Digital Agenda

Power & Responsibility

10 challenges and 10 ideas for change in the digital age

A DigitalAgenda green paper

Written by Eva Appelbaum and Jess Tyrrell

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Photography from 2018 Power & Responsibility Summit by Fran Hales.

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#DAPRSummit

In partnership with BCS, The Chartered Institute for IT
Additional support from Edelman

About DigitalAgenda

DigitalAgenda share ideas that look to make the world a better place, and work to connect good ideas to good money.

We also cover the digital downsides, asking questions about the impact of technology on issues like wellbeing, privacy, power and future jobs. There are unintended negative consequences of the digital age.

Our online and live content highlights innovation, reports trends and explains the difference that technology makes to our lives. Our events connect people face-to-face from our network of digital professionals – including at our annual Impact Awards, conferences and events.

We're building a community of founders, startups, innovators, investors, policymakers and academics in the UK and internationally. Our network comes from small and large business, government, non-profits and universities – giving us a broad and unique perspective from across the economy.
@DigitalAgenda

Foreword

DigitalAgenda are an inclusive and cross-sector network collaborating to create a sustainable digital future and sharing ideas to make the world a better place.

Celebrating the positive impact of technology is, however, only part of the story. Alongside its myriad of valuable innovations, the digital revolution has brought with it some serious unintended consequences, both at a societal and individual level.

The detrimental effect social media can have on mental health is well documented. Parents everywhere are anxious about the time their kids spend on screens and the divisions this creates between them. People of all ages struggle to identify with the perfect images they see around them and the increasingly subjective representations of reality and truth they're exposed to.

Meanwhile, a handful of mega tech corporations have emerged worth trillions, operating monopoly platforms used by billions of people across the planet. These tech giants have acquired vast quantities of data about us all, providing them with knowledge and insights with implications that go way beyond our understanding.

We are even witnessing the use of that data to manipulate the democratic process across the globe. Information in the wrong hands now has the power to make or break governments. Alongside the rise of artificial intelligence, these developments are making many uneasy about our future and what it means to be human.

These concerns about the unintended consequences of the digital age led to the first DigitalAgenda Power and Responsibility Summit in October 2018. This paper, authored by Jess Tyrell and Eva Applebaum, incorporates the views and wisdom of many who attended that first DigitalAgenda Summit. I am deeply grateful to all for their contributions.

In the run-up to the second Power and Responsibility Summit on 9 October 2019, Jess and Eva have provided a preface that brings last year's discussions at the summit up to date. They note the many recent changes towards making technology more responsible and then consider how to ensure the movement towards 'humane tech' matures and becomes mainstream; and the need to mobilise consumers to create real 'people power'.

I remain optimistic about the power of technology - but it must be used responsibly. As Jess and Eva say: "There is a lot happening, and that's a very good thing. We should celebrate those things when we meet this year, and not be down-hearted." The Power and Responsibility Summit on 9 October is an opportunity to debate these issues in more depth.

I look forward to meeting many of you there.

Rachel Neaman
Director
DigitalAgenda

Power and Responsibility

This Green Paper has incorporated the views and wisdom of many in our community and reflects the debate at and since our Power and Responsibility Summit last October. It now looks ahead to this year's Summit on 9th October.

It puts forward 10 key challenges for the digital age, along with 10 ideas for future change.

We're grateful to Eva and Jess, and to everyone who joined the first summit. We're grateful to our partners at DCMS; BCS, for helping create the event; and to Edelman for additional support.

Robin Knowles
CEO, DigitalAgenda

About the Authors

Eva Appelbaum is a recognised leader in digital strategy and business transformation. She is a frequent speaker and is published in two books, Creating Digital Culture and Building the Agile Business. As digital director at BBC Earth, Eva was pivotal in changing the way the BBC worked across television and digital content and products. She was also responsible for setting up the BBC Marketing Lab. Previous roles include digital director for Amnesty International, digital advisory board member at ActionAid and director of social media and digital production at GroupM. She has been in Marketing Week's Vision100 and the BIMA Hot100 list and is a regular judge of sector awards, including the CIM, Lovies and Festival of Marketing.
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Jess Tyrrell has a longstanding background in technology, public policy and business. She began work in external affairs at IPPR where she set up the digital society programme and worked with Tony Blair on his 2001 election campaign team. She then ran Germination, a pro-social production company responsible for tech for good events 2gether'08 and Reboot Britain. She co-founded the think tank Centre for London, producing the seminal 2012 report on Tech City, a programme on digital skills and co-authoring the 2016 Mayoral tech manifesto, which led to establishing London's first chief digital officer. Most recently she worked at digital design studio ustwo, managing work with tech for good clients Google DeepMind, Co-op Group and Babylon Health, and tech businesses Huawei and Three Mobile. Jess sits on the DigitalAgenda Impact Awards jury.
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The authors would like to acknowledge the contribution of Jemima Gibbon in editing the final report.

Content

Preface

In June of this year, Nick Clegg wrote an article on how to build a better internet, the opening statements of which echoed the opening gambit of the paper we wrote last year for this event.

“Every technological evolution follows a pattern”, he writes. “First there is euphoria, then fear, then eventually a sensible equilibrium.”

We began writing this green paper in 2018, in advance of the Power & Responsibility Summit. At this event in October of last year, we gathered tech enthusiasts - campaigners, business people, activists, journalists, bloggers and academics - who all agreed that tech has done much to benefit our lives. And at the same time, the harms we are increasingly becoming aware of must be addressed. Many proposals were put forward as to how this could be done.

In the intervening 12 months we have seen much change.

The fallout from the Cambridge Analytica exposé has continued. The Great Hack, released on Netflix just last month, added grist to the mill. The issue of tech harm appears more often in mainstream media and public concern is growing. GDPR was the UK’s third most searched news event in 2018, after the Royal Wedding and the Royal baby. Edelman’s 2019 Trust Barometer shows that more than 60 percent of respondents, globally, believe tech companies have too much power and won’t prioritize our welfare over their profits.

We have seen action by regulators. In June of this year, the US Federal Trade Commission fined Facebook $5bn for violating the privacy of millions of users - the biggest fine of its kind to date - and placed restrictions on the company to make directors accountable for privacy related decisions. Google got hit by a third billion dollar fine from the EU. In Australia, the Digital Platforms Inquiry produced one of the world’s most comprehensive studies into the impact of digital advertising and made 23 recommendations to government, including curtailing Google’s near-monopoly position in internet search.

We have seen action from companies. Google has responded to the EU’s fine for abusing dominance of its Android platform by allowing other search engines to bid to be the default on Android phones throughout Europe. Facebook has invested heavily in systems and people to counter the spread of fake news. Just this summer, social media platforms Facebook and Twitter have taken steps to curb inflammatory content in the wake of the protests in Hong Kong.

In the UK, we saw the launch of the government’s Online Harms White Paper and a £30m tech-for-good fund, and the largest donation in Oxford University history, £150m for a new Institute for Ethics in AI.

There is a lot happening, and that’s a very good thing. We should celebrate those things when we meet this year, and not be down-hearted.

We can see this mobilisation and various degrees of progression mapped across 6 major sites of power (see image opposite).

There is a real sense of momentum throughout, with a noticeable absence of ‘consumer power’. We are not seeing the rise in public awareness translate into significant behaviour change such as major drops in consumption. Nor are we seeing boycotts, consumer lobbying or other common consumer levers.

In our paper last year, we said we need to move from ‘tech worship’, through ‘tech fear’, to ‘humane tech’. To get there, we need to identify the target. What does ‘humane tech’ look like? How do we want our tech world to mature? What are the calls to action that can be turned into campaigns and unifying levers of change in the same way the UN Sustainable Development Goals or the Paris Climate Accord have done?

That question should be a question for the Power & Responsibility Summit
2019.

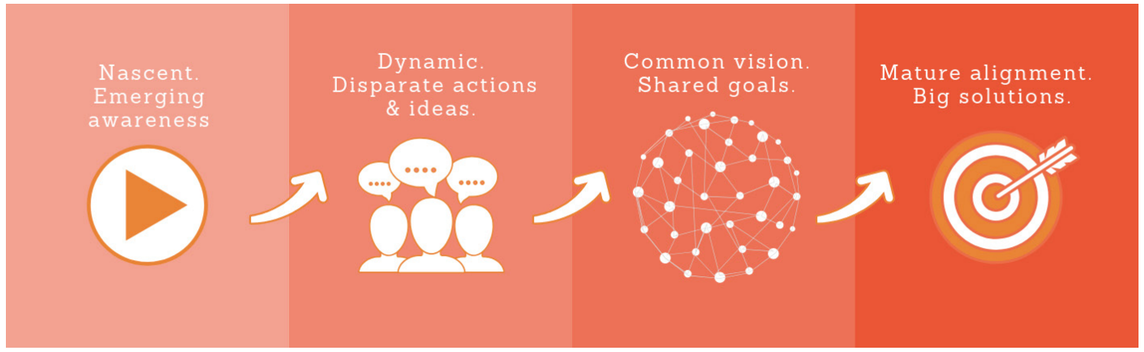
How does humane tech mature?

Compared to 2018 when we wrote the first paper, the movement now feels very different. We have passed many milestones. There is a clear momentum in the growth of public awareness around technological harms, as well as its advances. We might say these concerns are now mainstream.

But this is not yet a mature movement.

Actions are disparate and uncoordinated and we are not seeing energy channeled into common goals. In other words, it is still relatively early days. We have progressed from the nascent stage of maturity, but we need to focus on what must happen to arrive at big, game-changing solutions.

In order for us to mark the next profound leap forward, we need to move beyond a proliferation of initiatives and solutions, picking away at problems organically. We need to aim for alignment - bringing all actors together to determine shared goals and a clear vision of the change we want to see.



Let's compare this emerging 'movement for Humane Technology', to give it a name, to other campaigns or movements.

Take the movement against Climate Change, which has made great strides this year. We have seen acts of protest (school strikes, extinction rebellion) to proposals for consumer action (eating less meat, taking fewer flights) and government commitments (2050 targets in the UK) take place this year under the banner of addressing the 'climate emergency', with a clear call to action to reduce gas emissions to net zero by 2025.

What can we learn from the climate change movement?

The campaign has a number of positive elements. A clear call to action. An intense sense of jeopardy. Global reach with many local actors. A headline banner under which many issues can fit. Government accords and stated targets. It has become a mature movement.

What can we do to mirror this as we strive for humane tech? What can we do to move our cause along?

We don't yet have global goals or international accords, objective markers against which change can be measured. This is what we need to work jointly towards.

The looming challenge is one of alignment. We need a framework for change that the many different actors involved can coalesce around and sign up to - our equivalent to the Universal Declaration of Human Rights, Sustainable Development Goals or Paris Accord.

Perhaps the forthcoming summit should be accountable for coming up with proposals for how we get to this next stage of maturity.

Section three: Mobilising consumer change

Establishing goals for humane tech is not enough. To become a game-changing movement, we need to focus on the power of consumers and give them reasons to act. We need an agenda for consumer pressure.

The popularity of apps monitoring time on screen, for example, shows that concern does translate into changes in behaviour, once awareness is established and ethical products are designed. (See the evolution of Apple's 'Screen Time' for example.)

If we know something is wrong and we want to right it, we will buy into it if the conditions are right and if improved products are on offer. The humane tech movement can also create a market.

Can we do this better than the climate change lobby?

In his article "The climate change lobby needs a business strategy", Nick Butler says that having raised public consciousness, climate change activists need to "start providing practical solutions." Protest in itself is not the answer.

Imagine a humane tech movement that combines awareness raising with business innovation. We can see green shoots already, with the Center for Humane Technology engaging business owners (Steve Wozniack is a fan) and product designers in developing solutions. Alongside awareness raising, their meet-ups include entrepreneurs, VCs and technologists invested in devising solutions.

