

# People, Power and Technology:

The Tech Workers' View

doteveryone

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Doteveryone champions responsible technology for a fairer future. We are an independent think tank that explores how technology is changing society, shows what responsible technology can look like, and catalyses communities to shape technology to serve people better.

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### **Foreword**

I believe technology can and should be a force for social good - one that makes life better for more people, more of the time. This groundbreaking research by Doteveryone into the views of tech workers in the UK shows many of them share this ambition.

I founded Doteveryone to help fill the moral and ethical gaps in the technology industry; this report shows I am not alone in finding those gaps concerning. The people who make up the UK technology industry — data scientists, product managers, user researchers, designers, developers, and engineers — think it is important too. And in a year of negative coverage about the impact of our industry, I find much to celebrate in the desire and commitment of the people who create new products and services to do so in a way that is good for society.

Any entrepreneur knows that hiring and keeping good people is one of the secrets of a successful business. 93% of UK tech businesses already find it hard to attract the right talent, and this research shows that irresponsible and unethical behaviour will not make that any easier. In Artificial Intelligence, particularly, alarming numbers of talented people are stepping away from jobs they fear have negative social consequences.

The digital technologies we have created are maturing; as technology leaders, it is up to us to think differently — to balance growth with responsibility; impact with consequences. I'm a classicist not a coder yet have worked in technology for my entire career; to achieve a stronger sense of responsibility in technology, it is also essential to encourage a much broader reach of skills and backgrounds into the industry.

As I write this, 16-year-old Greta Thunberg is leading global school strikes to bring attention to climate change. But businesses too need to take more action to support our people and our planet, and must respond more quickly and adaptively to the concerns of those who make and use our products and services.

Responsibility is neither magic nor art. This report leads with practical advice on process and people that your business can begin tomorrow. Let's make the future of technology more responsible, together.

**Martha Lane Fox** 

Executive Chair & Founder Doteveryone

## **Executive Summary**

People, Power and Technology: The Tech Workers' View is the first in-depth research into the attitudes of the people who design and build digital technologies in the UK. It shows that workers are calling for an end to the era of moving fast and breaking things.

Significant numbers of highly skilled people are voting with their feet and leaving jobs they feel could have negative consequences for people and society. This is heightening the UK's tech talent crisis and running up employers' recruitment and retention bills. Organisations and teams that can understand and meet their teams' demands to work responsibly will have a new competitive advantage.

While Silicon Valley CEOs have tried to reverse the "techlash" by showing their responsible credentials in the media, this research shows that workers:

- need guidance and skills to help navigate new dilemmas
- have an appetite for more responsible leadership
- want clear government regulation so they can innovate with awareness

Every technology worker that leaves a company does so at a cost of £30,000.¹ The cost of not addressing workers' concerns is bad for business — especially when the market for skilled workers is so competitive.

Our research shows that tech workers believe in the power of their products to drive positive change — but they cannot achieve this without ways to raise their concerns, draw on expertise, and understand the possible outcomes of their work. Counter to the well-worn narrative that regulation and guidance kill innovation, this research shows they are now essential ingredients for talent management, retention and motivation.

It is time for the tech industry to move beyond gestures towards ethical behaviour — rather than drafting more voluntary codes and recruiting more advisory boards, it is time to double down on responsible practice. Workers — particularly those in the field of AI — want practical guidelines so they can innovate with confidence.

Oxford Economics (2014) 'The Cost of Brain Drain'. http://resources.unum.co.uk/downloads/cost-brain-drain-report.pdf

