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CHANGE

Technology for the Many: A Public Policy Platform for a Better, Fairer Future

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RENEWING
THE CENTRE

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EXECUTIVE SUMMARY

A world infused with new technologies demands courageous, imaginative policy solutions that will both harness technology's tremendous potential for good and mitigate the displacement effects of rapid change. This is one of the greatest policy challenges of our generation, and one of the biggest gaps in the prospectus across the political spectrum.

A world infused with new technologies demands courageous, imaginative policy solutions that will both harness technology's tremendous potential for good and mitigate the displacement effects of rapid change. This is one of the greatest policy challenges of our generation, and one of the biggest gaps in the prospectus across the political spectrum.

This paper is our first contribution to a new platform for public policy in an era of rapid technological change. It lays out an initial set of policy proposals that are bold and ambitious, pragmatic with respect to the broader political environment, and deliverable with the right momentum behind them.

The opportunities are truly transformational: delivering lifelong access to education and good work, building world-class internet

infrastructure, automating government administration and doubling down on front-line staff, bringing cutting edge tools and business models into the public sector, developing a new social contract with big tech – and much more besides. This is the sort of territory that centre-ground leaders who are serious about inspiring people with a practical, radical vision for the future ought to be occupying.

Of course, with opportunities come risks and unknowns – so whilst there's a huge prize to be won in terms of harnessing new technologies for the greater good, we also have to make a determined effort to protect the most vulnerable and ensure that power and responsibility are apportioned justly. Faced with challenges that are so big and complex, it's easy to see why politicians and policymakers often end up paralysed, look to the past, or take only the most cautious of steps forward. But this is a gross abdication of responsibility: the technologies around us cannot be uninvented, and must be responded to confidently and with clarity of purpose.

This, then, is the world as we ought to be talking about it: with both optimism and realism, and a firm view that although government remains essential, its role must necessarily evolve alongside new technologies and the wider environment. Our proposals build on what's been achieved already, embrace the astonishing opportunities on offer, and address the challenges they bring with them head on.

The future is arriving now, and together we can change it for the better.

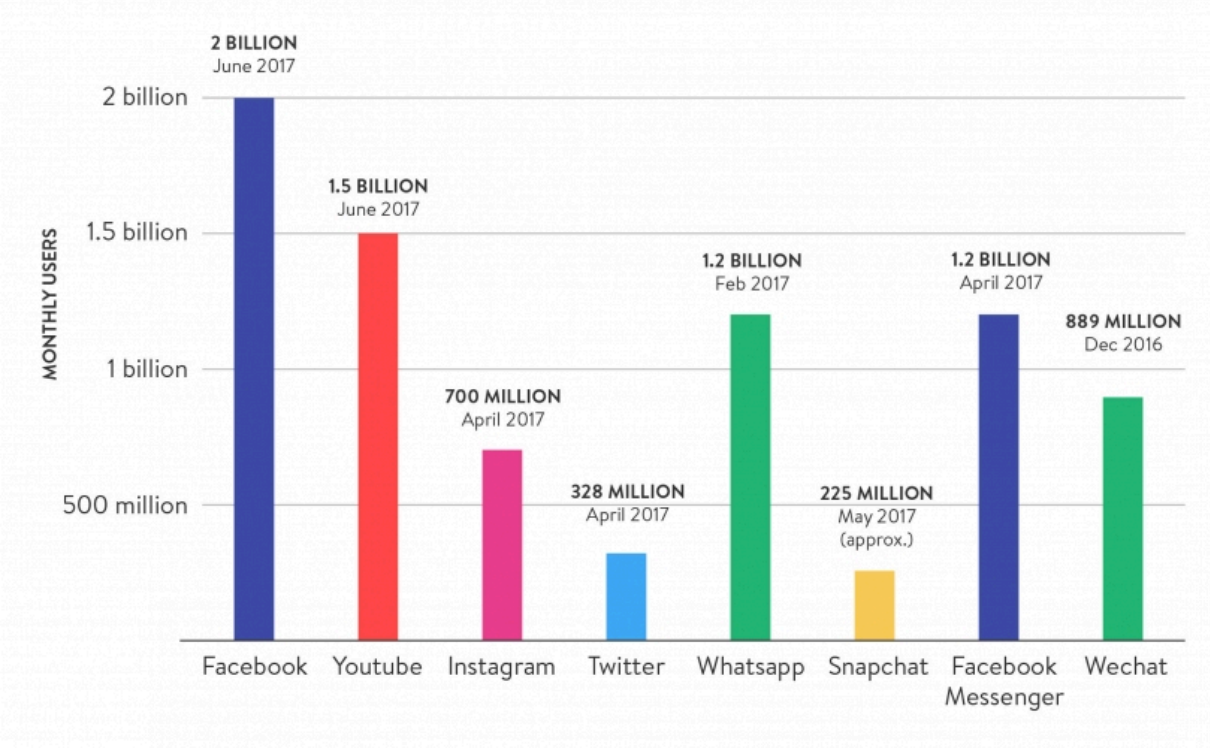
INTRODUCTION

The technologies that connect the modern world are among humanity's greatest accomplishments. Never before have so many people had easy access to affordable tools to communicate, learn, organise and transact. But the digital age that we are living through today is fundamentally different to previous technological revolutions: whereas past technologies were bounded by the limits of the physical world, over the last two decades the internet has rapidly decoupled the online and offline worlds. Freed from the old constraints of geography and physical factors of production, a new generation of technologists has ushered in an era of exponential change.

Technology is the common thread through change that is playing out at both an astonishing pace and at massive scale. The early pioneers of the internet era have grown into some of the most valuable companies on the planet, and some have vastly more users than many countries have citizens. This reflects both the huge value embedded in digital products and services that are used by billions of people, and the potential to leverage a leading position for sustained advantage in the future. In many cases, these companies built radical and compelling new business models around technology in ways that incumbent competitors were unable to match. In others, the commercialisation of new technologies created markets and sources of value that previously didn't exist at all.

Figure 1: Monthly active users for major social networks[1]

1 Facebook how has 2 billion monthly users...and responsibility https://techcrunch.com/2017/06/27/facebook-2-billion-users/



Whilst digital technologies have delivered vast benefits for an unprecedented number of people, they have also become associated with significant challenges. Disruptive innovation creates losers as well as winners, and societies have often struggled to cope well with the knock-on effects of new technologies that render established occupations obsolete. And as well as creating new categories of economic activity, digital technologies have also opened up the darker side of human nature. Abusive behaviour, herd mentalities, manipulation and addiction have all been amplified, and we're still struggling to understand exactly what has happened and how to fix it.

That all of this is happening at a time when confidence in democracy is in decline and destructive populism is on the rise is no coincidence.[2] Disruptive change contributes to economic and cultural anxieties, particularly when entire industries are under threat, and when new economic models unexpectedly shift the balance of power and influence between groups. Coupled with the ability to reach and enrage huge numbers of people online, it's no surprise that populists across the West are enjoying a resurgence,

2 Renewing the Centre http://institute.global/insight/renewing-centre/renewing-centre

and that liberal democracy is under strain. The siren call of the populists – *America first, take back control* – is undeniably more effective in an environment where too many people feel disoriented and left behind.

Faced with all of this, the temptation for many politicians is to try to split the difference. Progress, but not too much or too fast. Innovation, but constrained by last century's rules and regulations. New industries, but only if they prop up the old ones too. Status quo *plus*.

This is a grave mistake.

It's been more than 50 years since Harold Wilson first talked about the impact of automation and mechanisation on employment, and the strategies required to ensure that technology benefitted all citizens.[3] He said: "*the Britain that is going to be forged in the white heat of this revolution will be no place for restrictive practices or for outdated methods on either side of industry".*

Today, just as in the 20th century, technology operates in an environment shaped by policy decisions. But if policy is no longer fit-for-purpose – or worse still, is sometimes actively harmful to the very interests it should be looking out for – then it should not be surprising that conflict and mistrust pile up.

For anyone serious about building a better world – and that includes winning at the ballot box and delivering a programme for government that survives contact with reality – the only way forward is to embrace change. This is not the reluctant embrace of surrendering to the inevitable, but a wholehearted acceptance of the responsibility to play a proactive role in building a better world and making new technologies work for the many.

Right now, the sharpest visions for the future are found in Silicon Valley, in the boardrooms of companies whose entire businesses are rooted in a quest to create a world that doesn't exist yet. This space is exhilarating, because we are beginning to unlock advances that have genuinely transformational potential for humanity. But it's also insufficient: it can't be right to have a relatively small group making

3 The White Heat of Technology http://www.futurelabour.org.uk/the-white-heat-of-technology/

decisions that will shape the lives of billions of people, with barely any democratic engagement or oversight.

The chasm between technologists and politicians is also a significant missed opportunity. New technologies have the potential to solve problems that policymakers have found intractable for generations, and to underwrite wholesale reforms of the state in ways that can support a progressive political environment for the long term. Securing this dialogue, and bringing the brightest minds in the technology field into the public policy tent, should be a top priority.

This paper sets out the Institute's agenda on new technologies and the policy challenges and opportunities around them. It starts by exploring some of the ways that technology can help governments to do good things, followed by some of the big technology developments that governments need to prepare for. It closes with an initial view on some of the sorts of radical, sensible policies that forward-thinking, centrist politicians ought to be taking seriously. Further, more detailed development of these and other ideas will form the backbone of our work over the months ahead.

HOW TECHNOLOGY CAN HELP GOVERNMENTS

Despite rapid technological, social and economic change, government still matters. If anything, set against the pace and scale of change that we are now living through, and the looming threat to liberal democracy itself, good government matters more than ever.

Public policy must address some of the most important challenges facing a country. The complexity of the environment that governments operate in inevitably necessitates making difficult trade-offs, and often leaves weary politicians choosing what they think is the least worst out of a set of poor options. Moreover, unlike their corporate counterparts, those delivering public services have to do so without the luxury of choosing which customers or markets they will serve. It's not surprising, then, that the bureaucracy focuses on execution and has relatively little time or energy left over to contemplate radical reform.

Nevertheless, technology has the potential to help governments live up to their ambitions for public policy and delivery. Moreover, as new technologies advance the limits of what's possible, entirely new avenues are opening up to meet citizens' needs in new and innovative ways.

Here are some of the ways that new technologies can help governments achieve their objectives and deliver for citizens.