How do we reverse the direction of travel from tech that produces business gain irrespective of its damage to humanity, to tech that both makes good money and upgrades humanity? Let's build a market where this is the expectation, and where that expectation drives demand.

The humane tech movement, of which we are a part, will need to influence consumer expectations to make this change real.

Imagine if you will, a world where consumers veto free apps because of the hidden costs. A world where data wallets become standard and many different kinds proliferate because they are the norm. A world in which Google was forced to offer different search engines on their Android homescreen in response to user choice (ie. the best, most popular alternatives) rather than to the highest bidder.

Imagine a world where consumers boycott companies that advertise on social media platforms who refuse to enact responsible policies. Or where VC's employ 'regenerative incentives' to encourage entrepreneurs to develop products designed with positive human outcomes in mind. In short, a market for humane tech.

The 2019 summit will bring together a great community of technologists, designers, business leaders, investors, policy-makers and innovators, all of whom are also consumers.

Section 1:
The challenges we face

Context

How our lives have changed.

In a powerful podcast Globalism on the Brink, political scientist Ian Bremmer describes to philosopher Sam Harris two different experiences of jury duty, six years apart.

In his first experience, he met other jurors, they talked to each other and he stayed in touch with one or two. They connected across social boundaries. Six years later, in exactly the same setting, things had changed. After their group orientation, almost everyone reverted to their phones, disappearing back into their online worlds, into their own echo chambers, their own circle. No-one spoke to each other.

"Of all the trends that are stimulating us-versus-them populism...the one that is most debilitating, and the one that I am most negative about...are these technological transformations that we've seen, just in the last five years," he says.

This, and many other negative social impacts - mainly unintended - has come about as a result of the first wave of pervasive digital technology. It is worrying many of us deeply.

This paper provides an overview of some these concerns and suggests ways of addressing them. How do we move forward into a more balanced future where technological progress and social goods are more fairly mediated?

This paper was devised as a starting point for discussion, starting with DigitalAgenda's Summit of the same name in October 2018. We need to align our approaches, to be hopeful that we can together contribute to a collective change, so that the technology we create can better serve our human needs.

When we first discussed writing this paper, we were not sure if the status quo would change - whether big tech companies and technology innovation would remain largely unregulated, unaccountable and seemingly untouchable. Over the past year, the change has been nothing short of dramatic. A series of scandals, a rising consciousness of the downsides and a general frustration with the perceived lack of response has shifted public sentiment. By 2019 the tide has well and truly turned. Crises, and regulatory responses, are starting to come thick and fast, including the DCMS proposal for an industry watchdog with powers to fine social media companies who do not do enough to protect users. There was widespread condemnation of social media networks in March after live-streamed footage of the Christchurch shootings was shared and viewed thousands of times. In April, the Australian government passed new laws to force social networks to take more responsibility for the spread of violent content on their platforms. The fact that there is this level of awareness, with this speed of legal response, shows we are entering a new phase in our digital evolution. The opportunity is there for us to seize, and we believe there is a way to build a humane tech future that balances the best of technology innovation with public good and social protections integral to serving our human needs. This paper outlines how power and responsibility can be shared between technology creators and critical parts of public life.

We have a problem

For many years we have been mesmerised by the rise of new technology. We have been enthusiastic about the inventions coming our way and are living in an exciting world where the unimaginable has become possible. "Disrupt" has been a positive battlecry.

Prophets from the future described innovations that evoked optimism and wonder. We believed digital (itself a nebulous, at times quasi-religious term) would change the world, and that that change would always be for good: bringing people together; solving our greatest challenges; creating limitless opportunity for those who were open to its possibilities.

The past few years have changed this narrative.

A 'tech-lash' was born in 2016 - when major concerns about interference in the democratic process erupted with the election of Donald Trump- but was unleashed by many concurrent triggers: the exposure of the 'fake news' phenomenon, growing discontent with wealth inequality (particularly with

October 2018's Power & Responsibility Summit heard about digital's downsides

regards to affluent tech workers rubbing up against have-nots of the economic downturn), warnings of mass job losses to AI, frustration over perceived tax evasion by tech giants and the unaccountable power of Silicon Valley billionaires. Together with a growing unease that valuations within the industry may be overinflated and weariness over the next dotcom crash.

The bubble may not have burst on the economics of the industry, but it has certainly burst on its reputation. Those who were previous champions of digital technologies, or indeed responsible for its very infrastructure, such as Tim Berners-Lee, Jaron Lanier or Elon Musk, started to sound a note of caution.

Politicians who had little understanding of this new reality have begun to eye the industry as ripe for regulation. And the public began to develop suspicions that technology did not always have its best interests at heart, fuelled by frequent media stories relaying scenarios of a dystopian future. We have effectively moved from a state of **'tech worship'** to a state of **'tech fear'**.

Yet, neither of these states do us much good.

We need to move forward into a third, more enlightened state, where all the benefits of technology are balanced against public goods and social protections integral to serving our human needs. We might call this a state of **'humane tech'**, where power and responsibility is balanced between technology creators and other critical parts of public life.

This new state does not fetishise tech for its own sake, nor does it project a fear-inducing, disorientating future. Rather, it looks to balance human, social and public needs with the potential of new technology. This new state puts limits where necessary and provides guide rails for a growing industry. We need better frameworks for how we as individuals, society, and business can judge if technology is helping us evolve in the right ways, or not.

The developments made since the birth of the world wide web, are cited as nothing less than a 4th industrial revolution. Another parallel is drawn

Personal responsibility and unintended consequences

Our lives and outlook, and those of our children, are fast being shaped by the digital world. These changes are unplanned, largely unregulated and already happening. This, warns Adam Thilthorpe, leaves us reliant on the ethical fortitude of developers.

In a digital world with ubiquitous technology, our lives are increasingly shaped by unintended consequences. Trying to get a measure on this, or even some semblance of control back on our own lives, is proving not only difficult but a challenge that has everything to do with the very real issue of ethics in IT. Unintended consequences in our digital world shape our physical reality. When Mark Zuckerberg and friends were kicking around the original ideas for Facebook, they just had in mind a book of pictures of the students in Harvard – literally, a face book. Today, Facebook has grown to be one of the largest corporations in the world and, it is alleged, has been used to undermine the world's largest democracy.

We're now raising a generation who won't recognise a world without communal artificial intelligence. Whether it's Apple's Siri, or Amazon's Alexa, parents are being confronted by AI that disrupts the natural 'call and response' of learnt conversation in the home to such an extent that we ask whether it's still appropriate to teach children to say please and thank you.

Or is the opposite true? It is said that true digital natives can clearly distinguish the difference between human interaction, simple voice recognition and even natural language understanding. But do we really believe that?

It's not just about being polite. According to a NSPCC/Children's Commissioner report, 40% of 11 year-olds 'sext', and with half of 11-16 year-olds reporting seeing online pornography. How can that be good for the future of human interpersonal relationships?

What role do all of us, parents, educators and regulators have? We're seeing the daily use of biometrics at our borders and in our courts. Police forces are experimenting with AI software that can interpret images, match faces and analyse patterns of communication, all with the aim of speeding up the examination of mobiles. These are not planned changes, these are in use, here, now. Do you remember being asked if you wanted, let alone consented to, these incremental but important changes to the way that we conduct our lives? No, me neither. Yet step by technical step, we are seeing a change to the fundamental relationship between citizen and state. Instead of presumed innocent are we now simply all un-convicted people?

As our technologies move so quickly, inevitably public policy, legislation and our regulators lag far behind. Nowhere is that more starkly evident than in Cambridge Analytica's rise and fall. The firm extracted data about millions of us from Facebook, used it to profile voters and then targeted users with personalised political advertising – all designed to help the Cambridge firm's paymasters to achieve their political goals. Be that Brexit or the election of President Trump.

The Observer's Carole Cadwalladr, speaking about this mass abuse of data in her TED talk, asks us to consider whether free and fair elections are a thing of the past. I'll leave you to consider your own conclusion.

So, where does that leave us? Sadly, at the mercy of the ethical fortitude of those developers, designers, coders and makers who are forging ahead in this digital age, if not at our behest, certainly then at least with our enthusiasm for greater integration and insight.

Let's face it, what's more useful: online ads for a bulk buy of nappies that I'll never click, or ads for the new road bike I've been promising myself? These developers, designers and coders and makers are the very people that need to understand not only the intentions and motivations, but, importantly, also the potential for unintended consequences.

IT people must be great sociologists... the chances are that, if you're reading this, you know some or all of this already. You'll be in the know and probably already have your own opinions about the various issues I've raised. That's what I'd expect.

But the big question for me is how do those of us who work in, or at the edges of, some of this technology, raise these big, difficult questions with politicians, with civil society leaders and with the public at large?

Whose role is it to ensure that the magnitude and complexity of the world that is being created around us? The US tech giants – not a great track record so far. Our own governments and regulators, perhaps. What about our national news media?

For me, it's simple. We need those who work in the sector, who are developing these technologies, to understand that they owe it to their families, and to society at large, to develop within an ethical framework. With great power comes massive responsibility. Massive personal responsibility.

We need our makers, doers, coders and data analysts to think about the consequences of their work – before they put their hands on their keyboards. We all have a part to play in fostering this much needed personal responsibility. We need to create an environment where people creating these world-changing technologies can safely debate and discuss their products' consequences. And we need to support them when they say: "No."

Adam Thilthorpe is Director for Professionalism at BCS, The Chartered Institute for IT.

with the tumultuous shift from a society based on agriculture and all its values, to a society forged by industry. The breadth and depth of change emerging now will impact our systems, beliefs, behaviours and values.

"As with the impact of the industrial revolution on nineteenth-century life, today's digital revolution represents a civilisational problem that is disrupting our politics, economics, culture and society."
Andrew Keen, How to Fix the Future

When we frame the digital revolution in human terms, we understand why we cannot allow technology, and the companies that profit from it, to create a future based solely on their own interests. We must hold them to account. This is not to slow innovation or stifle vision, but rather to reach an equilibrium where we can be optimistic about our shared future because we know **power has been balanced with responsibility.**

We are still only in the foothills of change, but we have moved firmly beyond its heady early days. Now is the time to pause for thought and meaningfully debate how we want technology to serve us. A greater emphasis needs to be put on what we as humans want from technology, and how it can solve our big challenges, rather than capitulating to a pace of development that races ahead and leaves us behind.

A new narrative of **power and responsibility** should interpret the future optimistically and harness the creativity of innovators, while ensuring that an overriding 'duty of care' for humans and society is woven in. We believe this can be achieved by technology companies and their creators, governments and civic society working more closely together to shape the future.

We envision a future where intelligent technology and people coexist peacefully and responsibly. But in order to make it, we need to meet some major challenges head on.

Who owns these problems?

Firstly, the industry itself. We can take aim at 'big tech' - Facebook, Apple, Amazon, Microsoft and Google, the five top-performing tech stocks - but the industry, of course, includes many other providers of services big and small, startups, disruptors and now traditional businesses, many of which are grappling with how they themselves become tech companies.

In the state of tech worship, tech companies have developed largely outside regulatory constraints, the most successful of them amassing huge fortunes and power. These early visionaries hit the jackpot, but they are increasingly confronted with the need to address some big social issues which they are, in part, responsible for creating. Some say these visionaries would prefer to live in a **tech utopia**, a place with no governments, no checks on capitalism, where only engineers rule. This cannot be.

Still, we should have some sympathy for these early tech titans. For all their power and innovative skill, they suffer from their own clay feet. Creators of vast platforms and burgeoning businesses are not necessarily best placed to contend with fake news or online bigotry or the fixing of elections. It's not what they signed up for, nor arguably do they have the skills or mindset to address it. This is why they now need to look to others outside of the tech bubble.

The backlash, driven by tech fear, threatens a strong reactionary approach from regulators and government. We have seen this, for example, with the approach the EU Commission has taken to tax and to GDPR. And, while we should celebrate the progress the EU has made on these issues, regulation on its own is not enough.

