A Progressive Approach to Digital Tech

TAKING CHARGE OF EUROPE'S DIGITAL FUTURE

FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES
FONDATION EUROPÉENNE D'ÉTUDES PROGRESSISTES

A FEPS SAMAK REPORT

SAMAK

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A Progressive Approach to Digital Tech

Digital issues are rising on the political agenda everywhere: locally, nationally, and internationally.

Whether it is the power of online platforms, the impact of technologies such as AI and autonomous driving, or ‘fake news’.

As digital technology permeates our everyday life as citizens, workers, consumers and voters – for good and bad – we can no longer treat digitalisation as a separate, technical or inevitable matter.

Instead, the task at hand for Europe is to set out its own path for the digital transition. This requires a positive vision, and collective action.

Since technology is not neutral but embodies certain values, it matters who develops, controls and manages our digital infrastructure.

To make digitalisation work for a fair and green society, progressives must rise to the occasion.

It is time to shape Europe’s digital future.

IN A NUTSHELL

TOWARDS A EUROPEAN DIGITAL MODEL

What should our digital future look like? We sketch a number of policy ideas that together may outline a European Digital Model. To close in on this, we first discuss the threats and opportunities of how digital tech is presently put to use. And we investigate the story of the digital transition so far, leading up to today's online platforms, AI and emerging Internet of Things.

Writing from a progressive perspective, this is the political essence:

Digitalisation affects all walks of life, society and politics. Online platforms and automated systems already influence how we communicate, how we do business, and how we understand the world around us.

Let's not be naïve. The US and China invest heavily to dominate critical digital infrastructures, and their tech firms steadily increase their influence over our culture, public debate, economy and the way we learn.

Progressives must take charge. To limit to the marketisation of online life, and to put forward digital policies that promote democracy, transparency and decency.

Green transition and equality. A green and just Europe should be the guiding light for our digital future. Digital tech must reduce our carbon footprint and improve the quality of public services and jobs.

To get there, we need a European Digital Model. Europe must decide its own digital path. Citizens' genuine needs and participation must take centre stage. As Europeans we cannot outsource this vital part of our lives to commercial and security interests from other continents.

A progressive European Digital Model should:

1. **Restrict concentration.** The digital giants must be effectively regulated and taxed to reduce their political and market power. Open standards and interoperability will create room for alternatives. When platforms have the power to regulate, there must be accountability.
2. **Put people first.** Technology is most likely to benefit workers, citizens and communities when they have a voice in its development and use. Citizens should control their data; workers should have a say in workplace automation. Cities must govern digitalisation transparently in the interests of citizens and local businesses and with their active participation.
3. **Strengthen public governance.** Authorities must increase capacity and competence, as developers of technology, as buyers of digital services, and as rule-makers. They should invest in public interest technology and digital infrastructure, protect citizens' basic rights and retain European autonomy.

PART ONE

WHAT'S THIS DIGITAL ALL ABOUT?

A BRIEF POLITICAL HISTORY OF DIGITALISATION

Techno-utopianism

Many expected the digital transition, and especially the Internet, to start off a new era of participation, democracy, and economic well-being. Yet, in 2020, having just celebrated the 30th birthday of the world wide web, it is clear this has not come to pass. Use has exploded, but if anything, the current online environment is characterised by an increasing **concentration of resources**, combined with opaque and unaccountable surveillance.[1]

Why is this so? In large part, it has to do with the **prevailing utopian account of digital technology.** In that view, the Internet is seen as inherently emancipatory, as synonymous with progress.

"If you want to liberate society, just give it Internet."

Former Google executive Wael Ghonim (2011)

Technology is not neutral. The online environment is a mirror of our world, with all its inequalities and power-struggles. To understand the present-day Internet, we therefore need to retrace the cultural, economic and social conditions that have shaped it.

When we do that, we find that many of the engineers, inventors and scientists that were and are at the heart of the digital transition seem to follow what is known as computationalism: the idea that people and animals, and the human brain itself, may fruitfully be viewed as processing machines (Golumbia 2009). Starting from here, it is not that farfetched to argue that even our largest social problems can be solved by digital technologies "on their own", without considering politics and social relations. Hence, the **utopian claims about what digital technology can accomplish**, which serves as a cover for the "leave us alone"-stance of many tech companies. This is visible today in the hype surrounding for instance blockchain.