#### Our recommendations c

#### **Businesses should:**

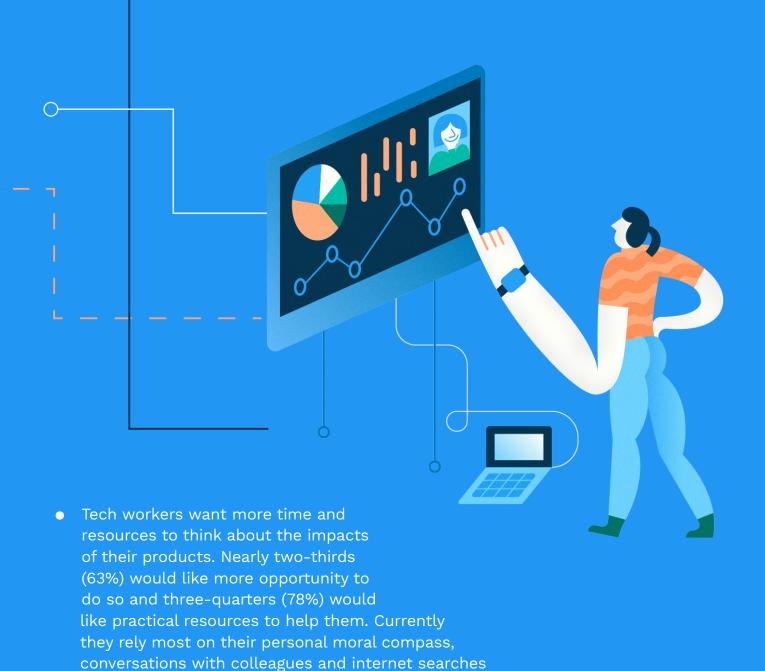
- Implement transparent processes for staff to raise ethical and moral concerns in a supportive environment
- Invest in training and resources that help workers understand and anticipate the social impact of their work
- Use industry-wide standards and support the responsible innovation standard being developed by the BSI – 78% of workers favour such a framework
- Engage with the UK government to share best practice and support the development of technology literate policymaking and regulation
- Rethink professional development, so workers in emerging fields can draw on a wider skills and knowledge base — not just their own ingenuity and resources

#### Government should:

 Provide incentives for responsible innovation and embed this into its Industrial Strategy

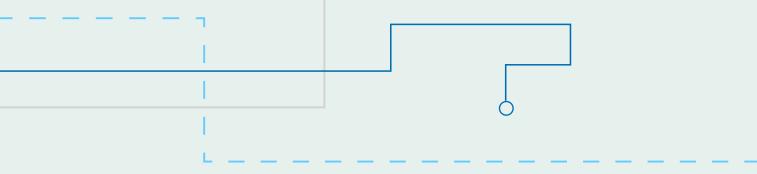
## **Key Findings**

- More than a quarter (28%) of tech workers in the UK have seen decisions made about a technology that they felt could have negative consequences for people or society. Nearly one in five (18%) of those went on to leave their companies as a result.
- The potential negative consequences these workers identified include the addictiveness of technologies, the negative impact on social interaction and the potential for unemployment due to automation by technology. They also highlighted failures in safety and security and inadequate testing before product releases.
- Government regulation is the preferred mechanism among tech workers to ensure the consequences of technology for people and society are taken into account. But almost half of people in tech (45%) believe their sector is currently regulated too little.



• Despite their concerns, the vast majority of tech workers believe technology is a force for good. 90% say technology has benefited them individually; 81% that it's benefited society as a whole. Looking ahead, they're excited by the potential of technology to address issues like climate change and transform healthcare, though they are alert to possible flipsides of such new technologies.

to assess the potential consequences of their work.



The transformative power of **Artificial Intelligence** is a source of both great excitement and great concern among both tech workers and the general public.

Accordingly, the UK government has made Artificial Intelligence (AI) one of its Industrial Strategy grand challenges and created the Centre for Data Ethics and Innovation to guide thinking in this area. Those who work in the field of AI have significantly stronger views about the consequences of technologies than the tech workforce as a whole.

These have been highlighted throughout the report and are summarised here.

- In AI, 59% of people have experience of working on products that they felt might be harmful for society, compared to 28% of tech workers as a whole. More than a quarter (27%) of those in AI who experienced such a situation quit their jobs as a result, compared to 18% of all tech workers who had this kind of concern.
- This means one in six (16%) of all people in AI have left their company over such issues, compared to one in twenty (5%) of all tech workers. Given the extreme scarcity of AI talent this is a cause of particular concern.
- Al workers are more likely to see companies' focus on revenue and growth as the greatest barrier to considering the consequences of technologies: 23% of people in Al said this was the most significant barrier compared to 15% of all tech workers.
- They're also more likely to cite a lack of interest personally or among colleagues as the greatest barrier to considering the consequences of technologies: 15% of AI workers compared to 8% of the workforce as a whole.
- However, they have the greatest appetite to assess potential impacts: 81% of people in AI would like more opportunities to do so compared to 63% overall.
- They also have the most interest in using internal resources to help them. They
  consider company policies to be the most effective mechanism of ensuring the
  consequences of technologies are taken into account and not regulation as the rest
  of the workforce believes. This suggests that AI companies should most urgently take
  steps to embed responsible practices into their organisations.