ECONOMIC GROWTH AND PROSPERITY

Supporting productivity growth and raising living standards

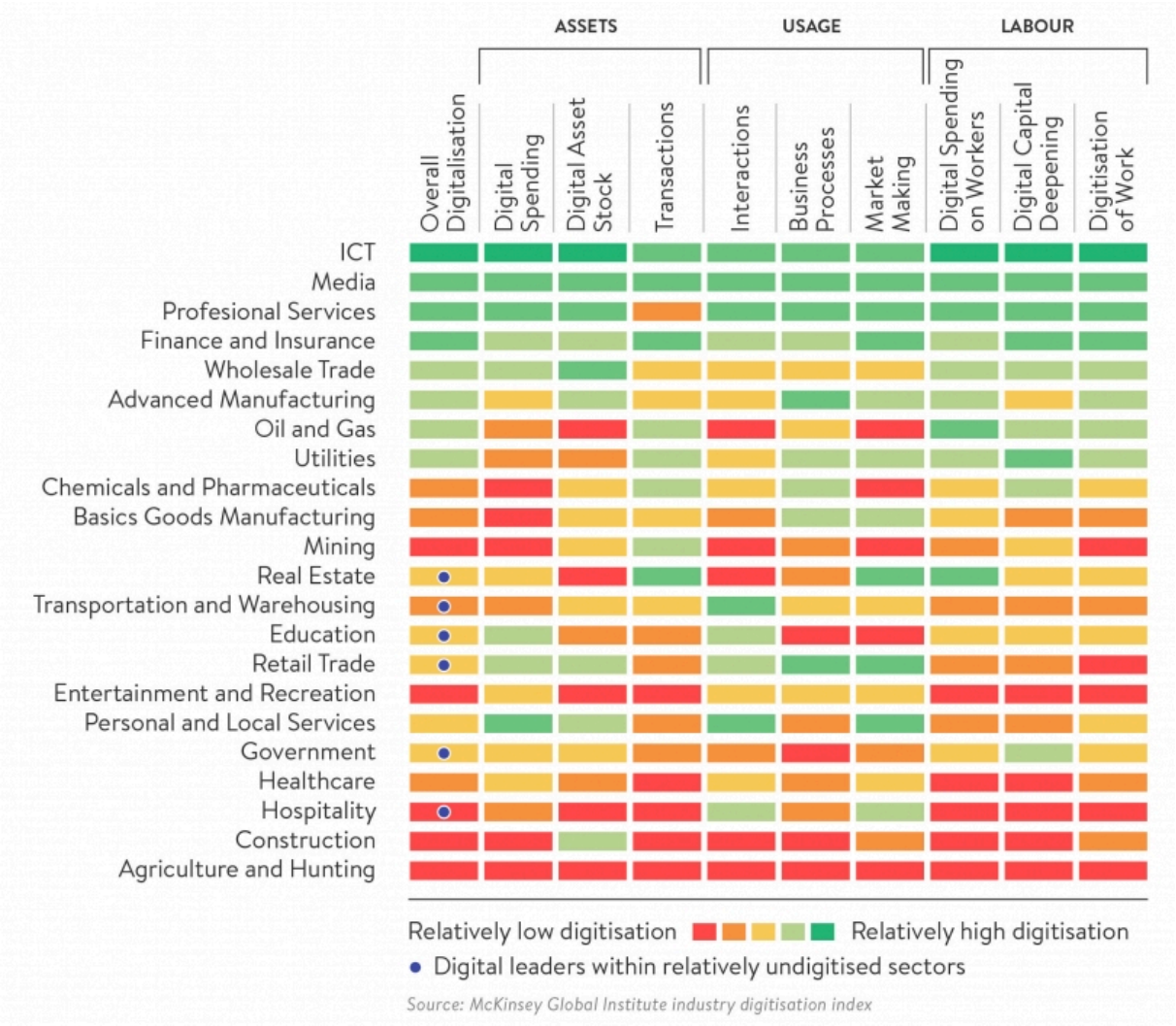
Augmenting labour with machines has been essential to sustained productivity growth since the industrial revolution. Productivity growth is currently in a funk, and recovering it is the only way to address the crisis of stagnant living standards felt by so many people today. Advances in robotics and artificial intelligence mean that a whole new wave of tasks are now in scope for automation or augmentation. At present, different industries are at different stages of technological maturity and adoption, and businesses will take their own views on what to automate and when – but will also make these decisions against a backdrop of public investment in infrastructure, training and skills, regulations, tax incentives and

other public policy factors. Measures that support and enable the use of advanced technologies will help unlock significant gains in labour productivity for people working in the factory or office of the future.

Although the context is often very different, the experiences of some countries in the developing world shows the potential gains to be made when new technologies are embraced, and obsolete methods are sometimes leapfrogged entirely. Adoption of electronic cash via basic mobile phones has unlocked significant, decentralised economic activity; drone technology is enabling the timely delivery of blood products to hospitals in areas without good road infrastructure; additive manufacturing is revolutionising the provision of good, affordable housing. Some of these changes may be easier to trigger without the hangover of legacy infrastructure and systems, but all around the world there is significant scope for new technologies to improve economic outcomes.

Figure 2: Degree of digitisation in different parts of the economy [4]

4 Imagining construction's digital future https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/imagining-constructions-digital-future



Enabling better work and more flexible working lives.

New technologies don't just hold the potential to make us more productive – they can also raise the quality of work and make it easier for people to balance work with the other responsibilities and commitments in their lives. Work that is better designed, and supported by technologies that empower people and enable them to achieve their best, should be something that policymakers in every advanced economy aspire to. This runs the full spectrum from the elimination of oppressive, repetitive tasks to increasing the visibility that workers have over how they are performing and their prospects for advancement. It also has the potential to create better prospects for people across the spectrum, with low-skilled workers able to benefit from working alongside new tools that make them more productive.

Technology is also opening up more opportunities to work outside traditional hours or workplaces, to enable people to stay active into later life, and to disrupt the cadence of the traditional working week itself. Good work, when you want it and on terms that you understand will be revolutionary for helping ensure everyone that wants to work can participate.

Reducing our environmental impact.

Pollution and congestion blight major cities around the world, and climate change remains perhaps the most pressing challenge facing humanity. Yet we still use our infrastructure extremely inefficiently, burning far more fuel and taking up far more space than we really need, often with serious consequences in terms of overcrowding and public health.[5] A whole range of connected and autonomous technologies – from intelligent public transport and self-driving cars to smart meters and drones – and large-scale peer-to-peer technologies designed to clear markets in transportation, accommodation and logistics can significantly reduce our local environmental impact and carbon footprint, and lower the cost of living. Beyond our big cities, these same technologies have the potential to open up access to mobility and amenities in ways that the public sector could never previously afford.

Rebuilding confidence in tax and welfare.

If law is code, then tax law probably represents the largest accumulation of technical debt in history. New technologies offer not just opportunities to simplify and streamline the process of calculating and paying tax, but also the potential to rebalance the fundamental stance of the system itself. Taxes that were previously viewed as too difficult to administer are now feasible, and could be used to shift the burden of taxation – away from taxes that distort incentives to work and invest, and toward correcting negative externalities and capturing economic rents. There's a similar opportunity around the welfare system, where the basic principle of simplifying the system is sound but there is still scope to make the system easier for families to understand, fairer in terms of transparency and consistency, and faster to arrive at decisions, take

5 Air pollution kills more people in the UK than in Sweden, US and Mexico https://www.theguardian.com/environment/2017/may/17/air-pollution-kills-more-people-in-the-uk-than-in-sweden-us-and-mexico

actions and make payments – so that families have better certainty and are not waiting unacceptably long for the support they are entitled to.

PUBLIC SERVICE DELIVERY

Accelerating and optimising routine administrative processes.

All citizens have numerous transactional relationships with government, spanning everything from paying taxes and claiming benefits, through to applying for licences and registering births and deaths. The processes that underpin these transactions are necessarily rule-based, which makes them good candidates for automation. Similar technologies are already being used to automate increasingly sophisticated tasks in the legal profession, customer support and other service industries. A deeper penetration of automated processes, with human intervention by exception rather than by default, would enable a significant increase in public sector productivity and help remove pain points for people who find government slow and inefficient to deal with.

Reusing and sharing common tools across organisations.

We often think of the state as one giant entity, but in reality it comprises many thousands of departments, agencies and other organisations operating at different scales all the way from national to neighbourhood. Although every one of these is operating to their own specific mission, they share many requirements in terms of basic business components and services. The public sector and its fiefdoms have a historic bias toward building bespoke solutions, and it is well known that these are often overly complicated and expensive to maintain. [6] More perniciously, we end up with a huge amount of duplication as every organisation builds its own tool for a task that is actually common to many. Much of the tech industry is on the opposite end of this spectrum, with companies combining the commodity services they need from third parties with proprietary tools only where they are strictly necessary and play to their specific skills and capabilities. Breaking up government silos, adopting common tools across organisations and freeing up each

6 Abandoned NHS IT system has cost £10 billion so far https://www.theguardian.com/society/2013/sep/18/nhs-records-system-10bn

organisation to focus on the thing it does best is not a particularly new or glamourous agenda, but it is a necessary condition to make government leaner and more effective.[7]

Giving time back to front-line public servants.

Modern organisations are hungry for data. Having access to it is critical for decision making, but the process of obtaining it can place an outsized burden on front-line staff. It's not uncommon for a doctor to spend a large part of a patient consultation looking at a screen, or for a teacher to spend most of their non-contact time completing paperwork related to the day's activities. Wearable technologies, environmental sensors and interoperable systems capable of sharing data more seamlessly make it possible to obtain more of this information directly, freeing up front-line staff to focus on the interpersonal and judgmental aspects of their jobs. As well as boosting productivity, stripping away repetitive tasks and increasing the time available to build relationships can positively transform the nature of the jobs themselves, helping to attract the best people and retain experienced staff.

Saving our cherished health and social care services.