Governments, regulators and tech companies will need to work together to find approaches that embrace the upsides of technology while also protecting - and extending - public good. We put forward some encouraging examples of this later in the paper.

Tech fear is exacerbated by ordinary people feeling outpaced by technological advances. It can be overwhelming to contemplate the implications of AI, machine learning or the complexity of financial algorithms. It is hard for us to feel we have control when the pace of change is so fast, and when individual companies seem able to develop creations unchallenged before space and time is given to anticipating their societal impact.

We explore the existential threat that this gives rise to further in this paper, and agree with Andrew Keen that we must find agency and a belief that we can assert some control over the next wave of tech development.

"The revolutions in biotech and infotech are made by engineers, entrepreneurs and scientists who are hardly aware of the political implications of their decisions and who certainly do not represent anyone."
Yuval Noah Harari, 21 Lessons for the 21st Century

A combination of actors working together is what is needed. In the end, it is humanity that owns this, and the problem is collective. We need a balance of governments with the political will to empower regulators to act, campaign groups to establish principles, policymakers and think tanks to develop and co-design solutions, academics, scientists, trade bodies and guilds. We need civil society, educators, health workers and the arts. And, we need tech leaders to be willing to engage in tackling these problems from a wider public standpoint, where the impact of their products and services meets public concerns.

"It is a problem that can be addressed only by the combined work of regulators, educators, innovators, consumers and citizens."
Andrew Keen, How to Fix the Future

Who owns the solutions?

These are difficult political times. We are seeing cooperation between states fracturing, at a time when we need global solutions to global tech challenges. But the challenge of global agreement should not stop us from taking steps at a national level. We can agree a set of British tech values, and operate with them, as Germany has already done with their values, especially around key challenges like data and online hate (which have been translated into national privacy and social media laws BDSG and NetzDG).

In the case of tax, for example, it might become

impossible to tax companies at a national level if and when transactions cease to be a clear-cut exchange of national currency, or indeed any currency at all (in the case of cryptocurrencies or goods exchanged over blockchain). At some point, we will need global rules to apply to the global, borderless nature of many tech services.

We need supranational solutions. National governments, through their influence at macro levels, can effect change. We do not underestimate how hard this is. Take GDPR: it took four years, mountains of paperwork, intense lobbying and 27 governments to agree. But, now the EU block has established consensus, it has set a standard for data regulation that will influence behaviour across the world.

We could look to existing international bodies to codify principles for regulation, such as creating a Digital Geneva Convention for technology. Conventions such as the original Geneva Convention show that despite thorny geopolitics, we can establish global principles. Interpreting and enforcing them is another matter, but agreeing a shared set of standards would be a good place to start.

This would be a huge challenge, particularly when different blocks of power (such as the US, Europe, Russia and China) have different approaches to economics, politics and technology at a time when geopolitics is also in turmoil. But, there is much to gain for all of us in agreeing the most commonly held values regarding tech and what we want it to achieve for us.

It is, as ever, a mixed picture. Big tech companies, well aware of the loss in public trust, have been trying to make positive adjustments, but fixes are often complex and can lead to negative unintended consequences. Facebook, for example, experimented with alerting users when fact-checkers had found posts to be false. But, they stopped because it led users to think posts without alerts were therefore true. Google have invested significant amounts into free online courses in their Digital Workshop, to help retrain workers across Europe whose jobs are under threat to automation, with a target to retrain over 1m people by 2020.

Increasingly, however, the public and regulators are losing patience with the tech giants. A lot of the interventions are seen as too little, too late. And there is growing incredulity at the impassioned reassurances of leaders like Zuckerberg and Sandberg. We are becoming used to seeing commentary that portrays our one time heroes of Silicon Valley as deceptive, incompetent, greedy or even as destroyers of democracy and social cohesion. Carole Cadwalladr, the British journalist who broke the Cambridge Analytica story, called social media giants 'the handmaidens of authoritarianism'. Big Tech is perceived much like banks were after the financial crash in 2008, if not worse. After years of being amongst the world's most trusted brands, that trust has waned.

So as the public mood changes, it seems increasingly clear that the solutions are of a higher order than individual companies can themselves effect, which is precisely why they need to work with other actors to solve the problem.

Do we have enough belief in our ability to fix these problems? We have done it before, and we have many levers of change at our disposal. We have power as regulators, educators, innovators, consumers and citizens to respond. We also have power as product designers, developers and those who influence digital strategies. There are many ways to pursue inventive design solutions, as Tim Berners-Lee is working on now, with his new platform Solid and decentralised web Inrupt. Put simply, there are levers of influence that are already within our gift to activate.

Under the tsunami of change brought by technology innovation the majority have felt passive - this is something that has happened to us, rather than a change driven by conscious human choice. As a result, individuals, communities and society generally have felt powerless to influence change. In re-writing a narrative, to one that champions humane tech, we can begin to feel we have choices and ways of making a stand from our own positions of influence. As individuals, as citizens, and as society, we can demand change; as consumers we have more levers than we may realise.

Time to rethink truth and trust

Trust in tech – or the lack of it – is at the heart of much public anxiety about the digital age. That's one reason why the the London School of Economics embarked on a major 'truth, trust and tech' commission. Sonia Livingstone, chairing the commission, says social media especially has forced a rethink of what we understand as truth.

The LSE truth, trust and technology commission (T3) deals with the crisis in public information – aka "fake news", Cambridge Analytica, election hacking, the crisis in journalism, filter bubbles, biased algorithms, ill-informed citizens and more.

As the DCMS select committee investigation into 'fake news' following the EU referendum campaign said, misinformation is a threat to the future of democracy. So ours is a timely and urgent remit – to identify the structural causes of media misinformation in the UK and to come up with a framework for tackling them through strategic policy recommendations.

The T3 commission was led by professor Charlie Beckett and overseen by commissioners who include leading figures from the media and information sectors, politics, academia and civil society. I am the commission chair.

The commission has four strands: journalism credibility, platform responsibility, political communications, and media literacy and citizenship. After holding a series of lively deliberative, multi-stakeholder workshops, we are finalising recommendations for whether and how platforms can be better regulated, how we can make sure people understand better how platforms work, and how politicians and civil society can help shape their impact on our lives – especially when it comes to politics.

The evidence demands changes – for some parts of the problem, through government regulation or co-regulation; for other parts through self-regulatory codes of conduct; to reach all segments of the public, through a comprehensive strategy for critical media literacy; for coherence and accountability across these different and moving parts of the problem, by establishing a new regulator, as many are now debating.

For matters connected to freedom of speech – for journalism, for the public – extreme caution is needed lest we find ourselves advocating for censorship. When it comes to enforcing existing regulation (regarding racist speech, campaign finance law or media plurality) or extending it in needed ways (to regulate digital advertising, discriminatory algorithms, and improve electoral law), greater resources and determination is needed. To ensure sufficient resources for quality journalism, some kind of levy on platforms or public service media funding may be required.

One of the biggest challenges the commission has addressed has been the problems of truth and trust as perceived by the general public. Although sources of news and comment have proliferated, only about half of voters say they know at least 'a fair amount' about politics, according to the Hansard Society, and around a quarter of UK respondents to a recent Reuters Institute survey say they sometimes or often avoid the news.

Problems for news consumers are also problems for citizens. And problems for citizens make for problems for democracy writ large.

This is not just a problem at election time. Votes may be swayed at the last minute by campaigns or tactics of mis/disinformation, but for the most part, political views are formed slowly over months and years, informed by news, information, events and circumstance – and, once formed, they can be hard to alter. So the quality and source of the news and information that reaches the public is crucial.

While news obtained via social media is under the

spotlight, the quality and financing of all journalism is threatened by platform dominance. In other words, now that ever more political discussion takes place online, what my colleague Nick Couldry calls the "communicative entitlement" to participate in the life of the community is being shaped by the policies and designs of platforms, and these in turn are shaped by commercial interests rather than the public interest, prioritising profit over democratic and civic considerations.

Too often, when such matters are being debated, hands are waved vaguely in the direction of "media literacy" as if education can single-handedly solve the problem. It cannot.

Call it what you will – media literacy, digital literacy, critical literacy, news literacy – educational alternatives to the regulation of the digital environment are often suggested yet they rarely result in concrete policies or additional resources which actually increase the media literacy of the public.

Crucially, we cannot teach what is unlearnable and people cannot learn to be literate in what is illegible. Terms and conditions written in legalese are a case in point. Relatedly, we cannot teach people data literacy without transparency, or what to trust without authoritative markers of authenticity and expertise. So people's media literacy depends on how their digital environment has been designed and regulated.

Only once the above has been properly recognised, can we turn to the question of what education can, realistically achieve. To reach young people, schools are clearly the answer, though the past decade has seen a retrenchment rather than a ramping up of educational resources in this regard. But how can the adult population be reached?

For me, this is the most important and pressing problem – to find an inclusive and effective way to support adults to understand their changing digital environment critically, so that trust is better informed, truth can be discerned, and civic participation is positively encouraged. Ideally, all those concerned with quality information in service of the public – public service media, libraries, the education sector, etc. – would be charged with delivering this. But government must nominate or create a responsible independent organisation to ensure the results are effective.

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10 challenges we face

1 It's not safe enough online

Today's under-18s are social media natives. They have not known life before it. Yet the codes that guide what young people can and should access online - and the technology that helps ensure this have not been powerful enough. The Children's Commissioner's Growing Up Digital report "exposed the gulf between children's experiences online and the protections and preparation in place for them." It is not safe enough online for young people. The NSPCC believes children have been "stripped of their childhoods at a young age by stumbling across extreme and violent porn online". The UK was the first country in the world to bring in mandatory age-verification for online pornography when measures came into force on 15 July 2019. A survey by the NSPCC, The Children's Commissioner and Middlesex University found that young people themselves favoured age checks. It is amazing that it has taken until 2019 for this to happen.

But being safe online extends beyond how difficult or easy it is to access age inappropriate content - it is also about that "lack of protections and preparations for them" with regards to privacy, data, literacy and much more. The iRights Campaign, built on the US Convention of Rights of the Child, seeks to enshrine 5 principles to protect children online: the right to remove, the right to know, the right to safety and support, the right to make informed and conscious choices and the right to digital literacy.

The Growing Up Digital Taskforce recommends a suite of interventions that "*would give children and young adults resilience, information and power, and hence open up the internet to them as a place where they can be citizens not just users, creative but not addicted, open yet not vulnerable to having their personal information captured and monetised by companies*". Much more needs to be done to bring these principles into practice and there is more the industry itself can do. Indeed, there are many opportunities for innovation in this area, and it should not be left to policy makers to fix these problems alone.

2 Not paying tax is unfair

Amazon is the world's third-largest tech company by revenue, on course to generate sales of $200bn last year, the equivalent of $548m per day. Analysts expect sales to surpass $500bn a year by 2023. Jeff Bezos, the firm's founder, is at 55 the richest man in modern history, net worth of $117bn. Yet Amazon and others have succeeded in legally avoiding tax by moving profits from high tax countries, like the UK, to lower tax ones like Luxembourg and Ireland, and by structuring their businesses so that they make little profit. In 2017, the EU ordered Amazon to pay €250m in fines for illegal tax advantages, following an enquiry into its corporate structures. The EU has proposed a 3% digital tax on the revenues rather than profits of large tech companies, arguing that taxes should be tied to the geographies where services are provided and users live - not to where HQs reside - to prevent corporate restructuring to avoid tax.

In October 2018 Philip Hammond announced a special digital service tax on US tech giants that will come into place in April 2020. The levy will apply against revenue from search engines, social media platforms and online marketplaces and will be charged at 2%. There is consensus that tech companies should not be allowed to avoid tax unfairly just because their operations are more fluid and harder to track but so far there has been no cohesive approach to addressing this. In Amazon's case, tax loopholes give it a competitive advantage over bricks and mortar retailers, raising questions about how this has allowed it to concentrate power while many high street retails go to the wall.