## Introduction

As the public techlash has gained momentum, the ambitions and explanations of Silicon Valley CEOs have dominated media coverage of the technology industry. Mark Zuckerberg has spoken about Facebook in Congress and blogged extensively on the future of privacy; Jeff Bezos's personal life has attracted almost as much speculation as Amazon's growth; Elon Musk has given Tesla shareholders advice on Twitter; Google executives have received vast payoffs over sexual harassment claims. The list goes on.

But the people who work every day designing and building tech products and services have been largely unheard. In Silicon Valley, Google workers successfully petitioned against the Project Maven contract to provide AI to the US defence department, there has been a growth in activist groups including Tech Solidarity and the Tech Workers' Coalition, and a few individuals have spoken out and led others in protest. But in Europe — despite a vibrant and emerging academic field of academic and civil society critique — the former Cambridge Analytica employee Christopher Wylie has been one of the few technology workers to speak in public about their concerns.

People, Power and Technology: the Tech Workers' View addresses this gap in understanding, surveying more than 1,000 people working in technology roles² across all parts of the UK economy. For the first time we explore their hopes and concerns about technology now and in the future, the importance they place on considering the consequences of their work and the opportunities for responsible practice. The research builds on Doteveryone's previous People, Power and Technology ³ studies of attitudes and understanding of technologies in the general public.

This report identifies three overarching themes:

- There is optimism about the potential of technology, especially where applied to societal challenges but tech workers favour greater regulation to ensure the potential downsides for people and society are taken into account.
- Companies are losing valuable, highly skilled staff as a significant proportion of tech workers quit their jobs over irresponsible practices.
- There is a business opportunity for those organisations that respond to the appetite for responsible practices to attract and retain scarce tech talent.

Each of these is explored in detail in the report that follows.

<sup>&</sup>lt;sup>2</sup> According to the government's definition of digital, data and technology roles https://www.gov.uk/government/collections/digital-data-and-technology-profession-capability-framework

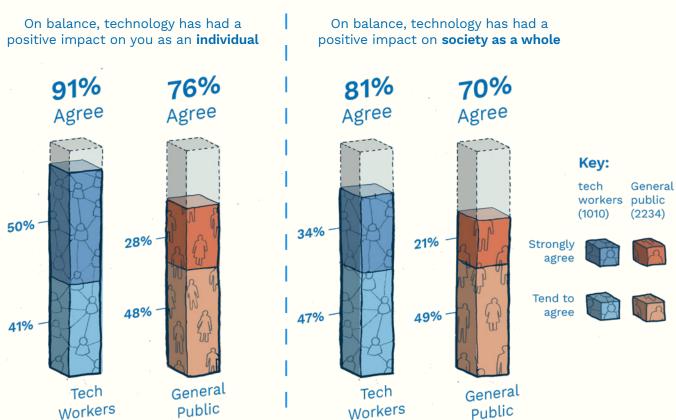
<sup>&</sup>lt;sup>3</sup> Doteveryone (2019) People, Power and Technology: The 2018 Digital Understanding Report 2018 and People, Power and Technology: The Digital Attitudes Report 2018 https://doteveryone.org.uk/project/peoplepowertech/

## An optimistic industry

Despite the focus on the negative impacts of technology in current media and policy debates, the vast majority of people both among tech workers and in the wider public believe technology is a force for good.

People in tech are significantly more positive about the impacts of technology than the wider public: 90% say technology has benefited them as an individual and 81% that it's benefited society as a whole.

#### Impact of technology on individuals and society



Question: To what extent do you agree or disagree with the above statements?

Looking ahead 83% of people in tech expect it to have a positive impact for themselves as individuals and 82% on society as a whole in the future.

There is excitement about the potential that new technologies hold in the years ahead, especially where they can improve people's lives and be applied to social challenges.

Tech workers are most enthusiastic about Artificial Intelligence, with the belief that innovations in AI will free up humans from mundane tasks, making life easier and more convenient. They're eager to see tech applied to address issues like climate change and to transform healthcare through greater accuracy in diagnosis, cures for currently untreatable conditions and better quality of life for people in ill health.

"AI will **free up time** for people to **care** for relatives and **contribute** to the community."

"The increasing use of AI in medicine to give **better outcomes for patients**."

"AI, to eliminate the need for humans to do mundane tasks and **shorten working hours**."