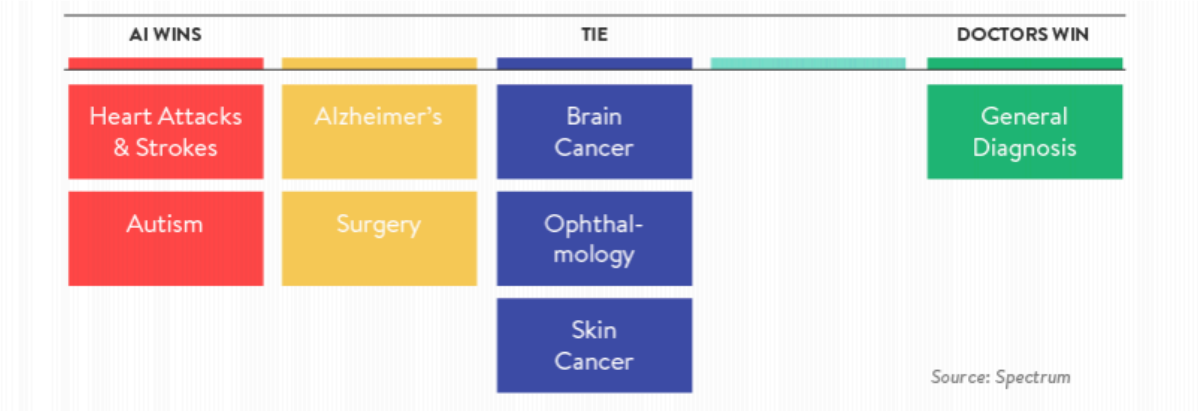
Faced with an ageing population and rising care burden, preventative actions, early diagnosis and access to the best quality care are more important than ever. Technology in the medical environment has benefitted hugely from recent advances in machine learning, with computers now able to diagnose some conditions earlier and with greater accuracy than even the best human doctors.[8]In social care, new robotics systems and intelligent assistants are playing important roles in stimulating engagement and interaction. Rather than replace doctors, surgeons, nurses and carers, these technologies work alongside them to make them better at their jobs, and give them more time to attend to the psychological and emotional needs of the people they are caring for.

Figure 3: Medical AI vs doctors [9]

7 The Gubbins of Government https://www.youtube.com/watch?v=02__3UTqXmU

8 A.I. versus M.D. https://www.newyorker.com/magazine/2017/04/03/ai-versus-md

9 AI vs Doctors https://spectrum.ieee.org/static/ai-vs-doctors



Raising educational standards through personalisation.

Mainstream education has historically been grounded in a classroom environment, with personalised tuition reserved for the few with exceptional needs and / or ability to pay. New technologies are now opening up the space for new models of teaching, decoupling traditional learning activities from the classroom and individual students' learning programmes from those of their peers. Many schools and universities have already started to incorporate a flipped classroom model, where students watch lectures at home via the internet, and spend their classroom time on problem-solving and coaching with teaching staff.[10] In the near future, new personalised learning platforms will use artificial intelligence to gauge a student's level of proficiency and tailor an individual learning plan accordingly – a level of attention that would simply not be possible for a human teacher responsible for several dozen students.

Improving policymaking itself.

The policymaking profession is stuck in a crisis of stasis. The environment that it operates in is messy and complex, and despite a long-running debate about evidence-based policymaking there are still major decisions where analysis is partial, consensus is impossible and decisions are made based on intuition or political expediency.[11] Threadbare scrutiny, unintended consequences and clumsy U-turns all then compound a broader sense that politicians

10 The flipped classroom https://en.wikipedia.org/wiki/Flipped_classroom

11 Evidence and evaluation in policymaking https://www.instituteforgovernment.org.uk/publications/evidence-and-evaluation-policy-making

are incompetent and experts overrated. One of the big contributing factors to this problem is that policy happens in a live environment, so it is very difficult routinely to base decisions on experimental evidence. New technologies are, however, beginning to open up a space for large-scale simulations of the real world, including the behaviour of individuals, groups and even entire cities.[12] This can provide policymakers with new insights into the likely impacts of the policies they are considering, along with previously unobtainable information about sensitivity to external factors.

POLITICS AND SOCIETY

Making democratic participation easier.

At a time when people's confidence in democracy is in decline (particularly amongst younger generations) and there are more and more calls on our time and attention, technology can play an important role in reinforcing engagement and participation. There is no a priori reason why the centre should cede the online space to populists; although building engagement around matters of compromise and substance is undoubtedly more difficult than promising the moon on a stick or stoking division and resentment, the basic tools to reach a wide constituency and build a movement for change are there for the taking. At a very practical level, technology can also assist with the mechanics of participation. The traditional ballot box remains superior to electronic voting machines on many dimensions, but in the margins there is real potential for technology to make things like voter registration, postal voting, getting to the polling station and the like more inclusive and straightforward.[13]

Transforming participation in civil society and charitable activity.

A vibrant third sector is an important part of a healthy, supportive and inclusive society. New technologies are transforming the ways that charities and non-profits work, enabling them to amplify their impact and reach in ways that were not previously possible, both by

12 Highly Detailed City Simulation Is the New Autonomous Taxi Dispatch https://www.technologyreview.com/s/601663/highly-detailed-city-simulation-is-the-new-autonomous-taxi-dispatch/

13 To fix voting machines, hackers tear them apart https://www.wired.com/story/voting-machine-hacks-defcon/

changing the sorts of services that they provide and how they organise to deliver them. This also extends to the way that charities engage the wider community – think online giving and text donations rather than shaking collection tins on the high street, or recruiting volunteers via social media as well as knocking on neighbours' doors. Although there are many great examples of charities and non-profits integrating new technologies, there remains vast untapped potential for third sector organisations to leverage technology for social good.

WHERE GOVERNMENTS NEED TO UP THEIR GAME

New technologies can play a remarkable role in delivering the outcomes that progressive governments care about, but they also present major challenges that front-line politicians and policymakers are largely unequipped to handle.

Human beings are hardwired to think about history and change in terms of narrow narratives and linear progress. We're far less good at making the connections between different fields, and worse still at forming good expectations in an environment of exponential change. For all of us, the easiest way to think about the future is to assume it'll be basically like the present, and the interactions between different drivers of change are often only clear with hindsight.

This mode of thinking looms large in the political and policy spheres, where today's populist politicians offer isolated solutions to problems that are inherently connected and complex, and tell far-fetched tales of a heroic struggle to hold the future at bay (or even turn the clock back to an imagined better past).

But no amount of denial can hold back progress – and nor would we want to, for advances in technology have generated huge improvements in living standards around the world and lifted billions out of poverty. The priority for forward-thinking leaders is to get ahead of the most difficult challenges new technologies are likely to present in the coming decades, and to proactively establish a policy and political environment that ensures progress serves the interests of the many and does not just benefit the few.

Given the global nature of many technology companies and platforms, and the decoupling of the internet from many aspects of geography, many of these issues also present in ways that reach beyond national borders. This adds additional layers of difficulty to an already complex environment, and invites further challenges for policymakers to overcome as questions of international relations, regional competition, transnational institutions and global governance assert themselves.

Here are some of the areas where challenges will intensify and governments need to put more effort into managing change.

ECONOMIC GROWTH AND PROSPERITY

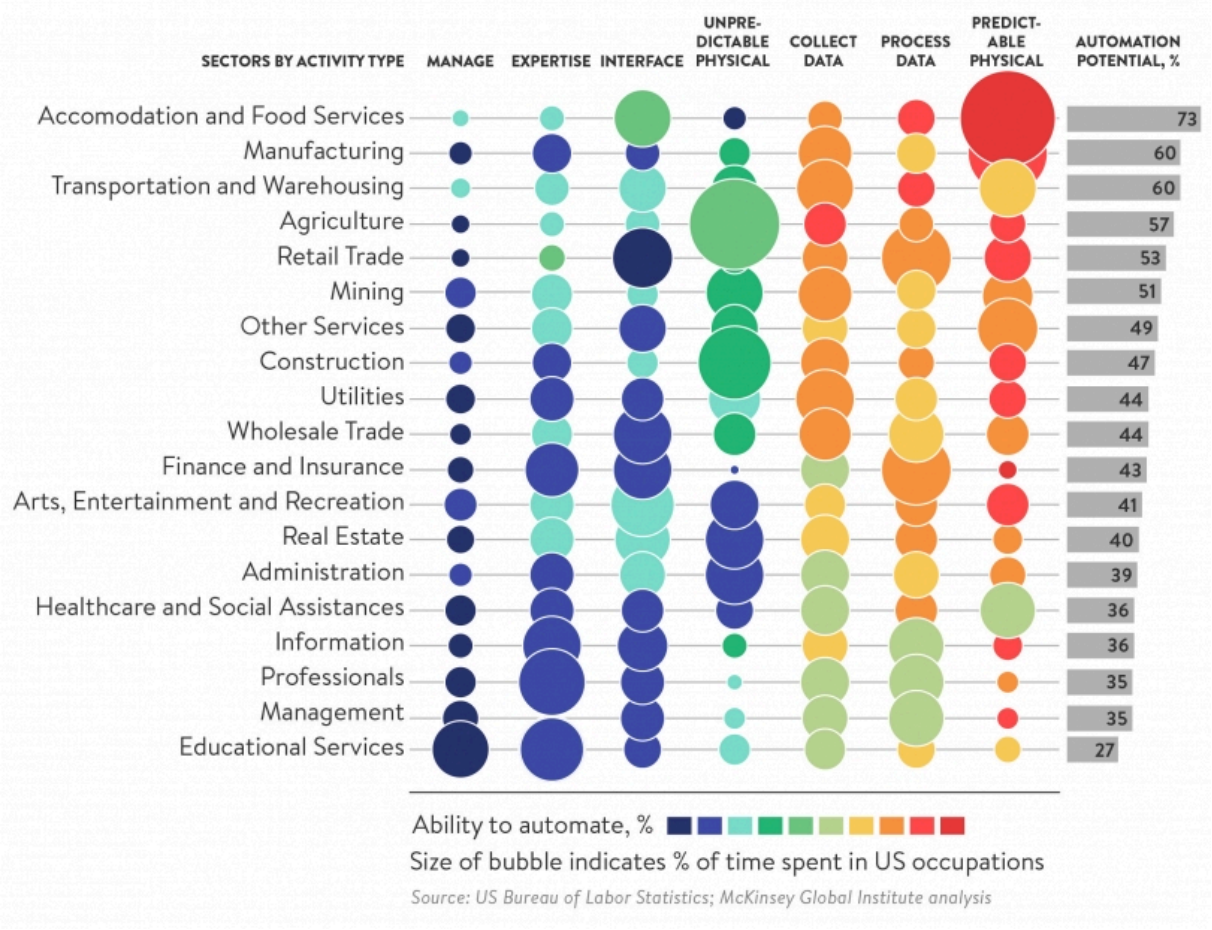
Automation and its impact on work and jobs.

