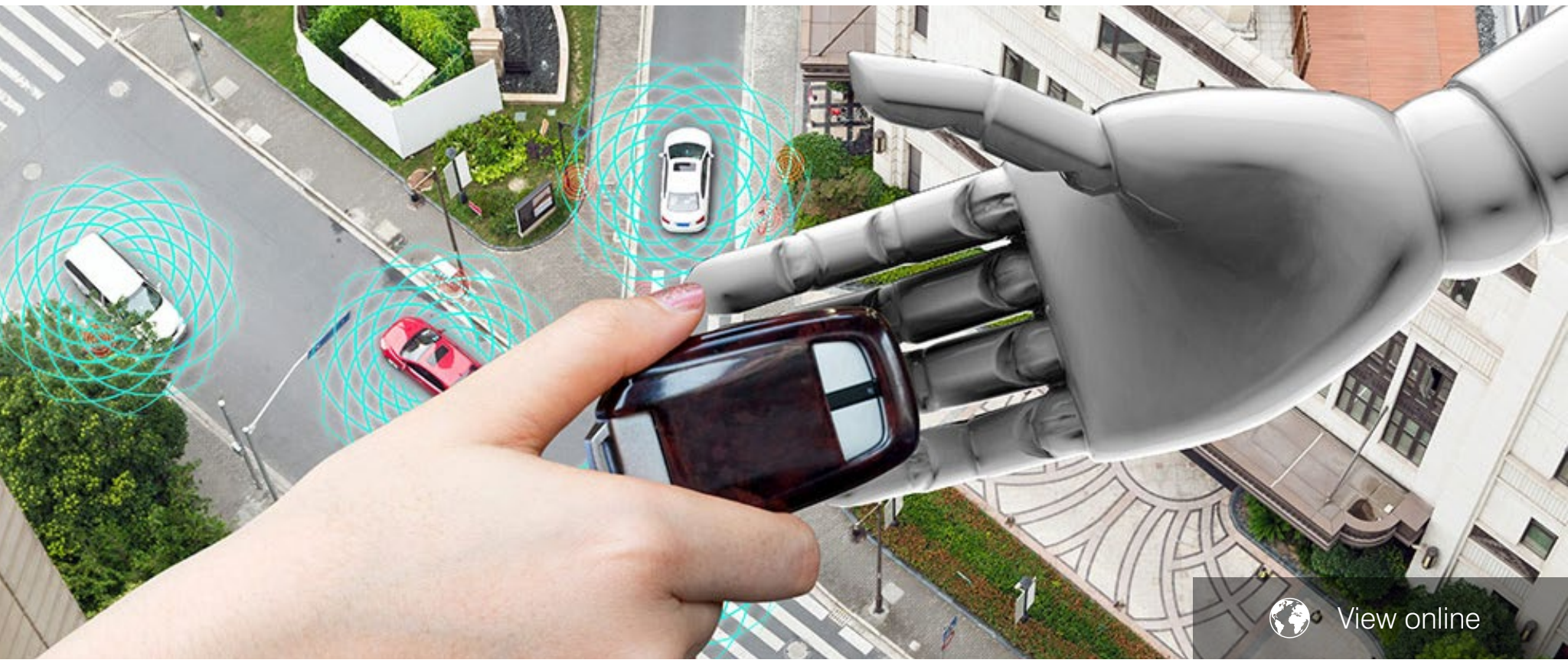
AI feeds on data from our connected lives

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



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

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

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".

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')

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

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

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.

ULADZIK KRYHIN/SHUTTERSTOCK

Google has partnered with big tech companies to study AI

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. ■

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

DANONE

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'

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.

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

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

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

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.

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.

LUISM94/WIKIMEDIA COMMONS

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

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 business 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.

MICROSOFT GERMANY

Sebastian Seutter of Microsoft Germany

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.

'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'

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."

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.

JACOB LUND/SHUTTERSTOCK

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

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 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.