Such thinking has **similarities with the neoclassic economics way** of looking at the world. Both the neoclassical economic model and the techno-utopian accounts tend to leave little room for the dense social relations and political processes that are fundamental to our society and democracy.

The Internet as we know it came about after decades-long investments by the US government starting in the 1950s. Spurred by the rivalries of the Cold War, the US poured money into computing technology. The hope was to use computers and databases to predict and **govern human behaviour** for counterinsurgency purposes (Levine 2018).

To make better use of these expensive computers, and to be more resilient in the face of nuclear attack, authorities developed a decentralised network to connect them: the ARPANET. Because it was a public network, aimed to maximise cooperation between scientists, all users had to share the fruits of their research, **without intellectual property law restrictions** (Tarnoff 2016). This fostered innovation. Similar networks sprung up in Europe too, using a variety of technologies.

1 When referring to the digital transition or digitalisation, we mean the increasing digitisation of information, which makes the latter perfectly copiable, easily shareable and instantly accessible. The processing of that information via computers, and the infrastructure that connects all this we refer to as the 'Internet'. Also, when we refer to the Internet it is a simplification, hiding an amalgam of different technologies, protocols, and a physical infrastructure.

"Bite That Apple Steve Jobs Desktop 2" by Anthony Sigalas

It is this ethic of open innovation, and the need to link up the different networks, that led to the creation of the Internet protocols. These are rules for communication between computers, and they were designed to allow any computer, no matter the hardware or software, to exchange information. These protocols were fundamental for the development of **the Internet as an open network**, not dominated by any vendors' specific technology.

From public good to commercial playground

At the start of the 1990s, the publicly funded network in the US – then called NSFNET – connected a range of military, academic and other institutes, exclusively for non-commercial purposes. But when the value of the network was becoming clear, especially for the many citizens who now had access to personal computers, the US decided to **fully privatise the network infrastructure**.

In a process that was finalised in 1995, the US government handed this crucial public utility to a small number of firms. Their belief in the benevolence of markets was such that there were **few or no effective rules attached, no formal public oversight, nor any fees demanded** (Levine 2018).

In the 1990s and early 2000s, there was indeed a strong sense of optimism and **creative outpouring**, with citizen blogging, peer-to-peer exchange, and bottom-up initiative (the 'web 2.0'). Google founders Sergey Brin and Larry Page seemed to advocate a public utility inspired approach to search engines.

With Kazaa and Skype, Europe was part of this. Initiatives, in which thousands of volunteers cooperated, saw the light. The most famous are the open source software operating system Linux and the online encyclopaedia Wikipedia. Since then, however, many of the applications that run on the Internet – and that increasingly run our lives – have been developed in **Silicon Valley, California**.

They were conceived in a specific culture, which has been dubbed the Californian Ideology (Barbrook and Cameron 1996), or cyber-libertarianism (Winner 1997, Murray 2016). Many of its adherents share **distinct anti-government views**, while professing an enthusiasm for the power and progressive potential of digital technology that borders on the religious.

In the context of this narrative, the EU and US had a **clear preference for industry self-regulation** (White House 1997, EC 1997). The laws adopted shielded online platforms from liability for content they hosted and aimed to stem cybercrime and strengthen intellectual property rights, in order to protect commercial interests

and advance e-commerce.[2] This facilitated the rise of the platform economy.

This coincided with investors looking for profitable investment, as productivity slumped across Western economies. Telecoms seemed to offer such an opportunity, and huge amounts of capital flowed into this sector. This culminated in the dot-com bubble that burst in the spring of 2000. While many firms failed, it did lead to **the commercialisation of the Internet** (Srnicek 2017). All told, over 50,000 firms were created between 1998 and 2002 to profit from the Internet, receiving over 256 billion dollars in investments (Goldfarb, Kirsch and Pfarrer 2005).

Finance continues to play a key role in the Silicon Valley model of quickly scaling an unprofitable business, in the hope of eventually acquiring monopoly power and profits. The ride-hailing firm Uber is a recent example, with total losses of over 14 billion dollars. Amazon also sustained heavy losses for years, whilst benefitting from a variety of tax breaks, to build up monopoly positions it could later exploit (LaVecchia and Mitchell 2016).

In effect, digital platforms have become **systemically important in the digital economy**, similar to the financial sector itself. As all firms need access to finance, they also need access to the services digital platforms provide, be it a good ranking on Google Search, or a spot in Apple's App Store. In terms of market capitalisation, at the start of 2020, 5 of the 6 largest firms in the world are Apple, Microsoft, Alphabet (Google's owner), Amazon, and Facebook.