Advances in computation, artificial intelligence and robotics are enabling machines to outperform humans in an increasing number of domains. For the most part it will be tasks rather than whole jobs that are susceptible to automation, but all of us can expect to be affected to some degree. The jury is still out on whether the next wave of automation will be a net destroyer of jobs – although it's easy to imagine environments populated exclusively by machines, there isn't a fixed quantity of jobs to go around, and new technologies have always created new economic opportunities and given rise to new sorts of jobs. What is certain is that a number of people – in all likelihood a very large number – will need to adapt and gain new skills (including the ability to work effectively in mixed human / machine teams, and to manage teams of machines) in order to participate fully in the new economy.[14] Change is also likely to impact unevenly across time, geography and different sectors of activity.

Figure 4: Scope for automation in different economic sectors [15]

14 Computers and the Future of Skill Demand https://www.oecd.org/edu/computers-and-the-future-of-skill-demand-9789264284395-en.htm

15 Human + machine: A new era of automation in manufacturing https://www.mckinsey.com/business-functions/operations/our-insights/human-plus-machine-a-new-era-of-automation-in-manufacturing



New business models that don't fit old legislation.

The breakthrough disruptive innovations at the core of many technology businesses are successful precisely because they don't follow established norms and business models. As a result, governments often struggle to figure out how to apply prior legislation to models that it simply wasn't conceived for. This issue has been particularly acute around the world for peer-to-peer platforms for things like digital media, ridesharing and accommodation, with overzealous regulators (often egged on by incumbent competitors) moving to impede services that deliver clear benefits for consumers. The tax system has also come under increasing strain, as technology companies that are naturally global in scope exacerbate a long-standing problem with where and how to tax corporate profits. Companies should of course behave responsibly and be regulated appropriately, but the internet has fundamentally changed the dynamics of the external environment; we will need entirely new ways to think about regulation to ensure

that innovation can flourish whilst managing the more challenging aspects of disruptive change.

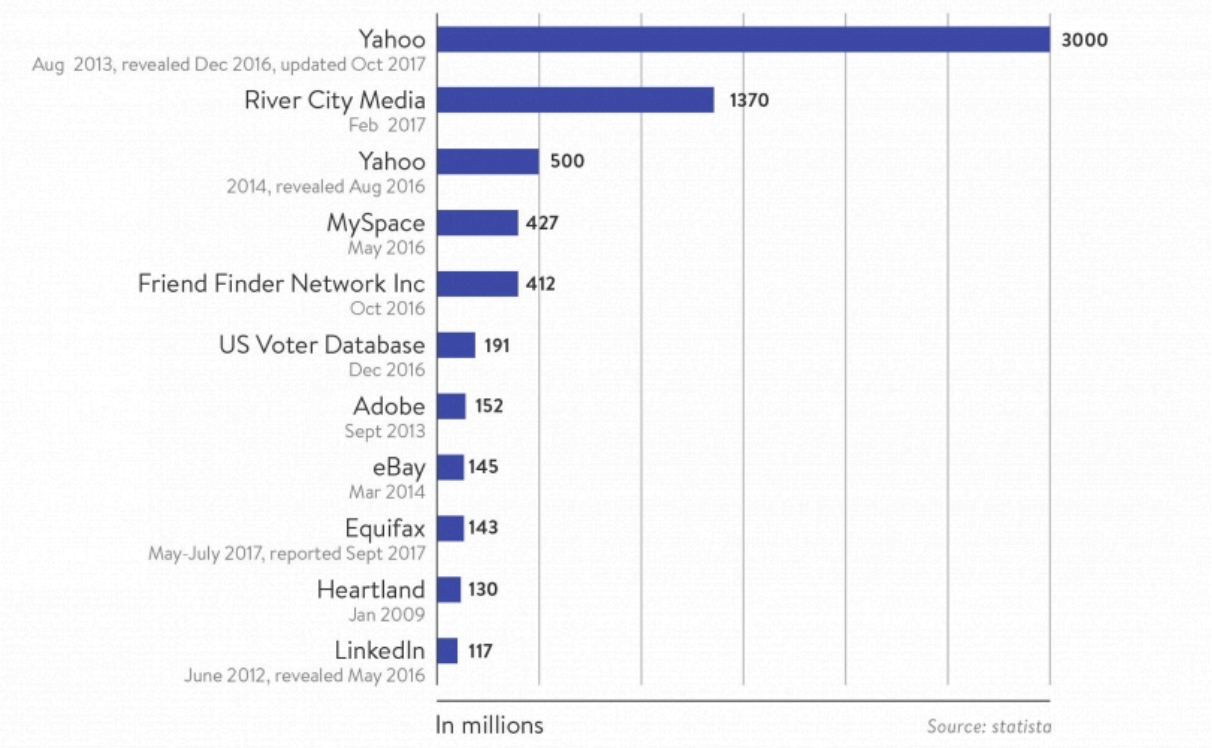
An explosion of personal data, much of it outside our control.

Artificial intelligence, and machine learning in particular, is built in part on huge quantities of data to be used as training sets. So as we live more and more of our lives online, we can expect more of our activity to be tracked and stored, by companies as well as by governments. In many cases this may be an acceptable exchange – having an algorithm parse all of your email might be a price worth paying for robust spam detection, for example. But an accumulation of personal data will also expose people to multiple points of vulnerability, and significantly complicate the question of who knows what about whom. Regulators are starting to grapple with new ways to think about data and digital rights, especially in the European context.[16]Nevertheless, much more will need to be done to ensure a just balance of power between people and the technology providers in their lives.

Figure 5: Records compromised in major data breaches [17]

16 Overview of the General Data Protection Regulation (GDPR) https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/

17 Largest online data breaches 2007-2017 https://www.statista.com/statistics/290525/cyber-crime-biggest-online-data-breaches-worldwide/



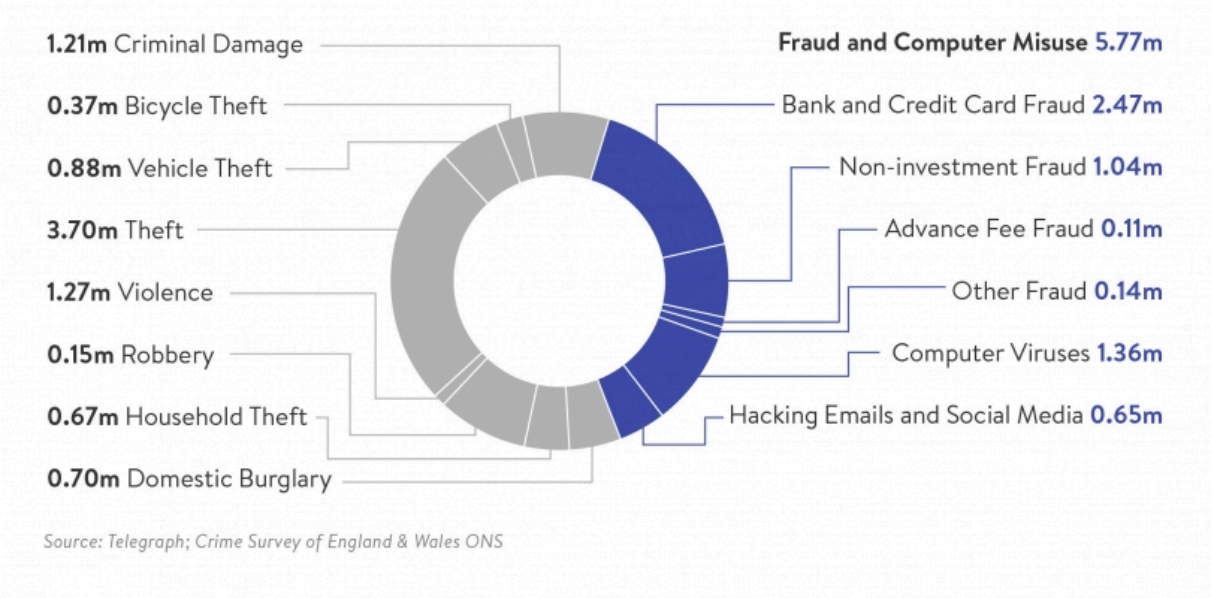
Digital technologies as a vector for crime and aggression.

Although headline crime figures have been falling in many countries, online fraud and other digital crimes are on the rise.[18]This trend is likely to continue as an ever-greater proportion of economic activity shifts online, and as we share more and more personal data in the course of our daily lives. Just as digital businesses are not subject to the same constraints as their physical cousins, the security environment is also fundamentally different. A technology like end-to-end encryption provides the foundational security that underwrites our digital economy, but it also frustrates traditional methods for surveillance. This puts policymakers in a bind – there is a strong impetus to maintain security capabilities as technology advances, but also new risks to civil liberties from bulk surveillance and backdoors. These sorts of tradeoffs often result in paralysis: politicians charged with protecting the nation feel powerless and try to shift the burden to industry to find an answer, and industry pushes back on demands that are impossible to satisfy without collateral damage. As a matter of urgency we need a more sophisticated debate about the risks, tradeoffs and precedents set

18 Cybercrime and fraud scale revealed in annual figures http://www.bbc.co.uk/news/uk-38675683

by new technologies in the security arena; this must start with a political environment where technology is better understood so that engagement can be more transparent and constructive.

Figure 6: Fraud and computer crime as a share of overall crime [19]



PUBLIC SERVICE DELIVERY

A failure to meet rapidly rising consumer expectations.

As advanced technologies melt into the background of our daily lives, we start to take many of the conveniences and user experiences for granted. A serious concern for governments should be the extent to which public services are failing to keep pace with rapidly rising expectations about the quality, speed, convenience and transparency routinely delivered by household name companies in the private sector. The comparison may not be fair, for government is charged with many responsibilities that are far more complex than those facing, say, online retailers. But that's almost beside the point: people expect public services to work, and if their experiences leave them feeling frustrated or disappointed then this poses real and significant risks to both social solidarity and the ability of public sector managers to retain the confidence of the people they are there to serve.

19 One in 10 people now victim of fraud or online offences, figures show http://www.telegraph.co.uk/news/2016/07/21/one-in-people-now-victims-of-cyber-crime/

A growing digital divide that risks exacerbating other inequalities.

Whilst the vast majority of people use the internet (and most of us take it for granted), a significant minority remain offline – either lacking the skills required to interact with digital technologies or excluded by income or access to broadband.[20] This digital exclusion imposes significant costs on those experiencing it, manifested through narrower choices, higher prices, fewer opportunities for participation and increased isolation compared to their online peers. But it also poses wider problems for society, driving another wedge between groups and increasing some people's sense of alienation from the modern world. Although this sort of exclusion is not something that the market will solve on its own, governments have mostly paid only lip service to ensuring that everyone is able to participate in the digital world. Closing the digital divide, in terms of both infrastructure and basic digital skills, should be an essential priority for anyone interested in securing a progressive future.