This preferential tax treatment can be seen as a form of state aid, underlining the argument that the success of big tech is, in some sense, stimulated by public investment. Traditional retail companies may have been slow to adopt technology in the face of digital disruption, but they also typically paid fair tax and created jobs. It is not right that tech companies avoid their tax responsibilities. Tech companies should be made to square up to their tax liabilities and contribute to the public goods on which they build their businesses.

3 Power sits in the hands of monopolies

The concern here is that too much power is concentrated in the hands of the biggest and most successful of the first wave big tech companies. Apple last year became the first company to reach

Discussion at the 2018 Power and Responsibility Summit

a $1tn valuation, with Amazon following suit and other big tech companies set to do the same. The advantages they have accrued are unfair and disallow future competition. These benefits include established user bases, deep knowledge of user behaviour, familiarity (users don't look elsewhere) and using wealth accumulated by dominating advertising revenue to fund the takeover of other market areas. All of this pales in comparison to the advantages they have by virtue of their vast datasets, in developing dominant AI and machine learning infrastructures that will consolidate their positions of power. We need to rethink anti-competition law and fair data ownership unless we want power to continue to rest, unchallenged, in the hands of a few giants.

4 The echo chamber dominates

Social media platforms have communities on the same scale as nations. Their role in society has come to be that of a global, open public sphere, and for years the likes of Jack Dorsey and Mark Zuckerberg proselytised their roles in connecting the world. Then the cracks started to appear. The very design of social media is optimised to serve users content that either aligns to their existing world view, or that provokes engagement. Outrage and controversy are now fed by algorithms. Rumours spread on social media not only stir up hatred, but in some cases lead to real violence. In the case of the massacre of Rohingya muslims in Myanmar, the UN accused Facebook of facilitating violence by allowing fake news and hate speech to spread on its platform. Sri Lanka, India and Mexico have also had incidences of mob violence as a result of fake news, optimised for social media shares. Live video of the Christchurch shootings was originally streamed on Facebook, but copies were soon circulating on other networks, including the alt-right file-sharing site, 8chan. Facebook estimates the original live video was viewed 4,000 times before it was removed.

In the past, propaganda was achieved by suppressing the truth. Today, social media has enabled a much more powerful approach - that of too much information. Attention is a finite resource and the manipulation of populations can come through the gaming of attention, flooding our networks with contradictory stories, using the confirmation bias and echo chambers optimised by algorithms to keep you on their sites as long as possible to sell ads against your data. Algorithms have no moral conscience but their effect on society is turning out to be morally profound.

In the early days of the internet, social media platforms were gifted "non-publisher" status, and are therefore not liable for content found in their networks. They were deemed to be 'just the pipes'. Had that decision gone the other way, they would have evolved within journalistic or editorial regulatory frameworks that could have mitigated some of the troubles in which they now find themselves.

5 We must face up to tech addiction

There is a public backlash over how pervasive technology designed for addiction has become. Not only that, we reward design which plays on human weaknesses to monetise addiction. Take Facebook: what began as a means for users to connect with friends has become so undermined by algorithms that serve advertising over users that it no longer has a central logic. We don't see posts from all our friends anymore. We no longer see posts in chronological order. These useful things have become de-prioritised in favour of 'outrage' content, designed to stimulate emotional responses and suspend our critical thinking. Easy scrolling, automatically playing video and easy to reach next level game mechanics in addictive games are designed to attract our attention and draw us in. Parents are struggling to set and enforce workable rules with their children around how much screen time is allowed, a job made harder by the irresistible pull of Fortnite, Snapchat Streaks or the latest Twitter Storm. Most of us will admit to spending too much time on our devices and want to detox. We need to consider how enforcing design standards could help to build our resilience in our digital world, so as not to lose touch with the human inputs so critical to our mental health, such as connecting with each other in person, building empathy and understanding our place in wider communities.

6 Social media impacts mental health

Humans are social beings and the need for social contact is built into our biology. The internet and social media have given us the opportunity to connect with likeminded people around the world. We can organise ourselves into virtual communities, to support and share. We can keep in touch with far away friends and family, and feel closer despite distances. But research increasingly shows that we need to engage with people in person to fulfill our primal human social needs, and the lack of this contact can cause psychological and even physical problems. It seems virtual interactions do not replace the need for engagement in real life.

There is a generation of teens spending more and more time communicating via social platforms, sometimes more than in person and amidst much speculation the effect of this is unknown. Studies show the more time people spend on social media the more isolated they feel and the more unhappy they are. Girls in schools where images of 'perfect' bodies are shared, for example, are unhappier with their own appearance. In February 2019, Instagram was forced to ban all graphic self-harm images after public anger following the suicide of 14 year old Molly Russell in 2017. When her family looked at her Instagram account they found distressing material about depression and suicide. Molly's father said he held Instagram partly responsible for her death. There has been a marked downturn in young people's mental health, which correlates with the rise of social media and the advent of smartphones. A Pew Research report in the US found that 57% of teens wanted to spend less time on social media.

7 Big brother is watching us

The Edward Snowden revelations exposed much about the technological capabilities of state surveillance, and rightly made citizens question to what degree our freedoms are infringed by the data that surrounds and tracks us. We have seen divisions emerge between tech companies' assurances to protect their users and government demands for them to release information: take the argument over whether Apple should unlock the iPhone. More recently, significant hacks and company data breaches have raised concerns about the security of the data companies hold on us. We must do more to understand the risks that come along with so much of our lives now residing online, and the fact business models rely on our most intimate data to make money.

The 'right to be forgotten' is an important principle enshrined in the new laws around GDPR and social media companies have had to tackle ethical questions such as what happens to a person's profile once they die. Many of these concerns have not yet been bottomed out. We need to pause to think about the potential harms of new forms of tracking technology, like facial recognition and even 'gait' recognition technologies. Just because we can, doesn't mean we should. Facial recognition is burgeoning in China, and being used to predict potential crimes based on past criminal record, and a person's propensity to commit a criminal act.

In gait technology, where governments tend to hold more data on certain citizens such as prisoners, civil liberties questions arise around the potential for unfair targeting and discrimination. Poorly designed machine learning solutions inevitably apply biases to their algorithms, thus cementing inequality in ways that become increasingly difficult to unpick, as exposed by Cathy O'Neil's Weapons of Math Destruction. While some of this is undoubtedly useful for law enforcement, are we comfortable that these advantages are adequately balanced with civil liberties risks?

8 Business models are growing inequality

The business models of many technology platforms are designed to generate wealth, but create few new jobs. Wealth is concentrated, and lower skilled jobs are either outsourced (eg Apple manufacturing), turned into gigs with no benefits (eg Uber), or badly paid under pressurised conditions (Amazon). The '4th industrial revolution' has not yet provided a significant boost in economic wealth to the wider population. We have seen huge innovations in

platform technologies which enable workers to provide services more directly to users. Platforms such as Uber and Deliveroo, enabled through multi-platform technology, are providing cost savings and convenience to consumers while allowing companies to scale. They also give workers more freedom and autonomy.

However, this emerging gig economy has raised big questions around workers rights. We do not want a race to the bottom where workforce protections are dispensed with, particularly when big tech is making such vast profits for shareholders. We need new protections where the companies that profit from the gig economy also take responsibility for the welfare of their workforce. These can be imagined in new ways to suit new models, but essential considerations such as holidays, sick pay and pensions need to be provided for. Recent rulings have required companies to take more responsibility for providing for their workers. Unless they continue to do so, we will end up relying on the state, thereby allowing companies to profit further while the state covers these externalities. We can look forward to more debate and further rulings on the obligations companies have in respect of their workforce.

9 Automation makes future work uncertain

The prospect of job losses at scale also looms. Automation will render some job categories redundant, as AI is sometimes just better than humans at doing certain tasks. The threat to jobs impacts many unskilled workers. Robots can stack shelves, cars can drive themselves and we can pay for our groceries without interacting with a human. Professional jobs are also at risk. AI is better at diagnosing disease, insurance underwriting and legal research. Paradoxically, the jobs that are least threatened by AI are caring professions, which are currently some of the lowest paid.

Whilst there will be new jobs created by automation and AI, the human cost to this shift in the world of work could be high unless there are robust efforts to reskill, re-train or redirect workers into new roles. In the wake of this disruption the state may not have the resources or reserves to recalibrate workforce systems and social benefits at scale. The future of work concerns not just what work will look like in the future; it also concerns how society will ride through the tumultuous changes in the labour market set to hit us relatively soon.

10 Existential risks are real

The existential questions around technology and its impact on humans are entering our public and political discourse. No bigger question affects us than the future of AI, as it questions the very nature of who we are, and whether the machines we have created pose a real threat to human life. Who is accountable if a driverless car hits someone? Can we determine how AI makes decisions? Is bias built into AI? Will robots take our jobs? The threat of robots conjures up the Terminator as we try to imagine what life co-existing with autonomous machines might be like. We think about killer robots. These anxieties are not without foundation, as Stephen Hawking, Elon Musk, Steve Wozniak and Demis Hassabis, founder of DeepMind, suggested in an open letter in 2015 warning of the threat of autonomous weapons.

People fearing the impact of technology is nothing new, but this time concern is coming from those who are at the heart of developing the science, not just those who feel left behind. This is Oppenheimer warning us of the risk of nuclear war, before he invents the atomic bomb. The threats posed by intelligent algorithms and big data are not what we might expect. Max Tegmar, Future of Life Institute and MIT professor says: “the real risk with artificial general intelligence isn’t malice but competence. A superintelligent AI will be extremely good at accomplishing its goals, and if those goals aren’t aligned with ours, we’re in trouble.”

Nick Bostrom, who runs Oxford University’s Future of Humanity Institute, considers a scenario in which AI reaches a superintelligence, and in doing so makes humans redundant. He writes: “Before the prospect of an intelligence explosion, we humans are like small children playing with a bomb,” he concludes. “We have little idea when the detonation will occur, though if we hold the device to our ear we can hear a faint ticking sound.”

The future of AI and how we control it, is perhaps the biggest and most pressing challenge facing us all as we look to the next wave of technological development. As Pete Trainor argues in his provocation paper on responsible AI, we should be pressing for AI standards that are ethical by design, and working together to realise the enormous benefits and protecting against the significant risks that AI poses.

Section 2:
Ideas for change

From tech fear to humane tech

In this section, we explore three key areas of opportunity which, should we choose to act, can help us make a shift from **tech fear** to **humane tech**.

Most importantly, we need a collective vision of the **humane tech** we want to create. In the end, all actors need to work together, where people at all levels of society should have an influence over our collective tech future.

Actors across civil society, government and business have a part to play. Civil society, campaign and consumer groups can build public and consumer pressure. Employees, trade unions and guilds can enshrine the principles and standards that they expect their employers to respect. Philosophers, academics and thought leaders can generate evidence, ideas and debate. Startups and disruptors can devise new business models.

But, in the end, there needs to be a greater balance of power between tech companies and governments, and a greater acceptance of responsibility from big tech to solve the social problems **tech worship** has created.

In this section, we outline three areas where we believe there is a positive direction of travel and solutions that can be collectively built on: in **education, regulation** and **design**.

DCMS and Doteveryone on stage at our the October Summit

Education

The most fundamental element of the **humane tech** is citizens. Citizens who can make informed decisions and who can ensure technology is serving their needs, rather than vice versa. For this to happen, the public needs to have enough understanding of the way technology is influencing and changing our world, so as to hold governments, regulators and the industry to account.

As citizens we do not yet have the language or consciousness to make sense of our new reality. Technology has moved quicker than our ability to make sense of it, to frame it, to apply values to it. Despite being heavy users of the products, most people lack even the most basic understanding of how the digital economy impacts us, or shapes our world. The media narratives that used to be in awe of technology are now suspicious of it, so that the most likely position public opinion will take is that of **tech fear**.