"Machine and deep learning could result in **less fraud and criminal activity**."

"Smart home care for the elderly enabling family to keep an eye on older people."

"Technology that allows us to **repair the environment** because it is desperately
needed after all the damage we have caused."

Question: What developments in the tech sector are you most excited about and why?



But this excitement is tempered by potential negative consequences of these same technologies. Almost a quarter of tech workers also identify artificial intelligence as the most concerning technology of the next decade.

They anticipate the flipsides of AI as increased unemployment due to automation. They also see a future where human dependence on technology leaves people vulnerable to security breaches and exploitation. And they worry about devaluing human contact, increasing social isolation and detriment to mental health.

"Al's already **rendering many traditional service jobs obsolete**. We need to learn from the de-industrialization disasters of the 1970s and 1980s and put people first."

"Mass unemployment

leading to unrest."

"Transferring too much power over how our society is run over to computers which **can fail or be hacked**." "Social media - they encourage **addictive** behaviour; practice targeted **manipulative** marketing and **disorientate** perceptions on life as we know it."

"Probably social media and virtual reality. I think **we are lonely enough** as it is and this will only make things worse."

"Surveillance technology, my children's generation will have **no privacy**."

"Exploitation of personal data by predatory entities, including corporations."

Question: What developments in the technology sector are you most concerned about and why?

People working in tech clearly feel a tension between the enormous opportunities that technologies present and the potential harms they can inflict. 80% believe companies have a responsibility to society to ensure their technologies don't have negative consequences for people and society.

But when asked about the best way to ensure that they live up to this responsibility, the largest proportion believe government regulation is the most effective mechanism, placing it ahead of internal company leadership or professional accreditations.

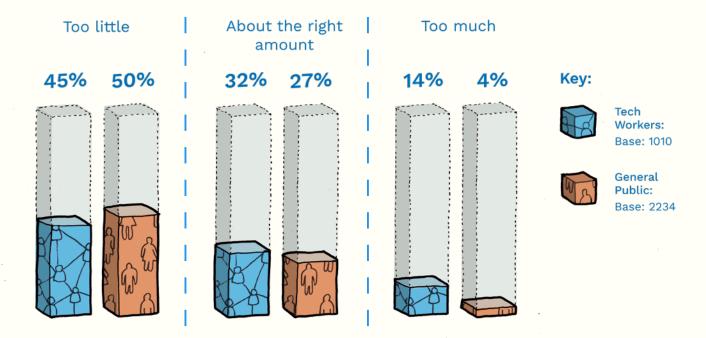
Although the idea of a 'hippocratic oath' for tech has often been discussed as a way to embed ethical practice in the tech industry, only 2% saw a voluntary commitment as the most effective way to mitigate potential harms.



For people in tech to be able to achieve the positive opportunities they see in future technologies, they will need the support of regulation to safeguard against the negatives.

But nearly half (45%) of tech workers think the industry is regulated too little.

#### Overall would you say the tech sector is regulated...



Those at earlier stages of their careers are most likely to think there's too little regulation of the sector, compared to those later in their careers. But across almost every sector and every job role, every age and every level in the business, people are more likely to say the sector is under rather than over-regulated.

Contrary to the public statements of some tech CEOs and founders, people that work in the industry don't subscribe to the idea that tech should be allowed to disrupt without regard for its consequences. They are aware of both the wonders and the woes of their products.

These findings explode the narrative that the tech sector is allergic to regulation. For people that build technology, it's the most preferred mechanism to help them harness tech's opportunities in ways that are good for more people, more of the time.

The UK Government has begun a series of regulatory initiatives - including the Online Harms White Paper, the Furman review into competition in digital markets and the establishment of the Centre for Data Ethics and Innovation. The appetite for regulation articulated in this research should be seized on by policymakers and regulators as an opportunity to work with people within the industry to craft effective accountability for the digital age.



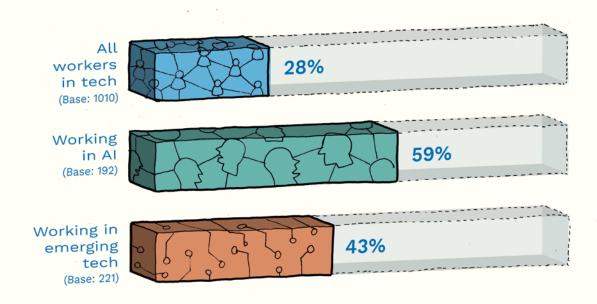
## The impact of irresponsibility

People that work in tech have a strong sense of responsibility for the products they create.