Figure 7: Share of people not online, by age and socio-economic group [21]

		AGE										GENDER		SOCIO-ECONOMIC/ INCOME					LOCATION/ NATION							
Media Literacy Tracker % of all adults, 2016	All UK 16+	16-24	25-34	35-44	45-54	55-64	65-74	55+	65+	75+	Male	Female	ABC1	C2DE	DE	Unemployed	Low Income	Low Income/ Children in Home	Urban	Rural	England	Scotland	Wales	N Ireland	BAME	Disability
Base	1846	234	272	313	284	270	218	743	473	255	885	961	993	853	484	46	265	56	1541	305	1172	227	223	224	129	251
Incidence of non-use of the internet	14	2	3	7	6	18	35	32	45	56	15	14	7	22	27	**	33	**	14	14	13	20	16	17	11	37

Source: Ofcom

A crisis in technology leadership and skills in the public sector.

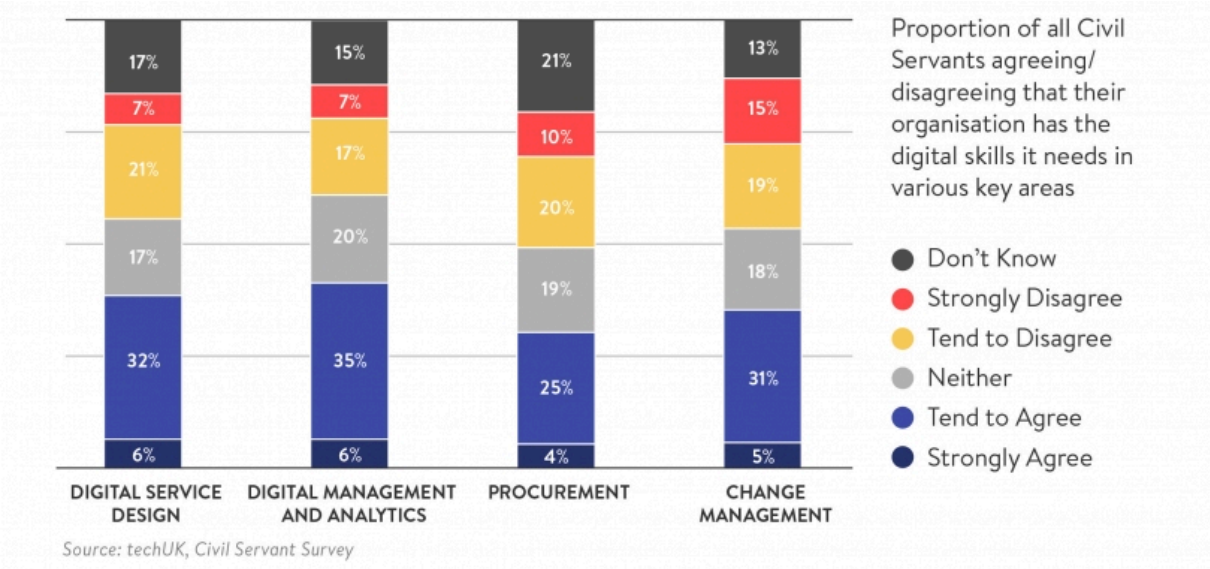
The rapid pace of technological change, and the increasing levels of abstraction and sophistication that new technologies operate at,

20 Basic Digital Skills framework https://www.thetechpartnership.com/basic-digital-skills/basic-digital-skills-framework/

21 Internet use and attitudes bulletin https://www.ofcom.org.uk/research-and-data/internet-and-on-demand-research/internet-use-and-attitudes/internet-use-and-attitudes-bulletin

has not been matched in the profile of skills and expertise of public sector leadership teams or their wider organisations. This manifests in all sorts of unacceptable ways, from public sector bodies running business processes that are stuck in the past, to policy programmes that either fail to take advantage of new technologies or are needlessly destructive of them. Although governments on both sides of the Atlantic have improved their digital capabilities in recent years, this has tended to be focused in specialist teams that have often struggled to maintain political momentum, and more than half of civil servants believe a lack of skills remains a barrier to technology adoption.[22] [23] No politician would boast that they don't understand basic economics or the concerns of their constituents, but an alarming number are all too eager to wash their hands of the responsibility of being informed and thoughtful when it comes to modern technology. In a world where technology pervades every aspect of our lives, this simply isn't good enough.

Figure 8: Digital skills missing in the Civil Service [24]



22 Improving the management of digital government https://www.instituteforgovernment.org.uk/publications/improving-management-digital-government

23 Digital skills and sharing key to public service transformation https://www.techuk.org/civil-servants-survey/main_finding

24 Digital skills and sharing key to public service transformation https://www.techuk.org/civil-servants-survey/main_findings

Super-platforms with significant power in the wider world.

A handful of big technology companies loom large in our everyday lives, and most of us are at least slightly uneasy about the hold they have over us. Scale and concentration are not necessarily problematic in and of themselves – there is a strong argument that the fundamentals of the internet favour highly aggregated businesses. And unlike the old monopolies that were harmful to and hated by consumers, digital platforms have widened choice, lowered prices and provided the scaffolding for far-reaching advances across our economy. But the significant and irreplicable amount of data that some of these companies have accumulated should give us pause, as should the accumulation of wealth that they represent and their willingness to use this to acquire adjacent companies before they grow into substantive competitors. Even if platform aggregation is both inevitable and broadly positive, the political challenges it poses cannot be ignored and some form of check on corporate power will be a necessary condition for a settlement that has broad-based support. What is certain is that existing antitrust and competition policy was never conceived with the dynamics of digital platforms in mind, and trying to force these new industries into old policy frameworks is not a sustainable solution.

Decision-making with human beings out of the loop.

Highly specialised algorithms are already in widespread use, and perform tasks at a speed and scale that human beings would simply not be able to manage.[25]We are used to the idea that these systems can sometimes go wrong – think a flash-crash caused by high-frequency trading systems, or the self-driving car that failed to distinguish between a white truck and a bright sky, with fatal consequences.[26]But the next class of challenges is altogether more fundamental: the risk that we inadvertently bake in systemic biases with profound social and economic consequences, or worse still the possibility that these technologies are used to persecute certain groups or prosecute a negative agenda. To navigate this world, and

25 AlphaGo Zero: Learning from scratch https://deepmind.com/blog/alphago-zero-learning-scratch/

26 After probing Tesla's deadly crash, Feds say yay to self-driving https://www.wired.com/2017/01/probing-teslas-deadly-crash-feds-say-yay-self-driving/

ensure that power is wielded responsibly and for the greater good, we will need new ways to think about the relationship between algorithms and the people whose lives are affected by their outputs.

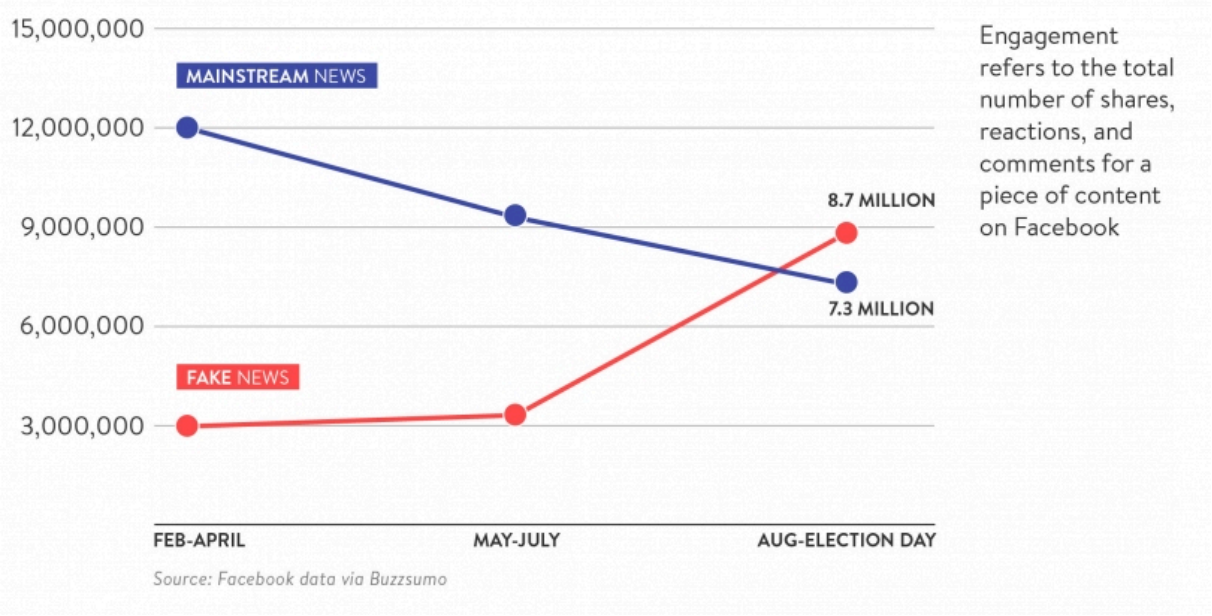
The (sometimes sorry) state of quasi-public online spaces.

We spend an increasing amount of our time in shared online spaces, and the norms and values that govern these environments are still in a state of flux. We know that these environments can be hugely liberating and enlightening, but we also know that they have been significant enablers of a polarisation and toxification of the political environment.[27] Most of these online spaces are freely accessible but ultimately governed by the technology companies that operate the underlying platforms. There has already been a marked shift recently from companies asserting neutrality to taking active steps to remove objectionable content. Nevertheless, given the intimate reach that these spaces have into such a large number of peoples' lives, questions of governance, freedom and rights are legitimate and necessary territory for governments to take a view on.

Figure 9: Facebook engagement for false stories published by hoax and hyperpartisan sites vs those published by major news websites during the US presidential election [28]

27 Your filter bubble is destroying democracy https://www.wired.com/2016/11/filter-bubble-destroying-democracy/

28 This Analysis Shows How Viral Fake Election News Stories Outperformed Real News On Facebook https://www.buzzfeed.com/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook



The illusion of participation via digital channels.