To move from **tech fear** to **humane tech**, we need to get a grip on how new technology is impacting us from a personal, business and societal perspective so that we can respond appropriately. If there are unintended harms, we need to evidence them - a forensic examination of what is troubling us about the impact of technology on our lives. Raising our collective consciousness about what is harmful about the things we have designed so far, and identifying exactly what we want to mitigate could help prioritise future actions. This needs to be done in an accessible way that the public understands. It is about communication.

To quote Doteveryone, *"people don't need to learn how to code, they need to learn how to cope"*. Investing in understanding is critical in guaranteeing society can have the right conversations in order to cope.

The industry itself is not incentivised to look for evidence or research scenarios that may threaten their business interests. But **humane tech** will demand that they do so. So we are calling on the industry to embrace a public debate on solutions and move from a mindset of a **tech utopia** where they rule alone. We need neutral bodies who can make sense of challenges, show causation, and influence public opinion and behaviours. Better understanding creates better solutions.

We need to shift thinking about the role of technology in our world and what we should accept and reject in order to maintain healthy human systems. For example, in our offline lives, no one would suggest that an open forum with millions of vocal participants would be feasible without some sort of structure, moderation, or system to manage it. Similarly, we see spaces like Twitter descend into chaotic or toxic interchanges. There are already examples of how online community management has enabled better communication, through moderation, policy and prioritising user needs. By shifting our thinking and fostering understanding of how technology fits in our human lives, we can begin to make sense of what we need to do to improve our interactions and relationship with it.

We therefore call for government to place a greater emphasis on **digital understanding**. We mean this more in terms of critical thinking about the influence technology has over our lives, and the upsides and downsides, rather than putting coding on the curriculum (which is also good, but not the only answer). The challenge, as we saw with coding, is equipping teachers with knowledge. So, we must develop a curriculum around understanding, and build critical thinking so society can decipher impacts.

This curriculum might include:

1. Critical understanding about technology so that we can participate in public debate about it in an informed way.
2. Teaching on the ethics of data, algorithms, machine learning and AI so that there continues to be a long-term and generational focus on these issues, so that they stay on the political agenda.
3. Education on the history of technological development, including business models and their alternatives, so that we can hold the industry to account as consumers, and make more conscious choices as users.
4. A baseline understanding of the digital industry, so that children are prepared for a major shifts in jobs and have the skills needed to participate in the job market.

Doteveryone's People, Power and Technology: The 2018 Digital Understanding Report recommended the following actions to address these challenges:

1. New codes of practice for design and consent in the technology industry, so that products and services do the hard work to be understandable.
2. A central, trusted and independent source of information with clear, up to date plain English explanations of the key aspects of digital understanding.
3. Public engagement to support digital understanding at all levels of society - not just for children and with a specific focus on digital leadership for public institutions.

A public health approach

We suggest taking a public health approach to the problem of digital addiction. Moves have been made towards this, with the Royal Society for Public Health citing social media as more addictive than cigarettes or alcohol. We need to build awareness of the addiction problem and promote behaviours to combat it. Unless the foundations of its design change, social media should come with a public health warning. The RSPH recommends social media companies follow the NHS Information Standard Principles and apply them to health information published on social media, for example. They also recommend that safe social media use be taught in PSHE (personal, social, and health education) classes.

We believe fixes can be made by social media companies and governments working together, for example by platforms serving up public health warnings. What if YouTube agreed to serve balancing content following incendiary videos? Or platforms used machine learning algorithms to note signs of depression (including heavy social media use) and then signpost users to helpful content and resources?

In Feb 2019, the Department of Eeducation published draft statutory guidance advising how Relationships and Sex Education (RSE) and Health Education should be implemented in all schools across England by 2020. The new guidance covers topics such as pornography and sharing sexual images, but only for secondary students. A recent survey from Plan International UK found 75% of the UK public supports teaching the impact of pornography in schools (with only 7% opposed). As young people are exposed to sometimes extreme

Change.org UK's Kajal Odedra on stage at October's Summit

sexual imagery and content, often at primary school age it would make sense to address these issues sensitively, at a younger age. Education is the best approach to help young people navigate potential harms and to close that gap between their experiences online and their protection and preparation.

Preparing citizens of the future

Formal education is a long game. Children starting school today are learning a curriculum that is meant to prepare them for the world over a decade from now. But the speed of technological changes and the fundamental shifts we are experiencing mean it is difficult to predict this future. The complexity and uncertainty of the digital age means planning for the long term is ever more difficult.

In the paper Education 2030 future of education and skills, the OECD notes that children starting school today need "broader education goals".

"Education needs to aim to do more than prepare young people for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens...Learning to form clear and purposeful goals, work with others with different perspectives, find untapped opportunities and identify multiple solutions to big problems will be essential in the coming years."

On top of existing education goals, do we need to consider additional fundamentals? Should children understand the infrastructure of Internet of Things the same way they learn geography? Do they need advanced data literacy? What about well-being that includes strategies for coping with mental health online? Should we teach our children problem solving via design or systems thinking? In the UK, the education system must be adapted to nurture critical thinkers and resilient, empathetic citizens. The government should support the introduction of new areas into the curriculum: technology ethics and understanding; social behaviour online; digital wellbeing and the impact of pornography. This is already being explored in some instances, for example, the Commission on Fake News and the Teaching of Critical Literacy Skills has proposed a Children's Charter on Fake News, which includes recommendations on how to introduce this topic into schools.

The OECD suggests we should teach our children to be change agents. In Andrew Keen's words, we should teach them agency. The OECD recommends *'transformative competencies'* that address the need for young people to be active, innovative, responsible and aware. These include skills such as creating new value, reconciling tensions and dilemmas, taking responsibility and influencing others. It warns that unless they are steered for a purpose, the rapid advances of science and technology may widen iniquities.

The world of work will have changed dramatically by the time today's primary students enter it. With the rise of automation, different skills and competencies become more important. Caring and creativity are two areas that seem the least threatened in the future of work. The World Economic Forum cites problem solving, critical thinking and creativity as some of the key skills needed to thrive in the fourth industrial revolution. In many places education policy is rising to the challenges of the age.

In Singapore, once known for its rote learning and stressed students, education reform is now focused on fostering creativity and problem solving. In Japan, with their aging population and rising life expectancy, some have suggested big increases in care workers' pay, which may start to lure more people into caring jobs.

It is clear that young people are having to straddle two worlds simultaneously: an education system of today that is trying to anticipate the potentially radical needs of tomorrow. A child starting school in 2019 should expect to be taught the skills, competencies, awareness, critical thinking, mindfulness and understanding to thrive in the future of **humane tech**.

"This is a world that requires generations of young people to have a strong **ethical** *grounding, be able to* **engage, analyse, empathise,** *and* **evaluate** *[AI] developments. It calls for an education system that requires both more and different skills from the educator; in which schools are set up to be centres of learning not churning, and crippling accountability becomes lighter and smarter; and that lifts the ceiling on what young people can achieve. Only then will the young people of today be prepared for the uncertainties of tomorrow."*
IPPR 'Success in the 21st Century: the education of head, heart and hand'

Further education - how we re-skill workers

To mitigate against the loss of jobs through automation - particularly jobs with hard skills - students will need to adopt a process that Alvin Toffler coined: learn, unlearn and relearn. The reskilling and re-training of displaced workers should not be the responsibility of governments and social systems alone. If companies want to introduce technology that will obliterate jobs, they should also be responsible for investment in redeveloping workers.

"We therefore propose that the government introduce a 'technology displacement fund' to support workers displaced by technology to be re-trained and supported back into the labour market."
IPPR, Commission on Economic Justice

Such a fund would provide businesses, trade unions, sector councils and devolved and local governments with resources to identify jobs at risk and skills training packages for affected workers.

Imogen Parker of ethics-driven Ada Lovelace Institute chairs a summit debate

In Japan, a Council for Designing 100-Year Life Society was set up to look at the how to support people for 'super longevity' and viable social systems to support it. One of the key themes was to support lifelong education, so that older workers can continue to be active in the workforce. It has become an area of focus for Prime Minister Shinzo Abe to create a society in which all citizens are dynamically engaged. In doing so, the council promotes recurrent education for adults who want to resume education at any age and with it major structural reforms to the adult education system.

We are facing a revolution where the jobs of the future will require us as a society to develop different skills. The skills less threatened by automation include creativity, caring, critical thinking, scientific analysis, problem solving and teamwork. These should not only be at the core of the curriculum, but also available for people to re-educate around during their working lives. Education systems may need to prepare the next generation for a career working in the gig economy, in which case job readiness requires awareness of professional qualities that are rapidly transferable, as well as skills training.

Knowing what to prioritise will be the challenge

for future education policy. But here, digital tools can help. Tools such as Nesta's proposal for Open Jobs, a collective intelligence tool that enables job seekers, employers and governments to track the labour market, can help stakeholders keep on top of opportunities. Such a tool would use the best of data science and machine learning to analyse and predict future opportunities, and highlight priorities for training.

Regulation

US senator Mark Warner serves as vice president of the Senate Select Committee on Intelligence, which grilled social media firms on Russian interference in the 2016 US election. Over the summer of 2018 he published a white paper laying out a 20-point plan for addressing problems posed by big tech platforms. In it, he admits that the US Government lacks the tools to regulate the industry effectively, and that it has been too slow to act.

"Government has failed to adapt, and has been incapable or unwilling to adequately address the impact of these trends on privacy, competition and public discourse."
US Senator Mark R. Warner, Potential Policy Proposals for Regulation of Social Media and Technology Firms

His proposals, which range from combating disinformation, protecting user privacy and promoting competition in the tech space, have gained traction. We have seen pressure mount in the UK too. Former home secretary, Sajid Javid, demanded that companies do more to tackle online child sexual abuse or face legislation. The Online Harms White Paper, published in April 2019, sets out the government's plans for a package of measures to keep users safe online. Proposals include a new regulatory framework and an independent regulator for online safety.

Regulators, it seems, are catching up. The next wave of tech evolution will be accompanied by robust debate and the emergence of new rules. We cannot have a repeat of the "we sell ads" fiasco when Mark Zuckerberg testified at the US Congress. Governments must populate themselves with people who understand how technology works, and establish new regulatory methods and institutions adapted to the specific challenges of regulating this fluid, fast moving sector.

At the same time, we do not want the pendulum to swing too far the other way, with regulators coming down on the tech industry with blunt force. We don't want to drift into **tech fear** as the driver for government narrative and policy. Instead, we need to visualise a move into **humane tech** where technology companies, governments and regulators work together to find solutions.

What if big tech embraced regulation rather than resisting it? And regulators worked alongside innovators and technologists to create solutions together? The challenges we face as society are all of ours to share. As stated above, we don't need a technology industry that isolates itself from this, and which looks to create a **tech utopia** without governments, collective systems or even the concept of society itself. Only by taking an inclusive approach can we counteract the opposing forces of **tech fear** and **tech utopia.**

Anticipatory regulation

In this provocation paper Geoff Mulgan outlines some emerging ideas. One is the practice of anticipatory regulation being developed by Nesta and others, which proposes guidelines for iterative rather than definitive regulation, and much closer cooperation between innovators and regulators. Here the focus is on outcomes, rather than process, allowing for more experimentation between parties on how those outcomes will be reached, a 'test and learn' environment more akin to agile product development itself.

Good examples are the regulatory sandboxes run by the Financial Conduct Authority (FCA) in the UK which invites innovators to develop and test regulation alongside policy-makers, testing with real consumers in the market. In this way, appropriate consumer protections are devised and iterated as the product develops. This has been one of the factors that have helped the alternative finance market to grow in the UK, with crowdfunding, peer to peer and other tools emerging more quickly through proactive dialogue with the FCA, an industry body which might have otherwise blocked or slowed down these innovations.