" What was once a rich selection of blogs and websites has been compressed under the powerful weight of a few dominant platforms. This concentration of power creates a new set of gate-keepers, allowing a handful of platforms to control which ideas and opinions are seen and shared. "

Sir Tim Berners-Lee (2018)

These online platforms use the data that is generated on their platforms to gain competitive advantages, while also benefitting from network effects, cross-subsidisation and their sheer size and wealth. Hence, **monopolistic tendencies are built into the heart of these mega-corporations**. There is a drive to capture ever-more data to build unassailable market positions, which fuels mergers and a further centralisation of market power (Zuboff 2019).

In addition, several digital giants, including Facebook, Alphabet and Amazon have archaic and **autocratic corporate governance systems** by giving one person, such as Marc Zuckerberg or Jeff Bezos, or a small group of insiders, almost uninhibited decision power within the company (Dignam 2019).

Right now, Alphabet owns five of the top six web platforms: how we access our smartphones (Android), determine our location (Google Maps), search for information (Google Search), watch videos (YouTube) and browse the web (Google Chrome). Facebook, already a social media heavyweight, acquired WhatsApp and Instagram, and tried to buy Snapchat. Together, **Alphabet, Apple, Facebook, Amazon and Microsoft have bought more than 750 firms** over the past three decades (CB Insights 2019).

Big tech firms use their power to **expand into new sectors**, such as cloud services (Streitfeld 2019), and traditional private sector industries as retail. In addition, there is a big push and investment into digital healthcare and education services, and recently, into creating parallel currencies. Literally under the radar, Alphabet, Amazon, Facebook and Microsoft have started investing in the physical backbone of the Internet, the submarine cables (Cooper 2019).

What does this story tell us?

First, that technological advances will not automatically lead to more democracy, progress or emancipation. In fact, the history of computerisation, and of the Internet specifically, show that **motives to increase hierarchical control and improve military capabilities have been instrumental**. The Snowden revelations in 2013, and cooperation between big

2 The EU did adopt Directive 95/46/EC on data protection, with an internal market and a citizens' rights angle. Furthermore, the EU adopted a dense regulatory framework for telecoms operators, mainly to liberalise the sector.

tech firms and the military and intelligence services, show this logic is still very much alive. Creating different outcomes requires social action, political debate and democratic oversight.

Second, the prevailing narrative that innovation is best served by granting **maximum leeway to firms and markets**, whilst constraining the role of governments and non-profit motivated coordination to a minimum, is false. Markets have a role to play, but long-term investments by the public sector underpin today's Internet. And imagine what would have happened if Sir Tim Berners-Lee – who invented the world wide web – had decided to patent his invention?

By adopting new data protection rules in 2018, the EU took the first step towards a different, more citizen-friendly Internet. It is encouraging to see how this sparked debates about privacy, market power and regulation across the world, not least in the US itself. It shows that **alternatives are possible**, and that digital technology can be harnessed for the public good.

PLATFORMS, AI, IOT AND 5G – A "NEED TO KNOW" TECH PRIMER

Three Characteristics [3]

These characteristics are the stepping-stones to understand digital tech:

Exponential growth

Computing power and data storage capacity grow at high, often exponential rates – Moore's law.[4] Coupled with advances in connectivity, this vastly reduces the cost of sharing, transmitting and processing digital data. Since the 1960's this has been the main long-term driver of digitalisation. These trends have been very consistent. That means that the possibility and economic incentives for increased digitisation, data collection, storage and exchange is likely to continue apace.

Cross-cutting

Digital technologies are cross-cutting. They permeate everyday life and the physical world. Smartphones, social media, apps of all varieties, facial recognition, robots, smart city and smart home applications are examples of how everyone and everything are getting digitalised, and how the digital and physical world are converging. Crucially, digital technologies build on each other and can be endlessly recombined, making it difficult to predict outcomes.

(Big)Data

Because it has become so cheap and easy, we produce and collect ever more data. While the scale of these datasets is difficult for humans to make any sense of, and for most businesses and software too, it is being capitalised on, especially by the largest and most tech-savvy firms. They use it for systems that take autonomous decisions to shape and affect people's lives. Decisions are taken about what data is collected, and how human experience is classified and transformed into data.