Technology has opened up new ways to engage supporters and participants, and many of these have been transformative for charities, campaigning organisations and political movements. But despite a surge in headline participation in many areas, there remain serious questions about the nature and substance of peoples' interactions. What value should we attach to the signatures on a petition if people only read the headline, clicked the button and got on with their day, feeling like they'd done their part? More fundamentally, if the dynamics of social media mean that campaigns are selected and prioritised on the basis of virality, then questions of principle and justice may take a back seat to appeals to virtue signalling and group identity – populism writ large under the cloak of effortless activism.

NEW SOLUTIONS, FIT FOR THE FUTURE

To realise the full potential of new technologies to help government deliver, and to address the significant challenges that new technologies present, will require a bold new policy agenda that is fit for the digital age.

Although we approach this undertaking from a progressive tradition, the primary point of divergence is not between left and right. On both sides of today's politics there are those who are eager to lean on the politics of grievance to sandbag the status quo. In sharp contrast, the agenda that is required to secure the widespread enjoyment of the benefits of globalisation and new technologies is one that leans unashamedly toward the future.

The proposals outlined below start to sketch out what the foundations of such a programme might look and feel like. In many cases, building a set of policies that is fit for the future requires us to be open minded about what government does and the responsibilities we have to one another. Doing this is not always easy, but it is the only realistic response to an operating environment that is fundamentally different from the one that faced previous generations. For those that believe the role of politicians is to lead the public debate and not just to pander to popular opinion, now is a pivotal time to revitalise our agenda.

Here are some of the sorts of forward-thinking policies that can help to renew the centre and make new technologies work for the many. All of the proposals we talk about here are intended to provoke a conversation; they at an early stage, necessarily painted in broad strokes, and in some cases there may well turn out to be better ways to tackle the same problem. Nevertheless, they indicate the level of imagination and ambition required to properly engage with the opportunities and challenges that new technologies present. Further work to develop, test and refine these ideas will form the core of our work programme over the months ahead, and we welcome an open debate around them to help arrive at the best solutions.

ECONOMIC GROWTH AND PROSPERITY

Fund the up-front costs of education or training for anyone that needs it, at any point in their life, with greater repayments from those who go on to earn the most.

Government cannot bring back jobs that belong in the past, but it can ensure that everyone gets the support they need to find their place in the economy of the future. And as software and automation eat more and more of the tasks associated with our jobs, and create entirely new ones as well, adaptability and opportunities to gain new skills will be critical factors in determining who is able to participate fully in the labour market. Against this backdrop, a model where training and education is weighted very heavily in the first two decades of life will not be sufficient. Instead, people will need access to substantive opportunities to develop their skills and capabilities, or even reset themselves for entirely new careers, at multiple times through the course of their working lives.

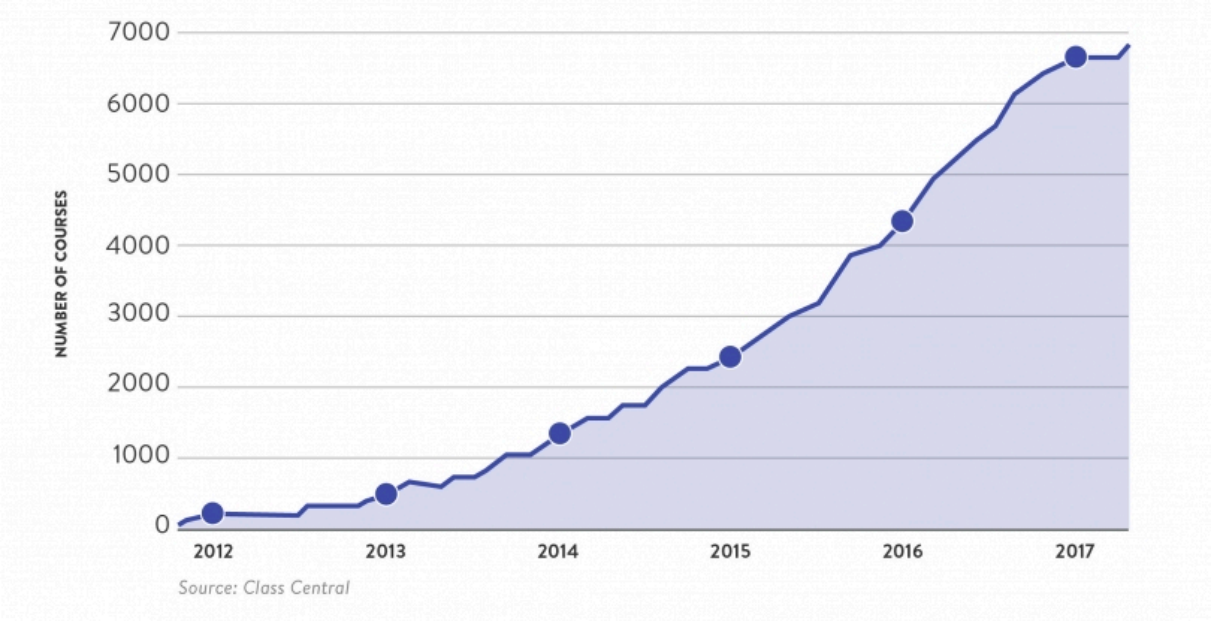
It would not be realistic for governments to provide open-ended funding or entirely direct, public provision for a scheme on this sort of scale, but the state does have an important role to play in underwriting access and shaping a broader and more diverse market in lifelong education. In terms of funding, the cost should be shared between individual participants and the public purse (as there are both private and social returns from getting people into better jobs). Having said that, the state has a clear role in helping to cover the upfront costs, so that people's incomes or savings are not a barrier to reskilling.

In a rapidly changing external environment, structuring repayments in a way that would build in a degree of hedging against the different ways that the world of work could change in the future, with higher contributions coming from those whose choices turn out to be the most productive further down the line. Opting to recover costs in this way would also make it easier to cope with people returning to education more frequently and for differing lengths of time, whilst avoiding the psychological downsides of individuals building up a stock of personalised debt as a result of taking repeated loans.

In terms of the options available to people, we need to take the existing debate around the merits of shorter courses and vocational

and technical training to the next level: learning opportunities and training provision that is more explicitly focused on both basic digital skills and the more advanced capabilities needed in the future economy, more closely tailored to individual needs and aptitudes, and more strongly geared toward getting people into good work, including through employer training and apprenticeships. In a world where people access education and training throughout their lives, we will also need many more options that can fit around a wider range of life stages and commitments, that blend online and offline learning, and that are easier to combine in different ways and over differing lengths of time.

Figure 10: Growth of massive, open, online courses [29]



Fund a national fibre-to-the-premises and 4G / 5G network, to equip the entire country with the basic infrastructure required for the 21st century.

With long-term interest rates at historic lows, government should be looking for productive opportunities for capital investment. Access to a fast internet connection remains one of the biggest disparities between urban and rural areas, and closing this by finally delivering a network that reaches 100% of the population would facilitate a significant increase in access to opportunity for all, and

29 By The Numbers: MOOCS in 2016 https://www.class-central.com/report/mooc-stats-2016/

in particular for people living outside our big town and city centres. Successive governments have toyed with some form of minimum standard for broadband access, but the level of ambition has been underwhelming and aspirations have often fallen short on scope (failing to reach enough people), quality (failing to keep up with changing patterns of use), and speed of delivery (failing to get infrastructure built quickly enough).[30]

To get past this, the same major projects / public development corporation approach that governments adopt for things like high-speed rail infrastructure should be co-opted to build out our national high-speed internet infrastructure, with private companies then competing to provide services over the top. As there are significant challenges associated with extending a full-fibre network to remote premises, a pragmatic solution is likely to involve both aggressive investment to lay fibre and a bold approach to backhaul and spectrum allocation to enable next-generation wireless technologies to fill the gaps. This sort of blend on the infrastructure side would mirror developments for businesses and consumers, where it is increasingly common for devices to combine whatever connectivity is available, and to hand off seamlessly between different carriers as required. Government will also need to take a more robust stance when it comes to things like planning and access to land, compensating people fairly for disruption but not letting this hold up the timetable for rapid rollout.

Fast, reliable internet access wherever you are will go a long way toward increasing equality of opportunity, particularly in the realms of education (where an incredible quantity and quality of learning materials and experiences are now available online) and work (where an increasing number of tasks and jobs can be done remotely or on the move). Reliable, world-leading universal fixed and wireless internet access would also enable a range of dependent technologies that could be game-changing for people living outside of our big cities, for example filling the gap left by deep cuts in rural bus networks with self-driving cars, avoiding lengthy round-trips for routine medical appointments, or connecting remote schools to world-renowned teachers.

Figure 11: Penetration of fibre-to-the-premises services [31]