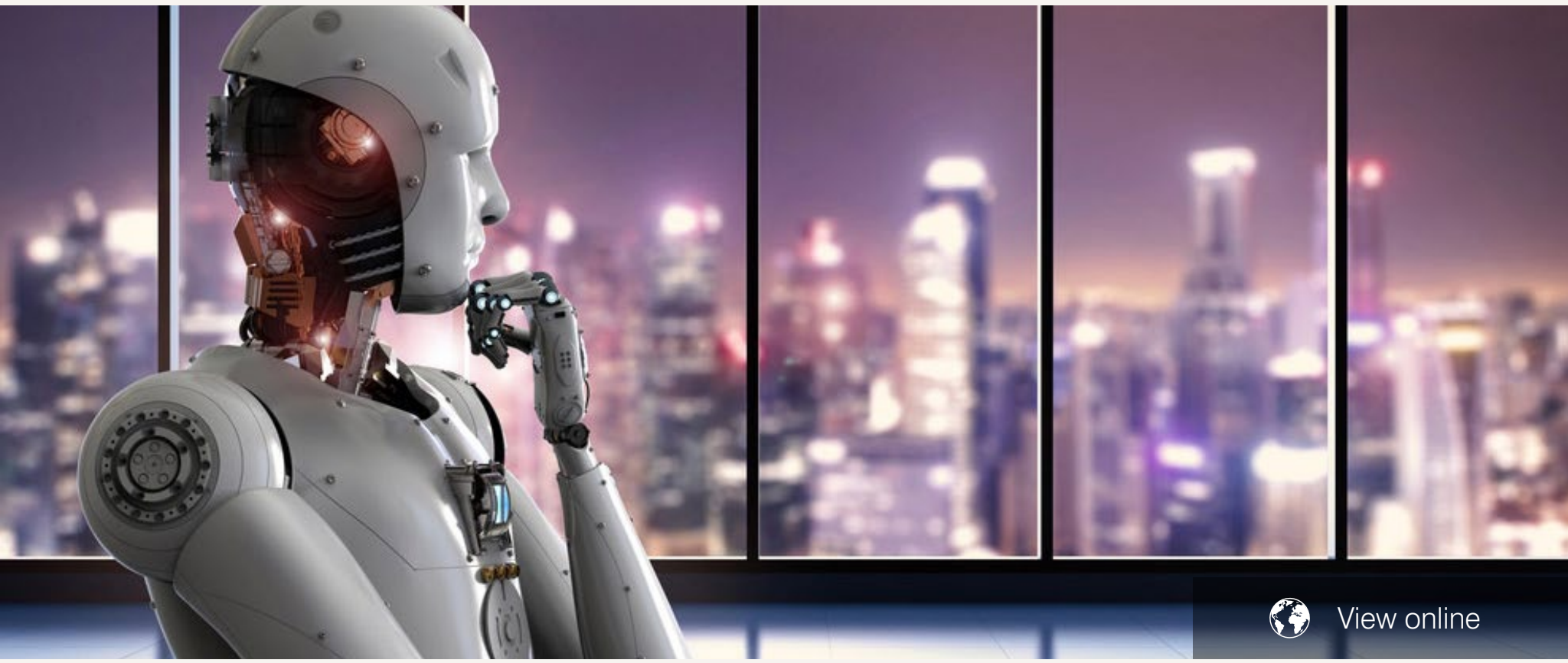
"What we are working the most on – this is ethically going to be the heart of the matter – is what will be the essence of service?" She adds that this is "when the humanity of the person who provides the service touches the humanity of the person receiving the service."

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



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‘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.

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,

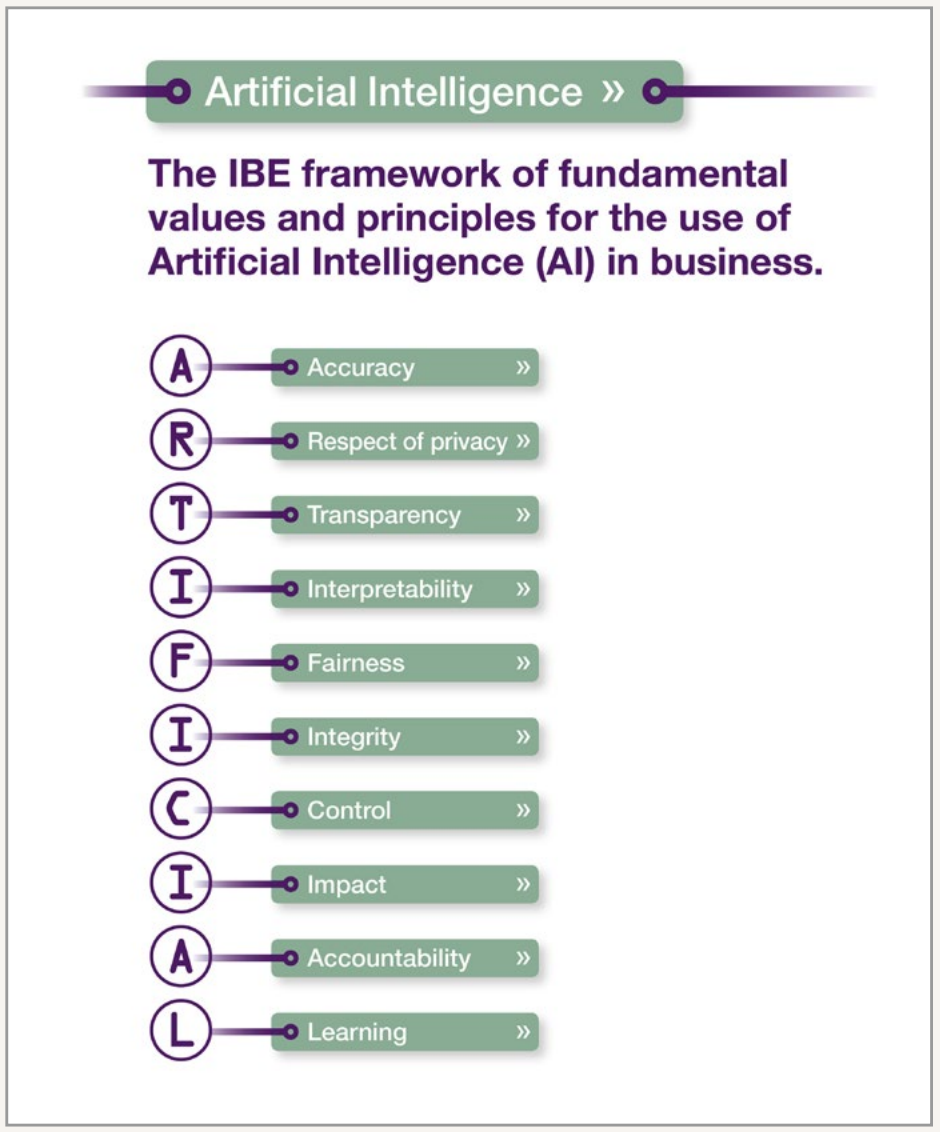
Governments, business and the public are demanding more accountability for AI technologies