" If you know how something works, you can control it. "

Stephen Hawking (2018)

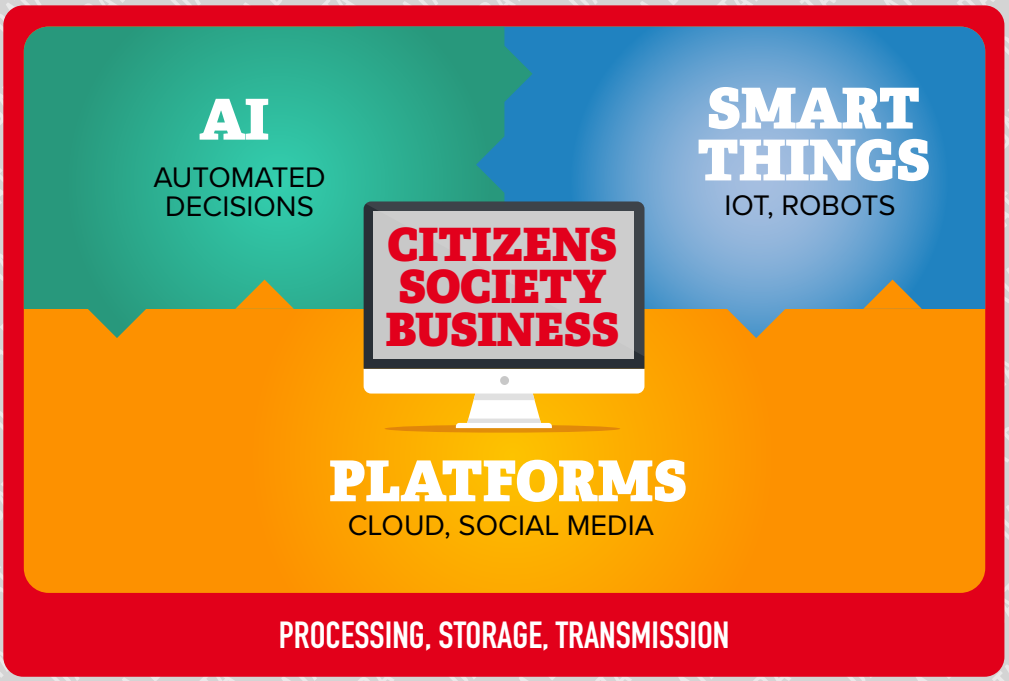
3 The Tech Primer uses as main guidance Johan Røed Steen's paper "Key Technologies in the Digital Transformation" commissioned for this project (Steen 2020).

4 Moore's law is the observation that the number of transistors in a dense integrated circuit doubles about every two years.

Digital Tech at a Glance

Figure 1.1 tries to catch the digital tech essentials from a societal point of view. In addition to the underlying technological advances in computing power, storage, and transmission, the figure highlights the role of platforms through which we hand over much of our data, artificial intelligence (AI) that is used to make decisions that impact us, and the rapidly developing myriad of smart digital devices, small and large that both gather data and take decisions that affect us and our environment.

Figure 1.1 Digital Tech at a Glance



Source: Adapted from Steen (2020).

How do these elements interact today? User and other data is extracted and collected, in a multitude of ways. This is done through our interactions with online platforms, but increasingly also via sensors and devices that are connected to the Internet and each other ('the Internet of Things'). Simply due to the enormous amounts, we call this "big data".

The data is stored and processed in large data centres referred to as 'the cloud'. The structuring and processing is called data science or data analytics. Finally, the data can be used to perform predictions through AI.

There is much uncertainty about the nature of the data that is being collected, how they inter-relate, the inferences drawn about us, and when automated decisions are taken, and on which criteria. This has been referred to as the 'black box' (Pasquale 2016).

Need to Know: Platforms

Platforms facilitate and organise social and economic communication between users and suppliers online. Because they connect users and suppliers, they can store, control and structure the data that is generated.

In addition, the more users a platform has, the more valuable it becomes to each one of them. Called "network effects", this in turn generates more data. In other words, there are monopolistic tendencies built into the logic of platforms, leading to accumulation of ever-more data at the economic disposal of the corporations controlling them. This data is often stored in the cloud.