30 Lords water down push for minimum broadband speed https://www.ft.com/content/23618b9e-2903-11e7-bc4b-5528796fe35c

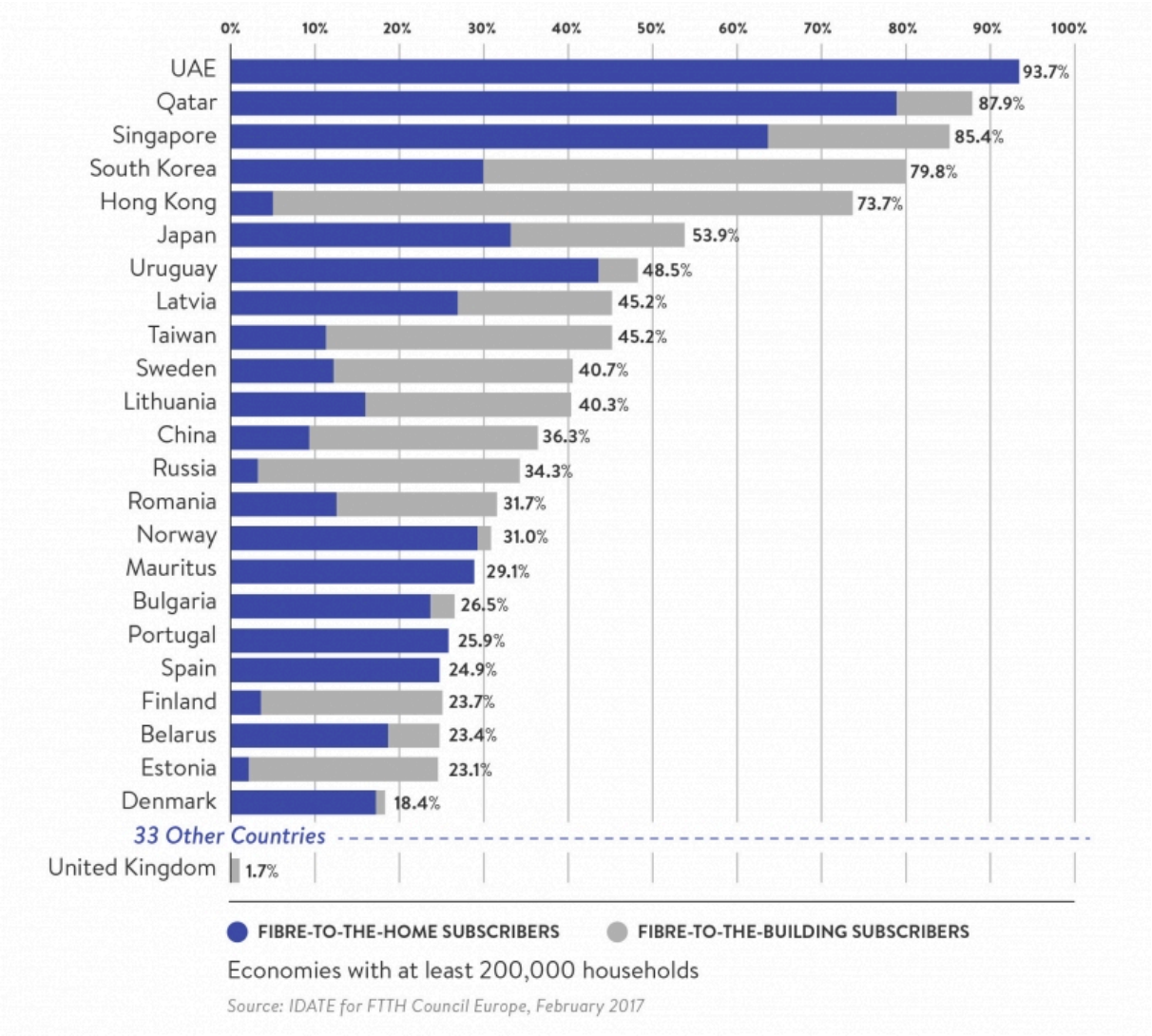


Figure 12: Fixed and mobile broadband coverage in the UK [32]

31 Global FTTH ranking, end-September 2016 http://ftthcouncil.eu/resources/resources/?media_id=3153

32 Connected Nations 2016 https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2016

FIXED BROADBAND (UK)	2016
Superfast coverage, premises	89% 25.5 Million
Full fibre coverage, premises	1.7% 498,000
Download speed 10Mbit/s or less, premises	5% 1.4 Million
Average download speed, Mbit/s	37
Average upload speed, Mbit/s	4

FIXED BROADBAND (UK)		2016
Voice	Indoor premises	89%
	Outdoor geographic area	66%
	Outdoor premises	97%
Data	Indoor premises	80%
	Outdoor geographic area	52%
	Outdoor premises	93%
4G	Indoor premises	72%
	Outdoor geographic area	40%
	Outdoor premises	86%

Source: Ofcom

Reduce congestion and pollution by making public transport, active transport and ridesharing the best ways to get around city centres.

Our big towns and cities are being suffocated by traffic; congestion costs businesses billions in lost productivity, parking and car lanes take up a significant proportion of our urban space, local air pollution is killing tens of thousands of people a year – and that's before we get onto the climate change impacts associated with burning fossil fuels.[33] The explosion in private car use is understandable – before things got to their current state, cars were a reliable and convenient way to get around. And now that cars are ubiquitous it often feels like we're stuck with them, with few good alternatives and in cities that were never designed to cope with anything like this volume of traffic.

New technologies, however, are giving old solutions like mass transit and carpooling a new lease of life. Mobile internet access and smartphones are the key: journey planning and ticketing apps can make it easy to decide on and pay for trips that involve switching from one mode of transport to another, car and bike sharing apps make it possible to unlock and use a vehicle only when you need it, and ridesharing apps make carpooling a practical reality by building a trust network between strangers. Taken together, this shift toward what is sometimes called mobility as a service has the potential to beat car ownership on the main dimensions that matter: convenience, reliability and affordability. [34]

33 See just how much of a city's land is used for parking spaces https://www.fastcompany.com/40441392/see-just-how-much-of-a-citys-land-is-used-for-parking-spaces

But freeing up our city centres isn't as simple as building an app. Government has a critical role to play, both in providing the basic infrastructure for the transport network to run on, and in setting the regulatory framework in which mobility providers operate. Government should invest aggressively in public transport infrastructure, give greater powers to regional transport bodies to direct local services, and make using public transport seamless by mandating things like contactless payments and pay-as-you-go capping nationwide.

Alongside this, government should write a new set of regulations to accelerate the deployment of ridesharing, electric and autonomous vehicles, and renovate our streets to support and encourage more active transport. And through all of this, special attention should be paid to ensuring accessibility for people with additional mobility needs, including those with disabilities, older people and those travelling with children.

Under the right circumstances, a combination of high capacity mass transit and shared, self-driving cars could make 9 out of 10 conventional cars redundant.[35] Eliminating that volume of vehicles from our urban environments, without impacting people's ability to get around, would clear the way for a radical reimaging of our cities and a major improvement in quality of life for their residents.

Double down on an aggressive strategy to accelerate the broad adoption of new technologies across the economy.

The application of new technologies, including automation and artificial intelligence, is critical to our future prosperity, and securing the widespread enjoyment of their benefits is best served by driving for revolution rather than evolution. Building on existing steps toward a modern industrial strategy and sector deals, government should play a much more active role in delivering the operating environment and incentives required for businesses to modernise their operations. As well as the essential foundations laid

34 Shaping the relationship between public transport and innovative mobility https://www.itf-oecd.org/shaping-relationship-between-public-transport-and-innovative-mobility

35 Urban mobility system upgrade https://www.itf-oecd.org/urban-mobility-system-upgrade-1

by the proposals above on skills and internet infrastructure, this would also include introducing strong financial incentives for businesses of all sorts to invest in new technologies, and using government's convening and purchasing power more firmly to drive the adoption of digital processes and the commercialisation of new technologies.

It would also involve a strong push on data, which is essential to the modern economy. Some progress has already been made in terms of opening up data and fostering an ecosystem of economic activity around it. Looking ahead, further steps should be taken to develop a sustainable competitive advantage in data, building not just the capabilities but also the regulatory frameworks necessary to become the jurisdiction of choice for organisations – both public and private – looking to store and process data. There is also scope for regulatory sandboxes – supervised environments that allow new products and services to be tested in a live environment – to accelerate the practical application of large-scale, data-driven technologies of the future – for example hosting the first city-scale deployment of self-driving cars, or a radical new approach to the use of public health data as an input for the next generation of medical AI.

Through all of this there should be a strong place-based component, as the impact of technological change will be felt unevenly across time, space and economic sectors. For governments that care about managing the consequences of change – both maximising its benefits and mitigating any adverse effects – a granular understanding of what is happening and where will be essential, so that policies can be designed to meet local conditions and be implemented in good time. This would mark a departure from some aspects of traditional policy thinking, but relying solely on market forces to rebalance the economy may carry unacceptable distributional or transitional costs, and other tools like welfare transfers or boosting immigration may not be politically feasible at the scale required.

Shift the tax base, to help people make more informed choices and to fund tax cuts for people on lower incomes.

New technologies make it easier to quantify and verify all sorts of data, from how polluting an activity is to how much vacant land is

worth. Armed with this information, governments have new options to use the tax system to improve incentives, to help people make more informed choices, and to design new taxes that do a better job of capturing economic rents. This opens up the scope for real advances in tax policy, which for decades has struggled with the best way to raise revenues whilst minimising economic distortions and disincentives to work, save or invest. Shifting the tax base turns this problem on its head, collecting revenues and correcting market failures at the same time.

Prime candidates to consider in light of new technologies include: carbon (where distributed ledger technologies could be used to provide verifiable information about a product's lifetime greenhouse gas contribution at point of sale, which could make higher prices for carbon-intensive products more palatable), congestion (where ubiquitous mobile devices make it possible to imagine dynamic pricing for driving on congested roads, with a corresponding reduction in other motoring taxes), land values (where new computational techniques and big data make it possible to estimate the undeveloped value of plots of land), and sugar (where advances in medical research can help us better estimate the long-term health costs associated with excessive consumption, in order to nudge people to make healthier choices). There may also be significant opportunities for new technologies to assist with tax compliance and enforcement. This spans a range of activities, from automating routine tax collection processes so that less time and effort is spent correcting mistakes and more people pay the right amount of tax first time, to using machine learning and other techniques to prioritise compliance investigations and combat sophisticated tax evasion activities.

Across all of these fronts, where new sources of revenue can be raised by taxing harmful activities or closing the tax gap, there are corresponding opportunities to fund tax cuts for families on lower incomes, and to abolish other taxes that are administrative costly or especially economically harmful.

PUBLIC SERVICE DELIVERY

Give every citizen a personal account manager for public services and government interactions.

Dealing with government can be extremely frustrating, particularly for complex interactions or processes that take a long time to complete. Whilst many public sector tasks should be in scope for automation, the touch point with citizens itself is due a major upgrade. Part of this is about improving the user interface and user experience for citizens dealing with government, something that has been reflected around the world in recent years with a wave of modernisations and streamlining of government websites and online services. Significant improvements on this front have enabled many more people to transact with government digitally, which in turn has contributed to major cost savings compared to old-fashioned paper processes. But even the best user experiences can still leave some people struggling to figure out complex underlying processes, and in other arenas it remains the case that well-informed people with the sharpest elbows are still the ones that secure an outsized share of public services.

Solving the root causes of these problems may well mean rebuilding entire service architectures from the ground up. Doing this should not be ruled out, but will be an unavoidably complex and costly process, and not something that many governments have the appetite to engage in across the board. In the meantime, as a pragmatic step forward, governments should immediately give every citizen a personal account manager. Just as the staff in many retail stores use the same digital platform as customers that are buying online, these account managers would be expert in navigating government websites and getting things done on behalf of the citizens they serve – anything from registering a child for school or arranging care for an elderly relative, through to accessing help to find a job or applying for a council tax discount. The purpose of this move would be twofold: to directly shore up public satisfaction with their interactions with government, and also to ensure that no one is disadvantaged by having to navigate complexity or failing to realise what they are entitled to. Staffing for these roles could be ramped up as the application of new technologies in other parts of the public sector releases people from routine and administrative jobs, therefore helping to ease the transition as automation of routine tasks becomes commonplace.