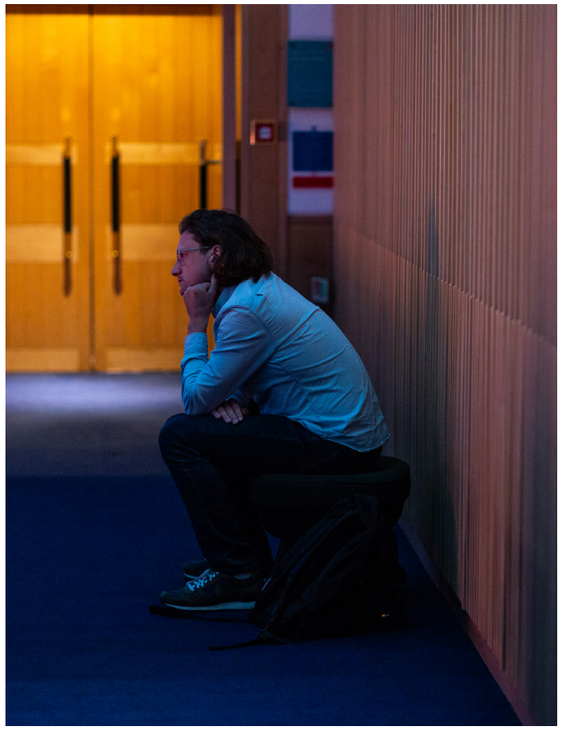
Duty of care

Imagine a world where tech companies that serve us are required to articulate openly how they interpret their 'duty of care' - what they are doing to protect their users and society more generally. With social media platforms, for example, a 'duty of care' would include ensuring minimum standards around published content, with clarity on news sources and verification; or ensuring their system is designed to deal more effectively and quickly with incidences of harmful behaviours such as stirring up hatred, emotional harm or child abuse.

The concept of 'duty of care' as a regulatory approach is explained well by Will Perrin and Lorna Wood in Reducing Harm In Social Media Through A Duty Of Care. They outline the history of health and safety regulation, where the UK government placed a 'duty of care' on employers through health and safety at work legislation in the 1970s.

The legislation placed the onus on organisations to *'prevent reasonably foreseeable harms'*. The duty of care concept frees legislators to look forward, and requires employers to predict what might cause harm - or ensure safety - and to show what measures they are taking to address it. This kind of duty enables organisations to pursue solutions without over-interference from regulators, while requiring them to prove they are accountable.

Nick Taylor of Unmind listens to the summit debate



Consider how a duty of care applies to data, for example. Rules might dictate organisations show how their requests for user data are either vital to the service, or protect users from harm. All other data requests would be ruled unnecessary. This argument, and technical solutions to this in government, were developed by Tom Loosemore and the UK Government Digital Service (GDS) in the form of a data register which houses all public data but prevents any department or service calling for more data than it needs.

GDPR is another example. It has forced companies to explain to users how it is using data, and to ask for permission to do so. This 'duty of care' over user data has empowered citizens, established important principles around personal privacy and rebalanced the power over data between users and companies.

We call on tech companies to adopt a more mature attitude to regulation. The right regulation can stimulate innovation, rather than stifling it. A recent example is Guild, a messaging app for businesses that is GDPR compliant, to rival WhatsApp, which was not. By showing a 'duty of care' companies can build public trust, develop better products and win over consumers.

In fact, as technology and our thinking about it evolves, good regulation can trigger innovation as companies devise new solutions that work within boundaries set for them by wider society. We should not be afraid of this. Innovation that is compliant with sensible regulation (co-designed with civic society, government, innovators, and so forth) is much more exciting and appealing than products that are developed with only profit at heart.

Cities as sandboxes

An area where we see optimism is in the ability of cities to tackle regulatory challenges. The late social scientist and author Brendan Barber describes how cities are well placed to devise solutions, as technology challenges play out on their streets. Cities embody pragmatism, civic trust, indifference

to borders and a penchant for networking, creativity and innovation that make them instinctively geared to proactive solutions.

"(Cities are) the one institution today that still works, where government functions, where trust levels are double the levels of other institutions."
Benjamin Barber, If Mayors Ruled the World

He cites the Global Parliament of Mayors as a kind of UN for Cities, in which good progressive government can share practice, including regulatory responses to tech challenges.

Transport is a good space to interrogate this, as the rise of Uber and other technology-driven car sharing services have raised questions about who runs transport services, who regulates them, and what standards should be adopted.

New York City's 2018 ruling to place a cap on cab licences and to set minimum pay conditions for drivers was a move forward that we can expect other cities to follow. In March 2019, four Uber drivers in the UK threatened legal action against the company if it failed to give them access to their data, which they wanted to use to calculate holiday pay and minimum wage back payments. Many more issues will be raised as we introduce autonomous vehicles on to our streets. One key area is data. Fleets of autonomous vehicles will compete with publicly run transport, as they offer more personalised, tailored and efficient services. Who will own them, and who will own the data gathered? How will this data assist with planning for cities' transport systems as they evolve? Will the data be shared or privately owned? How will services be paid for?

To answer these questions new public/private agreements are needed. Nesta's research on Smart Cities provides some principles: work together to create test beds for new services, involve citizens in data collecting and data sharing, develop shared digital ethics and develop ethical principles into practical policies. Then share those insights with other cities.

Smart companies will be those who work with cities to develop these principles and share data as partners, in exchange for a license to operate. And cities must realise the powers they have to enforce principles such as open data sharing in exchange for the right to run services. Private companies must not be allowed to hoover up and 'own' data which cities need in order to manage issues such as congestion. City transport data should be public and open, allowing other companies to build alternative services and solutions on top of it. We are hopeful that new forms of agreement balancing public and private needs will be developed at a city level. City governors have an opportunity to develop strong regulatory environments, to involve citizens in the design of new regulations and in turn build trust and confidence. The open development of London's Smart London Plan is a positive example. Cities are also places where regulation can be tested and developed at a manageable scale.

A way forward for regulation

Public pressure is building on governments and regulators to find answers to the problems technology has thrown up. As we move towards **humane tech** we expect our politicians and civil servants to understand expertly the implications of new technologies. We should invite - and expect - tech companies to be decent partners in these discussions.

As Geoff Mulgan outlines, there are reasons for optimism. We can build on examples of more experimental approaches, regulators can learn to use data and AI to spot patterns and monitor progress towards agreed outcomes, and open innovation methods can do more to involve entrepreneurs, designers and the public in developing and testing solutions through a more iterative approach. Tech companies need to play their part. The advantages for those that do are a smoother path to adoption and the creation of better products and services that build public trust.

Good practice and ideas are emerging. With the Online Harms White Paper the UK introduces the world's first online safety laws, with an independent regulator for online harms with a goal of making the UK the safest place to be online. In late 2018 the IPPR Commission on Economic Justice proposed another new regulatory role - an Office of Digital Platforms (OfDigi) to protect network neutrality, impose open standards to ensure interoperability, data portability and a requirement that companies keep audit logs of the data they feed into algorithms. In addition, they propose the creation of a 'digital commons' of a similar model to the BBC, to oversee public data and help communicate a narrative on why this matters.

Digital regulation should anticipate change

Existing models of regulation are too slow and unresponsive to cope with the fast-changing world of digital innovation. Geoff Mulgan argues that forward-thinking regulators need to change by focusing more on outcomes than process and by adopting some of the strategies used by entrepreneurs and digital innovators themselves.

Regulators have always faced an inescapable dilemma on timing. Acting to regulate a new technology or idea too early can kill off, or freeze, innovative business models with a potential for public good. Acting too late can leave consumers exposed to harm, or allow new monopolies to become entrenched.

Whilst traditional regulatory theory still works fairly well for stable industries with relatively stable technologies, it struggles to cope with more fluid, dynamic and uncertain fields, particularly ones where the boundaries between industries are constantly changing.

Fast-moving technologies like drones, blockchain or artificial intelligence bring with them big opportunities but also big risks. At the same time some mature regulated markets – such as finance and energy – are not delivering the competition and innovation that customers and the economy need and not using new digital tools, like open data.

In response to these challenges, we are beginning to see the emergence of new regulatory practices that reshape the role of regulation in supporting innovation.

Some of the early advances were made in finance, which was one positive effect of the financial crisis of the late 2000s that showed up the many glaring failures of previous regulatory approaches.

The Financial Conduct Authority's (FCA) sandbox was part of the response giving innovators the chance to try out their ideas, working closely with regulators.

The aim was to make it easier for fintech innovations to thrive, alongside other reforms that aimed to better handle risk. Similar methods are now being used in other fields, and together these point to a radical shift in how regulation is organised that could leave us a landscape very different to the approaches of Ofcom, the Information Commissioner's Office and others.

To better anticipate changes in industries and technologies, regulators are changing in at least four main ways. First, they're using more experimental approaches, and making it easier for innovators and entrepreneurs to test out their ideas, whether through simulations or live testbeds. This is obviously relevant to everything from blockchain in law to AI in health.

Second, they're beginning to make more use of data, whether through opening data up (as is happening in UK banking, including Nesta's Open Up Challenge) or through regulators themselves making full use of AI to spot patterns. Oddly this hasn't yet started happening in relation to the big network platforms but this may only be a matter of time.

Third, they are beginning to use open innovation methods, with regulators mobilising resources to encourage entrepreneurs to come up with creative new solutions, for example to energy access or law.

Finally, they're engaging more stakeholders, including the public rather than just relying on cosy relationships with big incumbents. Nesta has been showing how this can be done in relation to drones through the Flying High programme for drone test beds with cities. The UK government's new Centre for Data Ethics and Innovation is well placed to ensure more public engagement with artificial intelligence, hopefully avoiding the mistakes made in other technologies like nuclear and GM that failed to address public concerns adequately.

Many of these methods shift regulation from being all about process to being more outcomes based: specifying the goals to be achieved and then allowing more decentralised experimentation to work through the best answers to early-stage opportunities and risks, or thinking about where national or global policies and standards are still to be established.

For governments and regulators themselves, there is a big challenge around skills. Most simply don't have the right internal capacities to change in these ways. Through the States of Change programme, Nesta works with dozens of governments worldwide that are now applying innovation methods to regulation, including the UAE, Canada and Portugal.

Another challenge is speeding up learning. We're publishing a series of overviews of practice around the world to help with this. Singapore is a good example: future-facing (in its creation of the Committee on the Future Economy), inclusive (with the CFE and FEC engaging regularly with a wide range of stakeholders), proactive (with specific programmes facilitating engagement with innovators), and experimental with its 'never say no' approach to new business models. Singapore also encourages collaboration among regulators to achieve global goals.

The UK is well placed but will have to raise its game through Brexit and its aftermath. Nesta's research on anticipatory regulation helped influence the new Regulatory Pioneers Fund (£10m), which is now funding UK regulators to test and scale innovative methods in dealing with emerging technologies.

Hopefully this will help them to adopt new tools and catch up with the frontiers of the public sector more broadly. For example, Offices of Data Analytics have spread across local government and are using AI to help improve decision making and public service delivery at a city or regional scale.

Pilots in London and Essex are using machine learning to analyse historical data on cases of housing violations and modern slavery in order to help predict future ones. Very similar examples will be useful in regulation, but so far these methods have been little used.

New approaches to data and AI can be also a great tool for understanding how the economy is changing. Using web data (company websites and online job ads, for example) as alternative data sources, we can use state-of-the-art AI methods and tools including machine learning, text mining, topic modeling and deep learning to extract information to enable better planning of skills, training, education and recruitment.

These new real-time tools – like ones being applied to labour markets – are just beginning to transform the everyday work of policy and government. They are digital tools that should be at the heart of digital policy and part of the mainstream toolkit for regulators too. They're not quite there yet. But hopefully we won't have long to wait.

Geoff Mulgan is the chief executive of Nesta.

Design

In Addiction by Design, an ethnographic study of gambling in Las Vegas, Natasha Dow Schull shows how the increased use of digital and video in slot machine design has increased the pull of the "machine zone", turning slot machines into attention suckers and into gamblings' biggest revenue raiser. Schull describes how players continue playing in a trance like state, even when the player next door collapses with a heart attack and paramedics are called. This happens often, and most of the time neighbouring players do nothing to respond. Not even another human's near death experience can break them from their trance.