Key online platform owners: Google, Amazon, Facebook, Apple, Microsoft and Netflix

Although people often refer to platforms as a group, they come in many kinds and sizes and can rapidly change. Nick Srnicek identifies 5 business models (Srnicek 2017):

- Advertising platforms that extract and analyse user data, which is then used to sell advertisement space (Facebook and Google);
- Cloud platforms that own hardware and software and rent it out to other businesses (Amazon Web Services, Microsoft Azure, Salesforce);
- Industrial platforms that control and license hardware and software to help businesses digitise their manufacturing process (Siemens, General Electric);
- Product platforms where the access to products is offered as a service to collect subscription or rental fees (Spotify, Car2Go, Netflix);
- Lean platforms that provide a platform infrastructure and control and use the data generated, whilst outsourcing as much as possible of the transactions to customers and workers (Uber, AirBnB).

But for all their differences, the platforms are all interlinked in a data-ecosystem, which is hierarchically organised.

Platforms need vast data centres to provide their services

Need to Know: AI

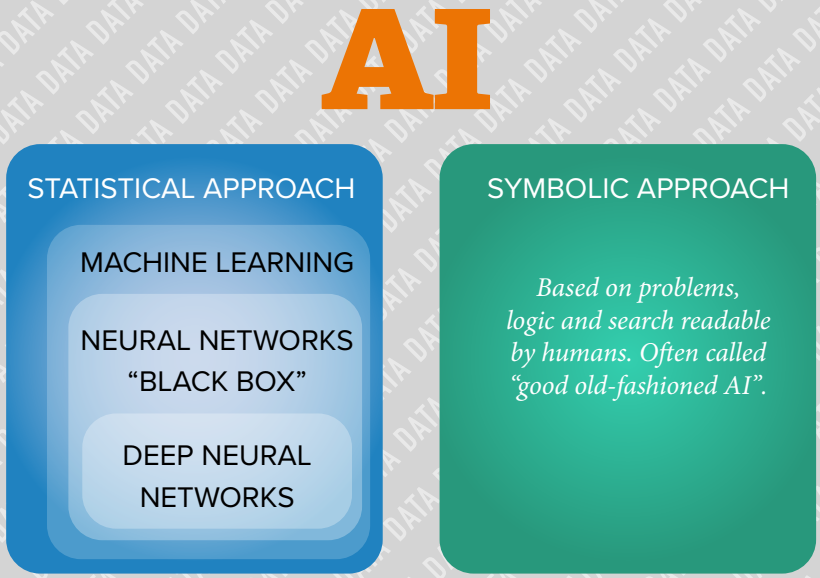
AI is shorthand for Artificial Intelligence, describing a wide variety of technologies that interpret and process information, to decide the best course of action to achieve a given goal.

Forms of AI have been around since the 1950s. But recently, more powerful hardware, more storage capacity, theoretical advances, better programs, and simply more data, allowed for a breakthrough in a subfield called machine learning.

One particular kind of machine learning, called deep learning, relies on artificial neural networks that are inspired by the functioning of the human brain. Simply put this allows computers to "self-learn". Such programs are increasingly becoming able to learn from experience, adjust to new inputs and perform human-like tasks.

Today's AI can process human speech, translate between languages and autonomously operate cars. This shows that AI is extremely capable in some fields, often outperforming humans. That said, it is far from reaching human-like general purpose skills (Artificial General Intelligence, AGI).

Figure 1.2 Approaches and concepts of Artificial Intelligence



The "AI-spring" this century so far uses the statistical approach, being fully dependent on Big Data and cheap computer power. AI attempts since the 1950's exploring the symbolic approach has had markedly less success.

Source: Adapted from OECD (2019), provided by the Massachusetts Institute of Technology (MIT)'s Internet Policy Research Initiative (IPRI).

Algorithms are the rules that a computer uses in calculations or other problem solving. Conventional algorithms are programmed step by step by the programmer. But with machine learning the design of algorithms becomes more or less automated, and with varying degrees of human input. In short, instead of humans programming computers, they increasingly programme themselves (Domingos 2015). As such they are an integral part of AI.

There is a lot of debate about AI, and whether or not such systems are inherently 'black boxes', due the self-learning nature of the technology, or whether there is simply a lack of transparency. Whilst the explanation of individual decisions may be challenging, it can be known what data a system uses, for what outcomes an algorithm optimises, and when and where it's used.