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.

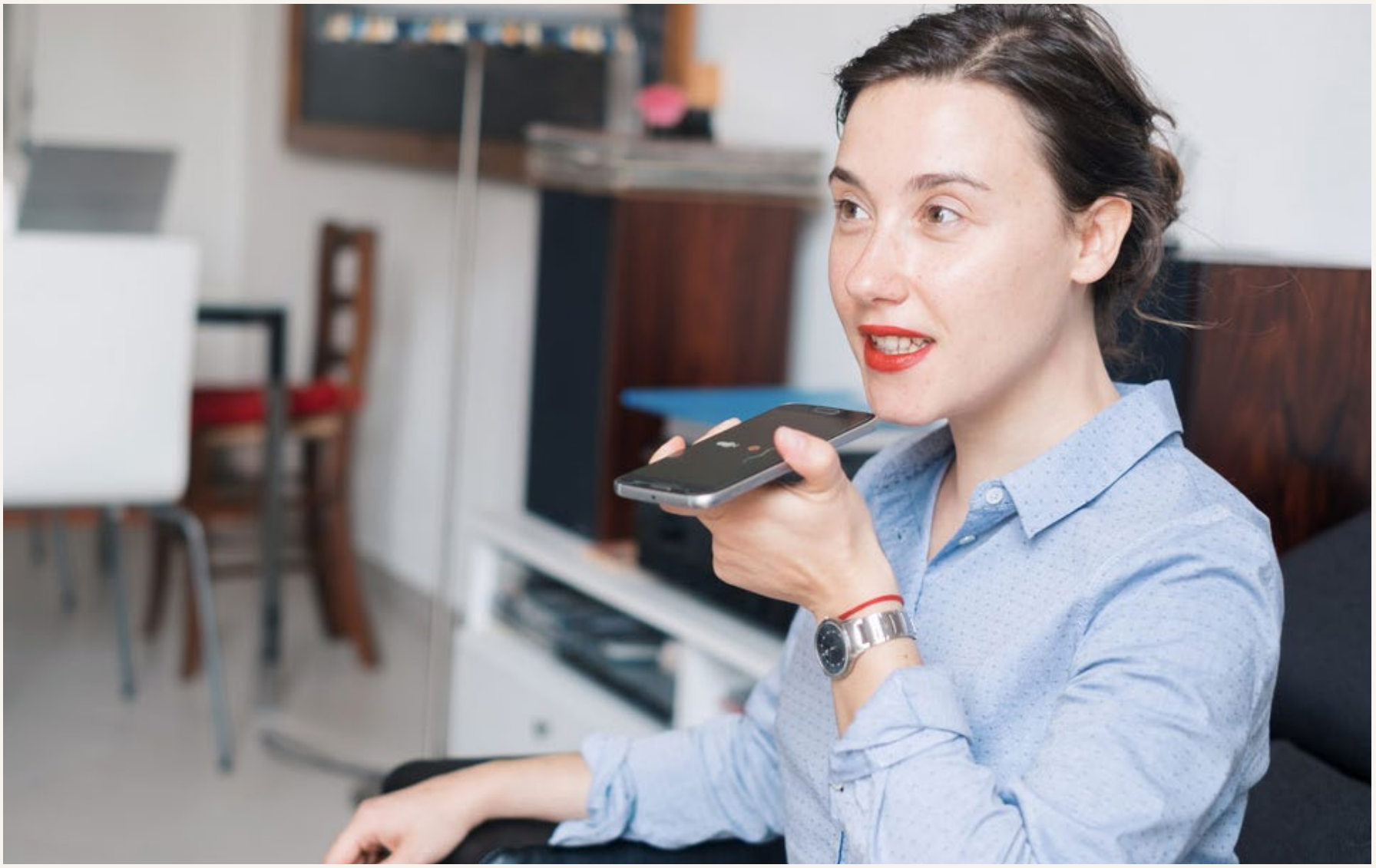


Many organisations include in their code of ethics (or similar document) guidance to support individual decision-making. This could be applied in a similar manner before adopting or using AI.

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?
- 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?

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



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

- 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 and it is important to conduct ethical due diligence on business partners. A similar principle applies to clients and customers to

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

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.

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Senior managers should also get training in AI

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.

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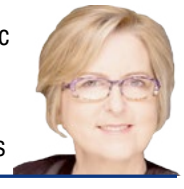

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