What do the people who design and craft these machines feel when they hear this?

People-powered campaigns

We are encouraged by the emergence of campaigns led by practitioners, such as the Time Well Spent movement run by the Centre for Humane Technology. The centre is focused on re-aligning technology with humanity's best interests and proposes humane design as the solution. They are working on standards for "technology which protects our minds and replenishes society".

Tristan Harris, the centre's co-founder and executive director, left his job as design ethicist at Google, to ignite public conversation about the harms of persuasive technology. The centre is uniting the design community around human design principles to create new industry standards. Harris was a student at Stanford's famous Persuasive Technology Lab, where future technologists are schooled in design techniques to make our apps and gadgets addictive. Nir Eyal, another student there, discusses how these techniques are used to form habits in his book Hooked.

Practitioners who contribute to the making of digital products have a role in shifting foundational thinking on how products are made and what drives their purpose. They too have a responsibility and we look here at what designers (in the broadest sense) can do to shift design practice to include more consideration for human well being. This becomes even more important when we consider the design of services, systems and the propositions business models are built on.

Jamie Bartlett of Demos

Change can come from practitioners working together to address concerns. In a recent example, Google announced that it would be ditching its work on Project Maven, after petitions from over 3,000 employees, some of whom resigned over it. Project Maven is a drone vision system created with the US military, using AI in warfare, which some have dubbed "killing by algorithm". Employee pressure led Google to cancel the project, with staff calling for a clear statement from the company that it would never engage in building warfare technology.

Workers and practitioners are increasingly holding companies to account.

What product designers can do

We can develop and embed strong industry codes of practice to help designers assess the wider impact of the products they create. Voluntary ethical design codes are emerging, but we need a stronger industry standard code of ethics for product development, to give practitioners guidance and more power if and when they choose to challenge the premise of the job they are asked to do.

As we have said elsewhere in this paper, there are benefits for companies choosing to verify a 'do no harm' or 'duty of care' status to their products. Ethical codes can help companies develop better

products and avoid embarrassment. For example, ensuring that a diverse range of people are considered during product development would rid us of such first wave examples as the Apple Health product that completely overlooked menstruation in its first incarnation, or an automatic soap dispenser which failed to recognise dark skin. It is also critical that tech companies address the persistent lack of diversity among their own employees, so that design can reflect the world realistically.

A review of design standards might lead designers to question industry held norms such as one-click payments. Friction-free transactions are not always good for society. We might wish to require designers to build in friction to trigger consciousness around financial choices, or gambling in the same way that the ReThink app helps kids pause for thought before they send messages that could escalate cyberbullying. Such a review might also seek to evolve design practice, such as a move from 'human-centred design' to 'humanity-centred design'.

Ideas and toolkits are emerging, such as the Ethics OS Toolkit which asks designers and developers to consider eight 'risk zones' to safeguard users, society and companies from risk by assessing these criteria:

- Truth, disinformation and propaganda
- Addiction and the dopamine economy
- Economic and asset inequalities
- Machine ethics and algorithmic biases
- Surveillance state
- Data control and monetisation
- Implicit trust and user understanding
- Hateful and criminal actors

Ways forward could include a human design kitemark or similar. Or a design code of practice for accessibility similar to that developed for the built environment. Another lever would be to require the App Store and the Play Store - our gatekeepers to the App market - to require a useability or humane design test before approving them for release.

Voluntary codes will not be strong enough. We need an industry-wide code enforced through regulatory means. Doteveryone's paper on Regulating for Responsible Technology suggests auditing designs which don't meet mandatory compliance standards, and insisting every product passes a social impact assessment before it is given a license for release. Another test could be to 'align use with intent' and scrutinise the purpose of an app or platform, holding the creators to that purpose regardless of how they choose to monetise; thus, for example, Facebook would be accountable to its overriding purpose of 'connecting people' rather than driving advertising revenue.

We have public spheres used for global debate that are privately owned and optimised to drive commercial outcomes. Regulating social media may help reduce the amount of fake news, or hate speech found on these sites, but equally, design itself could do much to help minimise the problems of echo chambers or 'outrage'.

Social media platforms are currently optimised to serve content or comment that drives engagement - in an ethical vacuum. What if platforms were also asked to adhere to ethics in their design? For example, the German philosopher Jurgen Habermas's model for ideal communications in the public sphere could be used as a design standard for social algorithms. Does the platform serve content and connections that adhere to the tenants of ideal speech? If so, the design passes an ethical standards test.

These tenets are:

- Every subject with the competence to speak and act is allowed to take part in a discourse.
- Everyone is allowed to question any assertion whatever.
- Everyone is allowed to introduce any assertion whatever into the discourse.
- Everyone is allowed to express their attitudes, desires and needs without any hesitation
- No speaker may be prevented, by internal or external coercion, from exercising rights as laid down.

What data scientists can do

We are encouraged also by the wealth of discussion about the ethical use of data as an input into AI.

Developments include Data for Democracy's Global Data Ethics Pledge, a movement from within the data science community which aims to work collectively towards a 'more accountable, equitable, open, inclusive and transparent data community'. The pledge includes five core commitments: to fairness, openness, reliability, trust and social benefit. How these commitments are interpreted

Katie O'Donovan made the case for Google as a responsible business

is the subject of ongoing discussion among the community, some of whom think voluntary codes will be enough, with others pressing for more formal codes that move beyond the guiding principles the community has set for itself.

Important principles are being established, alongside ideas such as a hippocratic oath for AI practitioners. These movements towards 'human-centred AI' need to be combined and strengthened to shape regulation and data science practice.

Encouragingly, industry is playing its part. Google has published its commitment to humanity-serving AI with a set of principles guiding the company's actions, such as tackling bias and transparency in AI models. Google is also publishing UX design guidelines on human-centred AI practice. In Future Computed, Microsoft calls on government to establish AI ethics guidelines now, which reiterates this paper's call for the industry and regulators to work together.

In the field of data science, machine learning and AI, it appears all players realise a collective effort is needed to guard against the worst outcomes of a dystopian AI future. Google commits to "take into account a broad range of social and economic factors, and...proceed where we believe that the overall likely benefits substantially exceed the foreseeable risks and downsides". Google cannot decide this alone. We welcome the establishing of the Centre for Data Ethics and Innovation and the Select Committee on AI, and the contributions advocacy groups such as Women Leading in AI are making. We need debate from the best in science, academia, public policy and business to make judgements on what is allowable and not. This should build on other conventions of scientific excellence such as peer review, open research and multi-disciplinary approaches.

"The role of AI shouldn't be to find the needle in the haystack for us, but to show us how much hay it can clear so we can better see the needle ourselves."
Global Data Ethics Pledge

A good example of this is in cancer diagnosis where machines have been trained to spot the clear cut cases of both malignant or cancer free biopsy cells, leaving doctors to focus on the more nuanced borderline cases.

Design new business models

Designing for stickiness and addiction has been built into our systems and product thinking. Years of design and development have gone into manipulating users to spend time on platforms to drive advertising revenue. We can do better than this. Good products must consider how they serve wider human needs.

In fact, as technology and our thinking about it evolves, we believe that good regulations would trigger innovation as companies devise new solutions that work within new boundaries set for them by wider society.

It is not too late to disrupt business models built on old assumptions. Public opinion (and behaviour)

is changing around how much time we want to spend absorbed in screens, for example. There is competitive advantage and market share to be won by introducing more responsible tools that meet consumers' changing expectations as our love affair with technology matures. We've seen Apple and Google bring out Screen Time and Digital Wellbeing tools respectively, to help users monitor the amount of time they spend on a device, manage notifications and shut down apps after set time periods.

We could look back on this first wave of technology as remarkably uninventive, purely because of the paucity of ways we went about financing them. A systemic change such as insisting users get paid for their data would open the industry up to new models.

Another good example is the work Nesta is doing around 'Open Up' Challenges. Here incumbents are required to fund open processes for innovation that actively threaten their market share.

What would happen if we changed the rules so that users were paid for their data? Jaron Lanier, one of the early proponents of the internet, now working for Microsoft Research, advanced this idea as an economic corrective to an online economy mostly financed by "advertisers covert manipulation of users' consumer choices". Eric Posner and Glen Weyl expand the idea in their book Radical Markets, imagining how paying users for their data would honour citizens as the suppliers of the data that makes the digital economy work.

Moreover, this power would incentivise users to provide higher quality data which they could choose to deploy anywhere, thus increasing competition. Methods such as data wallets and Tim Berners-Lee's new data platform, that put data ownership in the hands of users, are gaining traction. But it needs a government willing to make brave choices to change the rules of the game.

Eva Appelbaum talks to writer Andrew Keen at the Power & Responsiblity Summit

Screw tech ethics

Much is said about the harm digital technology does to humanity, with calls for a more 'ethical' approach. This approach, argues Matt Haworth, carries a risk of unintended consequence in itself, restricting the ability of innovation to make the world a better place.

Imagine that a paperclip factory becomes the first place in the world to have access to artificial intelligence smarter than humans, thanks to a clever R&D team.

They create an AI whose single, sole purpose is to maximise the production of paperclips. Sounds like an innocuous challenge, but fast forward 30 years and this AI has managed to consume all of the earth's resources – including the atoms that make up human bodies – in order to create more paperclips.

It's not all bad, though: there are a plenty of paperclips to go around.

This is the paperclip maximiser thought experiment and it's a provocation on how the development of new technologies may have harmful – or even existential – consequences for humanity. It may sound far-fetched and unrealistic – most thought experiments do – but in this case we have already seen the first example of it brought to life. In fact, you've probably interacted with the AI in question.

Social media networks' AIs are tasked not with maximising paperclips but with absorbing as much of our time and attention as possible – so it can be sold to advertisers.

To do this, their AIs have deftly learned that focusing our social media feeds on clickbait, fake news, and extreme viewpoints keeps people swiping and tapping more than in-depth, fact-checked content that challenges our worldview. It's responded by pushing more of the same content to hundreds of millions, and the real-world results on democracy and cohesion have been evident.

This is leading to a mainstream debate – in politics, public life and behind the scenes at tech companies – about 'tech ethics'. It's a hot topic. There are books about it, podcasts about it – DigitalAgenda's Power and Responsibility Summit is built around it.

Given that these conversations have been sparked by the unintended negative consequences some tech platforms are having – on our mental health, democracy, and on equality – it's no surprise that tech ethics has primarily focused on how harm can be limited or offset.

Yet in doing so this debate, ironically, poses a risk of doing an unintended harm itself. Sci-fi writer and Futurist Arthur C. Clarke famously said in his three laws that "any sufficiently advanced technology is indistinguishable from magic."

Nearly 50 years on, in an age of artificial intelligence, virtual reality and constant connectivity, this seems truer than ever.

So we have been given, effectively, magic. What questions should we ask? Should we only concern ourselves with how we limit the harm of it?

Or should we ask how we also use it to make the world better? To cure the sick, lift people out of poverty, or improve people's mental health?

In other words, how do we make the magic of technical advancement make the world better rather than make it worse at an accelerating rate?

This is the most urgent question for humanity. In times of unprecedented global challenges, harnessing technological progress to create humanitarian progress is an opportunity we can't afford to miss.

Yet debates about regulations and codes of conduct are taking more of the airtime and leading on the policy agenda. Tech ethics runs the risk of making us

feel like we've dealt with the issue by putting a few extra regulations or codes of practice in place around the status quo whilst we miss a greater opportunity for change.

In some cases, attempts by tech companies to 'clean up' their platforms is shutting out not just bad actors but also limiting 'good actors' like charities and tech-for-good innovators from reaching an audience or innovating on those platforms.

There's no shortage of innovation in ethical standards. The Institute of Electrical and Electronics Engineers are one body that set global safety standards for electronics – like IEEE 63-1928 – about covering wires with rubber so they don't electrocute people.