" It is not hyperbole to say that use cases for machine learning and deep learning are only limited by our imagination. "

Andrew McAfee and Erik Brynjolfsson (2017)

BOX 1.1 Algorithms

Machine learning algorithms power many services and devices we use daily. They determine which search results – and ads – an online search engine shows, what information turns up in your social media feed, and the recommendations you get when shopping online. AI is changing work by enabling workplace automation, algorithmic management and by providing decision support, including in courts and civil service. Learning algorithms can help discover new medicines, detect disease outbreaks early, and they can be used for predictive policing and assessing reoffending risks. They can create realistic fake videos or profiles and potentially manipulate voters.

While being expected to be a driver for economic growth and restructuring in the coming decades, AI raises fundamental questions concerning transparency, accountability and governability of economic and political decision-making (Steen 2020).

Machine learning as a whole is neither good or bad per se. For instance, learning algorithms can in practice reduce discrimination or reinforce it. Of course, human decisions are biased in myriads of ways, but algorithmic systems come with their own type of biases, linked to the data they use, the aims and workings of the algorithm, and the context in which they are used. But the opacity of many algorithmic systems, for technical reason or to protect trade secrets, often makes evaluation hard.

Some of the machine learning tools have been freely shared, such as Alphabet's TensorFlow. And the computing power that is required can be rented from cloud service providers. But the training data for these models is considered much more valuable, and there is a big push to gather and guard it. These can be very large and unstructured, but increasingly also small and high-quality datasets. For instance, in 2018, Deepmind used less than 15,000 scans to train an AI system to identify sight-threatening eye diseases that matched or outperformed experts.

Need to Know: Smart Things – IoT

Old and new devices seem to be getting "smart"; registering signals or wishes, processing the data and performing tasks.

The massive interconnection between all our devices and the internet, transmitting real time data – is often referred to as the Internet of Things (IoT). It describes networks of things – physical devices including cameras, machines, vehicles, lights, doors, home appliances, wearables etc., equipped with electronics, software, sensors, actuators and transmitters that enable them to connect to the internet and exchange data.

Complementing IoT is the emerging so-called Internet of Bodies, with online sensors on or inside your body, measuring heartbeats, blood pressure, sleep etc. – connecting the self in real time to the Internet.

The potential of IoT is augmented by speech recognition and language processing. For example, home automation assistants such as Apple's Siri, Amazon Alexa and Samsung's Bixby can perform tasks based on spoken or written commands. They can interpret human speech and respond via synthesised voices, answer questions, and automate tasks relating to email, to-do lists, calls and calendars. Also face recognition is advancing fast, with multiple uses.

There are by now billions of digital appliances and products, using these new cross-cutting technologies. A tiny selection is available by taking a look at the apps on your smartphone.

" No longer limited to building networks of human communications, the Internet of Things makes use of the Cloud and Big Data to create a global, centralized, and commodified system of communication among objects, as well as people. "

Vincent Mosco (2017)

The increasing amount of data captured by and from our environment, and the ability to use that data to influence it, has the potential to increase productivity and resource efficiency. But for now, security risks and a lack of interoperability present significant hurdles for increased adoption.

Many different firms are promoting their own IoT infrastructure, which are often not interoperable with each other, and hence devices cannot 'talk' to each other. Multiple standardisation efforts are underway, but it seems unlikely there will be agreement on a common standard (Noura, Atiquzzaman and Gaedke 2019). In addition, incentives for manufacturers to make secure devices are low, which makes these devices vulnerable to cyber-attacks.

Need to know: 5G

According to the telecoms sector, the next generation of wireless technology, called 5G, will bring a further leap in connectivity. Although first trials of the technology are underway, very large investments will be required, which makes it likely this new technology will be confined to cities and densely populated areas in the coming years.

5G may support much larger data volumes, for example for entertainment and for huge numbers of machines communicating with each other, by enabling real-time data transfer with minimal latency. This could stimulate new or better applications, such as in smart distribution of energy and connected and automated driving.

Europe is well-placed in this area, with major producers of networking equipment, such as Nokia and Ericsson, and important semiconductor suppliers. Although there is significant potential, there is significant hype as well, as telecoms operators, chip makers and networking equipment manufacturers look for new sources of revenue (European Parliament 2019).

That said, the range of upcoming digital technologies, and the broader trend of digitisation, seem to converge on the need for continuing increases in connectivity.

Some Nice to Knows

Having dealt with the most basic, these are a few of the current digital technologies and buzz words which are of particular interest.

Extended reality

Augmented Reality (AR) can superimpose or "improve" on our perception of the real world with visual objects, sound and text.