79% agree it's important to consider potential consequences for people and society when designing new technologies.

But it's not uncommon for them to see irresponsible choices during the development of a product.

Proportion of tech workers who've experienced decisions that could lead to negative consequences for people and society...



Question: Have you experienced a situation at work where decisions were made about the design, creation or marketing of technology that you felt could have negative consequences for people or society? Base: (1010) - All tech professionals

More than a quarter (28%) said they'd experienced a situation at work where decisions were made about the design, creation or marketing of a technology that they felt could have negative consequences for people or society.

Almost two-thirds (59%) of people working in AI and almost half (43%) of those in emerging tech had experienced this kind of situation.

They said these decisions were potentially harmful for a range of reasons, pointing to a lack of consideration for safety and security, a failure to consider the needs of consumers and a lack of assessment or testing of the product. They also believed the products could be addictive and decrease social interaction, while some feared that automation as a result of the product would cause unemployment.

C-suite, senior management and executives were more than twice as likely (47%) as those in more junior roles to have experienced such potentially harmful decisions.

"Business and financial considerations, **eroded** 

"I think this technology will be a dividing force in society."

moral values "

"Too much technology **less communication** between people."

"Job cuts following automation."

Question: What developments in the technology sector are you most concerned about and why?

"Too much monitoring and spying on people."

"Was not properly tested and the company was too quick to put the product on the market."

"Safeguarding not being considered properly."

"Some features tend to be **addictive**."

"Far too easy for data to be used fraudulently."

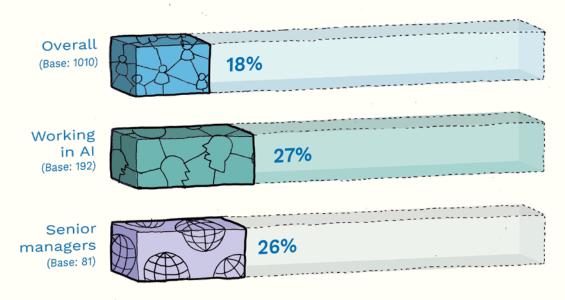
The vast majority of people who experience these issues act on them. Only 10% of them say they do nothing at all.

Around half raise concerns with colleagues (51%) or with a manager or HR (47%) and 29% report their concerns to an external body. But for many this is not enough.

Nearly one in five people (18%) that experienced potentially negative product decisions left a company as a result. This is true for 27% of people working in AI and 26% of senior managers.



### Workers who experienced a negative product decision and left their company...



Question: On the occasion(s) you have just mentioned, which if any of the following actions did you take? Base: (287) - All who have experienced a situation at work where decisions were made about the design, creation or marketing of technology that you felt could have negative consequences for people or society.

Across the sector, this means one in twenty (5%) of all people in tech have left a job due to concerns about the consequences of their products. This is more acute in AI where one in six (16%) have left their company and in senior management where one in eight (12%) have left.

#### $\bigcirc$

The UK tech industry has major concerns about the availability of staff. 93% of employers have struggled to recruit to tech roles in the past year, with shortages most acute for management and experienced professionals.<sup>4</sup> Brexit is expected to exacerbate these issues. Each lost tech worker is estimated to cost a company over £30,000.<sup>5</sup> Our findings show that potentially irresponsible technology practices are a significant factor for retention and it's vital that these are addressed for the industry to thrive.

The UK Government's Industrial Strategy has identified Artificial Intelligence as one of its grand challenges and its AI Sector Deal highlights the fast growing demand for highly skilled AI specialists. With 16% of people in AI having left a job due to irresponsible practices, it will be vital to embed responsibility into the AI ecosystem to realise the government's ambition to put the UK at the forefront of the AI revolution.<sup>6</sup>

<sup>&</sup>lt;sup>4</sup> Hays (2019) 'Hays UK Salary and Recruitment Trends 2019 guide' - http://hays.co.uk/salary-guide

<sup>&</sup>lt;sup>5</sup> Oxford Economics (2014) 'The Cost of Brain Drain' - http://resources.unum.co.uk/downloads/cost-brain-drain-report.pdf

<sup>&</sup>lt;sup>6</sup> UK Government (2018) Policy Paper: AI Sector Deal - https://www.gov.uk/government/publications/artificial-intelligence-sector-deal/ai-sector-deal

## An opportunity for organisations

This research demonstrates the depth of concern in the tech workforce about the potential downsides of technologies. And it shows that irresponsible practices in tech can cost companies dearly in lost talent. But it also points to an opportunity.