Today, they're drafting new standards for the new dangers of electronics – such as P7009, about ensuring effective failsafe mechanisms so AI doesn't cause harm when it fails or is no longer needed. These are valuable – and much needed – standards, but we should also ask ourselves: where are the underlying levers for change, before the problem gets created and hits the need regulation and legislation?

These regulations may have been helpful in the paperclip thought experiment but the sole focus of the AI on one outcome, without any concern for others, is the root cause. Tunnel vision doesn't just apply to tech, but it applies to the tech companies themselves.

In tech, an industry driven by venture capital, investors own and control companies to create financial returns. Their influence ensures scale is driven above all, pushing companies to "go fast and break stuff" as they race each other for market dominance in an emerging sector.

It's been incredibly successful at driving forward innovation – innovations that could be harnessed to do good – but not so good at creating ventures that focus on something more than generating returns for their founders and investors.

In recent years impact investment has emerged as a way to rebalance venture capital towards a more social purpose. It's worked well at solving challenges that fit the mould of business – shifting solar panels at scale, for example – and less so at more nuanced challenges – like youth mental health. It's not created any unicorn-sized solutions to our unicorn-sized global problems yet – although it is early days.

This is why innovative, *truly* ethical tech ventures require innovation in the way they're capitalised first. Venture capital is an amazing innovation in deploying capital to beat risk – we need a similar breakthrough.

One that gives social outcomes parity with financial returns. There are glimmers of hope on this. Social impact bonds (SIBs) provide returns for investors aligned to the delivery of social outcomes, although difficulties in giving cast iron guarantees of outcomes combined with the lack of confidence in the numbers generated in impact reports continue to hold SIBs back from the mainstream yet.

Dare we allow ourselves to think instead about what could supercede or complement venture capital, rather than just how we should restrict venture capital's monocular focus on financial value?

While tech ethics is leading the way in debating how tech could do less harm, the burgeoning tech-for-good movement is still consigned to the fringes, given limited resources and status as a separate branch of technology, suggesting that 'mainstream tech' and 'tech for good' are two separate endeavours.

Matt Haworth is the Co-Founder and Director of Reason Digital.

We need to unify the two and take tech ethics back to its roots: in the philosophy of ethics. A philosophy concerned not just with how to do no harm, but one that starts with the question of how we can do the most good.

Take Immanuel Kant, one of the central figures of modern ethics, and his categorical imperative. It asserts that in order to be ethical we must never to treat others merely as a means to an end but always, additionally, as ends in themselves. Or not to treat users merely as a means to ad revenues, perhaps.

This is how we should be considering ethics in tech. Not as we mean ethics in 'ethical' coffee or 'responsible' gambling. But instead putting the human, and the improvement of life for that human, as the focus instead of trying to do as little harm as possible in the process of profiting from them.

To do so we should take head of another of Clark's Three Laws, the second: "The only way of discovering the limits of the possible is to venture a little way past them into the impossible".

We owe it to humanity to urgently discover the limits of the possible here, not just to talk about limiting the harm of what's possible. To take the abilities that tech provides us and use them mindfully to do good. Now that, for many, would be true magic.

A call to action

We have said that improved education, regulation and design are where society should focus.

Much of how we regard our current relationship with technology as society, workers and consumers is shaped by Silicon Valley. But Silicon Valley is not synonymous with our collective future. It is, instead, one version of how this future could progress. A **tech utopia** where companies develop unchallenged is not good for society.

There are many alternatives. With our call for greater understanding of **humane tech**, power and responsibility, we also look for an alternative narrative to that of Silicon Valley. One where innovation is not synonymous with disruption, but rather with solving pressing global problems. A narrative that is less influenced by private Venture Capital. Instead, a narrative which explains how public investment can be used to derive greater public outcomes (economically and/or socially). Innovation should not only be about valuations, power and profit, but should be about how humans and technology can co-exist in a future that is attractive to us all.

The alternative is possible, **humane tech**, where power and responsibility can work hand in hand, where technology is designed with ethics and human society in mind, where regulation protects our interests and sparks innovation and where outcomes are measured by public good, not just public consumption.

This is everyone's challenge. We all need to be aware of both the opportunities and threats in what the next wave of what technology can do for us. We need to be engaged in creating this future together. It is no longer okay for the disruption caused by new technology to happen without us having any ability to shape the outcomes. It is in our interests as humans for the industry, innovators, educators, regulators, civic society and governments to work together to create our collective future.

Our final note is one of optimism. There are many ways in which private companies can work more closely with the rest of society to solve the new and emerging problems we face.

As Mariana Mazzucato proposes, we need to rethink our narrative around regulation. The state actively shapes and creates markets. Rather than acting as a barrier to business, the state in fact pump-primes markets through innovation funding, R&D and other levers, including regulation. Mazzucato argues that the private sector should carry more of the burden for these 'innovation systems'. By the same token, the industry needs to take much more accountability for the disruption it has caused. Working proactively alongside regulators would help.

A commission

Finally, we propose a government-funded commission to guide the direction of all technology regulation across the board. The Online Harms White Paper is just the tipping point and so many other challenges need to be tackled in a cohesive manner. We can all play our part in pressing for this, including tech companies, who we call on to engage proactively in this process.

The UK government must do more to build on Dame Wendy Hall's Review into Artificial Intelligence in the UK. This review looked into stimulating growth in AI and proposed the Alan Turing Institute become a National Institute for AI and Data Science. It also proposed the Alan Turing Institute and the Information Commissioner's Office develop a framework for explaining the processes, services and decisions delivered by AI to improve transparency and accountability. We need to build on this to include ethical and moral dimensions. The Human Fertilisation and Embryology Authority is a useful parallel, dealing with ethical dilemmas on the nature of scientific interventions in life.

What might such a commission look like and do?

We believe it would need to be non-partisan, not politically motivated and in it for the long haul. It should represent all stakeholders, including the industry. Its initial mission would be to look for corrections to the 10 critical issues that we identified in section one. It would communicate a narrative for humane tech and set a course for education, regulation and design to tackle these issues. It should engage the public and fund publicly developed and co-designed solutions to these issues. It should build on initiatives that we have established in the UK already including GDS, NHS Digital and the good work that is going on at a local government and city level. It should be an enabler and set the agenda for future regulation.

We can think of ourselves being at an inflexion point between the first and second waves of digital revolution. If so, we are at a critical point in our response to the capabilities of this new age and what it means for us as human beings. We might characterise the first as an explosion of possibilities, from which we now realise there are unintended consequences - things we which could not see.

We therefore pose **10 ideas for change.**

1 Prepare citizens of the future
Our education system must nurture critical thinkers and resilient, sympathetic citizens. In the paper Education 2030, the OECD notes that today's children need to be taught 'transformative competencies' to be active, innovative, responsible and aware in our uncertain future. The government should add technology ethics, online behaviour and digital wellbeing to the curriculum.

2 Reskill workers through lifelong learning
The UK should reform its adult education system to enable re-learning at any age. People whose jobs are displaced by technology should be given funding to support re-training. If companies want to introduce technology that will obliterate jobs, they should also be responsible for investing in redeveloping workers through some form of levy or taxation.

3 A public health approach to tech risks
We should treat digital addiction as a public health problem. The government should build public awareness of the problems of digital addiction and promote behaviours to combat it. Safe social media use be taught in personal social and health education classes and the impact of pornography should be taught in sexual relationship education.

4 Design innovative regulation with industry
The challenges of technology require different thinking around regulation. Anticipatory regulation developed by Geoff Mulgan from Nesta proposes guidelines for iterative rather than definitive regulation. Regulation that is co-designed with civic society, government, innovators and business can enable more fluid, more appropriate regulation that encourages innovation and helps shore up trust in the tech industry.

5 Use cities as test beds
Cities embody pragmatism, civic trust and partnerships and are well placed to devise solutions to the technology challenges that play out on their streets, as we have seen with city-based responses to new platforms like Uber and Airbnb. We should look to cities to be test beds for new services, involve citizens in data sharing and evolve ethical principles into practical policies. City solutions can provide a framework for innovative, citizen-led regulation elsewhere.

6 Contribute to the debate shaping AI regulation
The Centre for Data Ethics and Innovation and the Government AI Committee are debating the future of AI and the regulation of it. This should build on other conventions of scientific excellence, such as peer review, open research and multi-disciplinary approaches. It should build on Dame Wendy Hall's Review into Artificial Intelligence in the UK and use the Human Fertilisation and Embryology Authority as an example of how to deal with ethical dilemmas posed by scientific interventions in life.

7 Set up a commission into technology regulation
To set out a cohesive approach across Online Harms, Data, Privacy, AI, Online Advertising, and so on. The IPPR's September 2018 Commission into Economic Justice proposed the foundation of a new government office to regulate search, social media and digital services as utilities - OfDigi. Its job would be to represent all stakeholders, communicate a narrative for what our future humane tech should look like and set a course for education, regulation and design to tackle these issues.

8 Create a hippocratic oath for data scientists
Build on developments such as Data for Democracy's Global Data Ethics Pledge to enshrine the principles by which data scientists should practise their work. This professional oath would bind all data scientists to uphold fairness, openness, reliability and trust and ensure that social benefit is built in to the foundation of every AI model.

9 Devise a code of practice for product designers
Good products must consider how they serve wider human needs. Voluntary ethical design codes are emerging, but we need a stronger industry standard for product development. Evolve design practice from 'human-centred design' to 'humanity-centred design' and require products to pass a social impact assessment before they are given a license for release. Require the App Store and Play Store - our gatekeepers to the app market - to issue a useability or humane design test before approving new apps.
10 Redesign data-led business models
It is not too late to disrupt business models built on data surveillance. Regulation requiring companies to pay users for their data would honour citizens as the suppliers of the data that makes the digital economy work. Such a change would give users more agency and stimulate the design of inventive new user-led business models.

At the same time, as consumers we can increasingly opt for companies who follow a 'privacy-by-design' model. Apple can be held up as a champion for this alternative approach to data and privacy. Shoshana Zuboff calls it "advocacy capitalism" vs the surveillance capitalism of data-led business models. Following Apple's lead in advocacy capitalism can be a competitive business advantage, especially as consumer awareness and concern over data surveillance grows.

So how do we get there?

The first stage is to evidence the problems - a forensic examination on what is troubling us about the impact of technology on our lives. But we must not become stuck here. In the time that we have written this paper, we have seen a shift in public discourse. The sophistication of the discussions around how tech is impacting us have grown exponentially over the past year. Public interest in this has grown too.

Whereas in 2017 Margrethe Vestager, the European Commissioner for competition, was seen as almost a lone wolf going after big tech, today governments and regulators are already taking on the tech giants. What we would like to see as an outcome is not punitive policy, but rather innovative approaches - arrived at collectively. In the end, there needs to be a shift in power from tech companies to governments, and a greater acceptance of responsibility from big tech to solve social problems.

We should have hope that, in the end, people will win out. Not in a naive way, but by having belief in human nature and our power to adapt our cultural values and behaviour over time.

We find joy in the example of the English football team during last summer's World Cup, who decided,

without coercion, that they would leave their phones behind when they ate together, so they might improve the quality of their conversations and therefore the connections between them. It was the young team who decided this, in response to advice from their coach and psychologists that connecting with each other on a human level - increasing empathy between them - would help them win. This is a good allegory for our times.

From tech fear to humane tech

From	TO
Unregulated gig economy	Balancing flexible working with basic employee rights
Tech tax loopholes	Fair tax applied globally
Addiction by design	Technology designed for mindful use
Global media platforms without editorial oversight	Responsible content approach
Mob rule social media	Community management
Innovation driven AI	Ethics driven, regulated AI
Data wild west	Controls on data use and misuss
People feeling passive and confused about technology	Society with digital understanding and digital resilience
Opaque business models	Transparent, well understood business models
Tech worship/fear narratives	Humane tech narrative

Digital Agenda

Edelman