Already quite a number of apps use AR, with Pokemon Go! and Snapchat's Lenses and Scan features being some of the best-known examples. AR glasses are being introduced in the workplace, but examples such as Google Glass have not been widely adopted by consumers. This may change as costs continue to go down.

In contrast, virtual reality (VR), describes a computer-generated world, which may be entered via VR headsets. These technologies are often associated with the gaming industry, but they are used in many settings.

VR tools are widely used to train workers for situations that would be too dangerous or costly to train for in the real world. This is the case in the military and healthcare sectors for example. In addition, workers use VR to visualise and hence improve product designs in a variety of sectors.

Widespread use of these technologies by consumers likely depends on advances in connectivity (5G). The often-sensitive data that can be generated by VR applications on people's behaviour, voice, and environment also raises questions around privacy, safety and security.

Blockchain

Blockchain is the best-known form of a range of technologies that are called 'distributed ledgers'. In essence, these technologies allow people that do not trust each other or are at a geographical distance, to directly exchange data, such as money, contracts or medical records, without a trusted intermediary, such as a bank or public authority.

You could think of these technologies as a spreadsheet, without a central authority that verifies the data that's inserted or is able to change it. Instead, to validate the information and add new transactions, participants need to agree among themselves. There are a variety of ways to achieve such a consensus, using computing power and cryptography.

Distributed ledger technology is already used for cryptocurrencies (Bitcoin, Ethereum), but has also a variety of other potential uses in accountancy, banking, and e-commerce. Because all participants have a copy of the records, which can only be changed if there

is a consensus, these technologies may improve transparency, trust and security.

That said, although the underlying technology may be or become robust, it has been described as an often impractical, not economical and energy intensive way to circumvent conventional forms of organisation. Thus, it still faces a lot of issues (European Commission 2019), not least including that it has drawn scrutiny for facilitating illegal activity such as tax evasion and money laundering.

3D-printing

3D-printing is a type of additive manufacturing in which a product is created layer by layer. With 3D printing, it is possible to produce objects from a computer file, quickly and wherever a suitable 3D printer can be installed and provided with the necessary raw materials.

When creating different objects only requires different digital designs, it becomes easier to experiment with new products (prototypes) and customise production. Examples are automotive and aerospace parts and prosthetics.

The kinds of materials that can be used by 3D printers are expanding, and the potential for new products is large. Future 3D technology can support more tailor-made production processes, with less waste of materials, and hence increase productivity as well as influence the geographical pattern of production.

Non-digital technologies and sciences

A vast number of non-digital technologies are advancing rapidly as well. The common denominator is that they all, in varying degrees, depend on digital technologies in their development and practical applications. In the present context, nano- and biotechnology are prominent examples. This means further advances in digital tech will also spur technological advances in these other areas. And vice versa.

The most unexpected future technological innovations may come when digital and non-digital advancements combine.

In addition, advancements in social sciences as behavioural economics or neuroscience will surely combine with digitalisation to spur further innovations and applications, and perhaps the most unexpected and influential.

CHANGE AND HYPE

Since enormous resources are directed to further digital innovation and expansion, major new products, apps and strategic initiatives from the big tech firms as well as start-ups appear to be emerging ever more rapidly.

From a policy point of view we should be aware that many, if not most, of these represent hype. But not everything is a hype, and the cumulative effects just a few years ahead are likely significant. One conventional wisdom is that we tend to overestimate the short-term impact of new innovations and services, but underestimate the long-term effects. Especially because many of the technologies amplify each other and can be combined in unexpected ways.

As history shows, the diffusion and practical implementation of new technology is notoriously uneven through the economy, and often demands major changes in business models and mind sets (McAfee and Brynjolfsson 2017). Many of the technologies described above are already proven to work technically, but applying them in ways that make broad economic and societal sense is much harder.