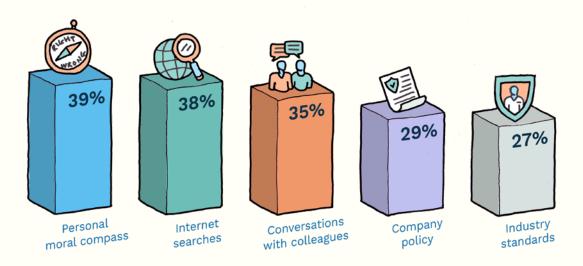
Organisations and leaders that can understand and meet their teams' demands to work responsibly will have a valuable competitive advantage.

Almost two-thirds of people working in tech (63%) would like more opportunities to assess the potential impacts of their products - among senior managers and above this rises to 74%. The appetite for these opportunities is strongest in AI (81%) and emerging tech (76%).

But at the moment, they say anticipating consequences of products for people and society ranks as the lowest priority in their work.

When they come to consider the potential impacts of their products, they mainly use informal methods.

Where tech workers have turned to when looking to assess the potential consequences on people and society



Question: As somebody who works in technology, to which if any of the following have you turned to when looking to assess the potential consequences of technology on people and society?

Base: (1010) - All tech workers

But they are keen to have greater guidance. There's strong support for a set of resources to help people assess the impacts of technology.

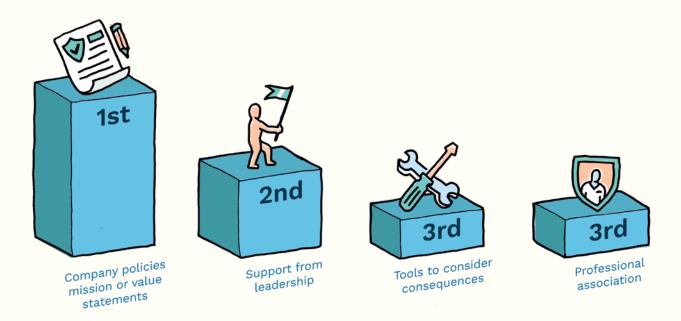
78% would like a set of practical methods, workshops and resources to help them build technology with consideration for the consequences for people and society. The same number would be interested in a single framework for the governance of innovation.

There's also clearly scope for companies to significantly strengthen their policies, so that they play a much greater role in helping people consider the impacts of their products, rather than leaving it to gut instinct.

This is especially true for the groups likely to feel most strongly about the consequences of technology for people and society.

People who've left a company due to potentially negative products, senior managers and those working in AI all put much more emphasis on using internal resources than tech workers as a whole.

### What has the greatest potential to ensure tech workers consider the consequences of their work on people and society



Question: Which of the following do you think has the most potential to ensure technology professionals consider the possible consequences of their work on people and society? Base: (53) - All who left a job as a result of decisions that were made about the design, creation or marketing of technology that they felt could have negative consequences for people or society.

And there are signs that where internal processes are in place, they often work.

Among tech workers who had experienced a decision at work that they thought could be negative for people and society, around half raised concerns with a colleague (51%) or manager (47%).

The vast majority of those who who report concerns either internally or externally (79%) then had their concerns satisfactorily resolved - and this was true of 93% of those in AI.

It's essential then that more companies learn from this to create systems for people to raise and resolve concerns, to avoid losing their staff.

But there appear to be blockers to companies changing the way they work.

Currently, the greatest barrier to greater consideration of the impacts of products is perceived to be companies' focus on revenue and growth.

Those who quit their jobs due to the potential negative impacts of products were twice as likely as tech workers overall to point to revenue and growth targets or incentives as a barrier - 30% saw this as the greatest impediment to assessing consequences. In AI, 23% identified revenue and growth targets or incentives as the most significant barrier.

Despite this, most don't see financial success and responsible practice as being in conflict. Nearly two-thirds do not agree that considering the potential consequences of technologies will stifle innovation and growth. And in fact this research points to the benefits that these ways of working can bring to a business.