Introduce secure digital identities for all citizens.

Asserting one's identity and / or credentials is an important element in many interactions, including those involving public services and public sector organisations. There are very real objections to centralised government identity databases and registers, particularly in Europe where historic concerns about surveillance and state overreach are still very salient. Until now, the alternatives have all carried significant disadvantages: both physical credentials (like driving licences and birth certificates) and digital identities (both federated and user-centric) have all exhibited inherent or de-facto centralisation, been prone to fraud and error, and tended to overshare information.

New technologies, albeit in their infancy, appear to hold of the prospect of addressing many of these concerns, by placing citizens in control of their identity whilst retaining the ability to make and verify claims with a high degree of confidence. This sort of approach, broadly characterised as self-sovereign identity, binds together individuals with trusted third parties who attest cryptographically secured claims about them.[36] These claims would be held by the individual in a private digital wallet, most likely stored securely on their smartphone. One important practical upside to this approach is that it would enable people to assert the claims that matter in a particular circumstance (e.g. over the age of 18, European citizenship, etc.) whilst avoiding unnecessary oversharing (e.g. full date of birth, full home address) and without having to build a giant central database or make it mandatory to carry ID.

In our context, this could form the foundation of a system that enabled people to access only the public services to which they are entitled, instilling greater confidence that the system is not being abused. In particular, questions about who is in the country and what they are doing have a heightened sensitivity post-Brexit and post-Trump. Whilst immigration remains a hugely positive force, concerns about peoples' sense of control must be taken seriously in order to move the debate forward, and technology could have an important role to play in achieving this.

Replace paper licences and permits with secure, digital permissions.

36 A self-sovereign identity architecture https://github.com/ymmah/ID2020/blob/master/topics-and-advance-readings/a-self-sovereign-identity-architecture.pdf

An important function of government is to issue licences and permits, usually for activities that have entry requirements (e.g. selling alcohol, running a betting shop) or where availability is otherwise restricted (e.g. street trading, digging up roads). Although this information is technically in the public domain, in a world of patchy government websites and paper certificates it can be time-consuming to obtain and difficult to verify. New distributed ledger technologies make it possible for a permissioned set of authorities to store this information in a way that is both easy for the public to query and difficult for third parties to tamper with.[37] Taking advantage of this would make it much easier to verify that a licence or permit is genuine, and to ensure that activities cease when a licence or permit expires or is revoked.

As government moves down this road, it will be important to resist the temptation to apply new digital ledger technologies to situations that they are not suitable for, or where there is no clear user need. In particular, government has a special responsibility to handle edge cases that may be very hard to reconcile with immutable public ledgers, for example putting someone safely into witness protection in the presence of an immutable ledger of births and deaths. Similarly, proposals to track welfare payments on a semi-private immutable ledger, and possibly even using smart contracts to constrain how they are spent, look like an unacceptable degree of surveillance and a recipe for lasting stigma.[38]

Nevertheless, the case remains for further exploration of the use of distributed ledger technology for some types of official information that is in the public domain but slow and costly to obtain and verify.

Allowing permissioned authorities to publish official licences and permits to a publicly readable ledger could potentially be done in parallel with the adoption of a self-sovereign identity system as described earlier. The two are complementary: most claims will be

37 Blockchains: How they work and why they'll change the world https://spectrum.ieee.org/computing/networks/blockchains-how-they-work-and-why-theyll-change-the-world

38 Use of bitcoin tech to pay UK benefits sparks concerns https://www.ft.com/content/33d5b3fc-4767-11e6-b387-64ab0a67014c

held privately by individuals, but others are a matter of public record and should be accessible as such.

Build a new Department for Digital and Technology from the ground up.

This should be headed by a Secretary of State, sitting at the Cabinet table and taking a strategic view across government of the way that new technologies are reshaping the economy and society, and devising and implementing policy solutions as a matter of national priority. Experience shows that a heavyweight political sponsor is essential for driving change and maintaining momentum, particularly when significant external forces and internal transformation are in play. Such a move would represent much more than just elevating a concern for technology to an appropriate position in the political hierarchy - it would also be an opportunity to build an entirely new approach to the machinery of government, fit for the internet age. This would of course extend to the technologies such an organisation would make use of, but it goes deeper: the business model, culture and processes should all be based on the best aspects of the approach that one would take to building a world-class start-up, and act as an exemplar and proof of concept for future change and renewal across the public sector.[39] [40]

Establish an independent Office for Policy Simulation.

This would be staffed by experts in computer science, analysis and complex simulations, and provide a sandboxed environment for policymakers to explore the likely impact of different decisions. Aspects of this would be similar in philosophy to the Office for Budget Responsibility, the body that provides independent analysis of the public finances – in particular an arms-length setup, transparency over methods and the ability to bring in outside experts.[41] It would, however, be much more hands-on in terms of helping policymakers to test, explore and validate the advice that

39 Digital by @tomskitomski https://twitter.com/tomskitomski/status/880099461132845056

40 It's the business model, stupid – three steps to transform UK public services http://www.computerweekly.com/opinion/Its-the-business-model-stupid-three-steps-to-transform-UK-public-services

41 Office for Budget Responsibility http://budgetresponsibility.org.uk/topics/international-engagement/

they give to Ministers. In the run-up to a general election the same service should be made available to all major political parties.

POLITICS AND SOCIETY

Place new public interest obligations on big technology platforms.

Just as policymakers think differently about small banks and systemically important financial institutions, we ought to think differently about systemically important technology platforms that have an outsized impact on our economy and public life. Although it is tempting to think about these companies in the same way that we do for natural monopolies and public utilities due to their sheer size, this is unlikely to be the right analytical framework. As described earlier in this paper, the internet has resulted in a fundamental shift in the dynamics of many industries. Broadly speaking, in the old world, transaction and discovery costs encouraged companies that were competing for customers to integrate supply and distribution – think newspapers employing journalists, or hotel brands owning rooms. In the new world, super-platforms leverage the internet to integrate distribution with customers via the user experience – think social networks or peer-to-peer accommodation – and modularise supply instead.[42]When done effectively this can be an almost unstoppable flywheel: having more customers on your platform gives you a stronger prospect to win suppliers, and having more supply makes your platform more attractive to customers.

This has two important implications. Firstly, markets where these sorts of winner-takes-all dynamics play out are very likely to tend toward a small number of large platforms that capture large economic returns. Second, in the process they typically generate significant benefits for participants – a better user experience, more choice and lower prices for consumers, and new business opportunities, fewer overheads and larger addressable markets for suppliers.

So rather than seek to force these businesses into old regulatory frameworks, or to try to break them apart because we don't have any other tools at our disposal, we need a new approach that

42 Defining aggregators https://stratechery.com/2017/defining-aggregators/

recognises the reality of winner-takes-all digital markets and asks how best to harness the innovation that powers them for the greater good. This might include new conventions on acquisitions and on fair access to platforms and data (for both suppliers and end users), stronger requirements to design products and services for inclusion and equitable outcomes, and expectations that they will make meaningful, global contributions in support of basic human rights and public goods. There should also be a robust discussion about ensuring that companies in these privileged positions of power design for democratic health; whilst direct political oversight is fraught with problems given the authoritarian nature of many of the regimes that global companies operate under, increased transparency around how decisions are made, what steps are being taken to combat abuse and how political actors are using digital platforms to further their own objectives will be important factors in upholding the integrity of liberal democratic societies.

Set up new institutions to support and steer artificial intelligence.

Automation and machine learning will be transformative for all parts of the economy, but there are significant opportunities in developing these technologies as well as in deploying them. Government has a unique position from which to bring together world-class researchers, commercial partners and the large datasets that machine learning platforms rely on. Critically, this is more than just an academic exercise: more PhDs in artificial intelligence and related disciplines are welcome, but we need product managers, user experience designers, ethics experts and more to ensure that technologies can be commercialised effectively and to high standards. Government must also be responsible for enforcing new checks to ensure that decisions made by algorithms are free from bias and unfair discrimination. It will never be practical to inspect the source code and training set for every algorithm or AI system, but governments can and should work with the private sector to develop better standards for summarising the decisions that these systems make, and a cadence for reviewing these for indicators of potential concern.

Make local government more responsive and dynamic, by better aligning decisions and accountability.

Our current systems of regional and local government are designed for the past, but as the priorities of the state change, it makes sense to rethink the structures we use to deliberate and to deliver them. Many functions that currently sit at different levels of government, which are often fragmented, would be located at quite differently if we were starting over. In many cases, big strategic decisions about things like transport, infrastructure, healthcare and the like could be rolled up and handled by public bodies at the city-region level, such as Transport for London, to improve coordination and take advantage of economies of scale. This would also be an important step to reinforce many of the other proposals in this paper, from a new approach to fibre infrastructure or urban mobility, to stronger place-based economic policies or education provision. Other decisions, for example to do with neighbourhood amenities or community groups, could be better handled at the local or neighbourhood level, to free them from bureaucracy and keep responsibility for decisions close to the people they affect. Again this would help to shore up engagement and civic participation, and help people feel a more direct connection to local decisions that affect them directly. New technologies make both sorts of transition possible, and also mean that hyperlocal bodies in particular no longer need to carry the large fixed costs that traditional councils are saddled with. Instead, they could be largely virtual – and in many cases the right approach might well be to build out from an existing social network or digital platform.

NEXT STEPS

This paper has provided a broad sweep of the technology landscape as it should be seen by politicians and policymakers: both alive with opportunities for governments to build a more prosperous and just future, and inseparable from significant policy challenges that are not amenable to yesterday's remedies. Governments have a responsibility to embrace the opportunities and tackle the challenges that new technologies bring, and to act as the stewards of change so that progress can flourish alongside benefits that accrue widely and fairly.

Dialogue will be essential to this undertaking, especially between leaders in the worlds of technology and politics. Those developing world-changing technologies have a responsibility to pay attention to the social impact of their creations, just as those who seek to govern have a responsibility to engage thoughtfully and with an open mind when new technologies challenge their assumptions.

In the months ahead we will be developing an ambitious programme of work to produce the strategies that global leaders will need to navigate this new environment, backed by robust evidence and analysis, and situated in a broader vision of optimism about the future.

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A world infused with new technologies demands courageous, imaginative policy solutions that will both harness technology's tremendous potential for good and mitigate the displacement effects of rapid change. This is one of the greatest policy challenges of our generation, and one of the biggest gaps in the prospectus across the political spectrum.

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