People who work in tech care deeply about the impacts of their work - and they will vote with their feet if they think their products are potentially harmful. This presents an opportunity for a new approach to leadership that balances growth and societal impact, that creates opportunities and deploys resources to consider consequences and that has effective mechanisms to hear and address concerns when they arise.

Organisations that meet these needs will be the ones that move beyond the discredited move fast and break things culture to lead a new wave of thriving, sustainable technology businesses able to realise the full potential of responsible innovation.



## Conclusion & Recommendations

Innovation and ethics are usually seen as two separate things, often in opposition to one another. But these findings reveal there needs to be a new way of seeing - and doing - innovation that puts ethics and responsibility at its heart.

It is people who drive innovation. It is people whose ingenuity unlocks the possibilities that technologies can hold for everyone. And the people who work in technology and whose views are expressed in this research are clear: they don't want to be part of innovation if it is harmful for people and society.

If UK tech workers aren't on board with the direction of their industry, innovation will falter. Opportunities will be lost. So the tech industry needs to learn how to innovate responsibly. What tech workers want and need is practical ways of doing that.

By its nature, innovation requires people to do new things in new ways that haven't been seen before. Tech workers need ways to navigate this. They may be pushing boundaries but they still need to know where they draw the line. What is acceptable and what is not.

Our research finds that people in tech are working this out informally at the moment. They rely on their personal moral compass, they chat to their team or they google for answers. The products that tech workers make can have profound effects on people and society - there must be much clearer parameters for how they are made.

#### We recommend businesses should:

- Implement transparent processes for their staff to raise and address concerns about the impacts of technology on people and society. Each lost tech worker is estimated to cost a company £30,000.<sup>7</sup> But this research shows that where people have internal processes to deal with problems, they are most often satisfied with the outcome. We endorse the recommendation of the AI Now institute<sup>8</sup> that companies should provide protections for conscientious objectors, employee organising and whistleblowers, to help drive accountability and ethical decision making.
- Invest in training, time and resources to help tech workers anticipate the impacts of
  technologies on people and society. There is a growing number of workshops, courses
  and reading lists that help people tackle these issues. Industry groups such as techUK
  and Tech Nation can help their members by making these more widely known.

<sup>&</sup>lt;sup>7</sup> Oxford Economics (2014) 'The Cost of Brain Drain'. http://resources.unum.co.uk/downloads/cost-brain-drain-report.pdf

<sup>8</sup> https://ainowinstitute.org/AI\_Now\_2018\_Report.pdf

- Use industry-wide standards for responsible practice. The BSI is currently developing a single framework for the responsible governance of innovation that lays out the basic principles to be considered. 78% of tech workers say they would like such a framework. We urge businesses to engage in the consultation for this standard and ensure it gains widespread adoption as it develops.
- Engage with government to share best practice and support the development of technologically literate policymaking and practical regulation. A failure to demonstrate the industry's commitment to responsible technology is likely to result in regulation that is much less sympathetic to companies' needs.
- Rethink professional development so tech workers can draw on a wider skills and knowledge base and consider certification and required continued professional development to improve practices. In return, existing professional bodies need to update themselves for the modern era with sustainable business models and relevant offerings to help tech workers develop their careers, work responsibly and thrive professionally.

#### We recommend government should:

 Provide incentives for responsible innovation and embed this into the industrial strategy. Initiatives such as the ICO regulatory sandbox<sup>9</sup> provide a useful precedent for others to follow.

Tech leaders and policymakers must make these changes to enable the people who make technology to do their best work. These steps can ensure that ethics and innovation are not in conflict but combine to unleash new opportunities and new ways to make technologies that work better, for more people, more of the time.

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<sup>&</sup>lt;sup>9</sup> https://ico.org.uk/about-the-ico/news-and-events/news-and-blogs/2019/03/ico-opens-sandbox-beta-phase-to-enhance-data-protection-and-support-innovation/

## Methodology & Acknowledgements

IPSOS Mori conducted an online survey on behalf of Doteveryone of 1010 UK tech workers between 25th February – 6th March 2019, selected according to the government's definition of digital, data and technology roles under its profession capability framework.

This was accompanied by an online survey of a representative sample of 2,234 members of the UK general public between 12th – 15th March 2019. Full data tables have been published under creative commons license and are available from: github.com/doteveryone/peoplepowertech/worker-view

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This research was led by Catherine Miller, Sam Brown, Alao Abiola and Jacob Ohrvik-Stott at Doteveryone.

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