PART TWO

THREATS AND OPPORTUNITIES

DIGITAL AFFECTS US ALL

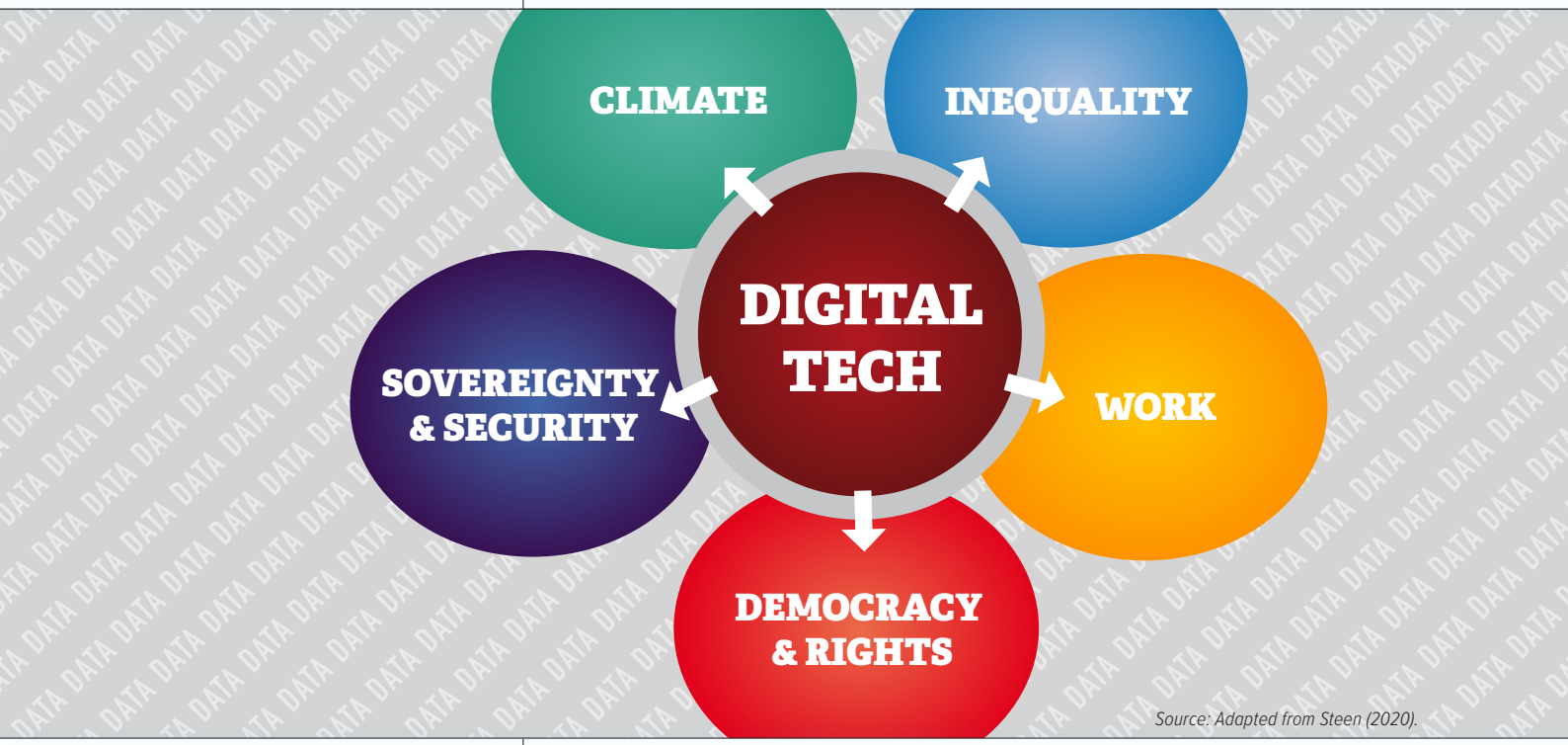
" Future technology is not a fate one must choose for or against, but a challenge to political and social creativity. "

Andrew Feenberg (2000)

The online and off-line worlds are merging. More and more tasks are automated, and many of our day to day activities are shaped by screens, apps and data. This makes it an unavoidable political question **who is building, managing and owning the digital infrastructure** that underpins our lives and societies.

Part One revealed that the digital space has become commercialised and aggressively controlled by a handful of firms. And as we shall see, digital technology is increasingly **affecting our climate, inequality, working life, fundamental rights, democracy and even our sovereignty and security in negative ways**. Hence, continuing down the current path contains major risks. This is why Part Two emphasises the nature of the downsides, while the arguably even larger – but less identifiable – upsides of digitalisation are less spelled out.

Figure 2.1 Digital technology permeates society



Source: Adapted from Steen (2020).

DIGITAL FOR CLIMATE CHANGE?

The popular view that digital technology helps our economy to become more resource-efficient and green is based on three myths. The first is that the digital infrastructure is more or less immaterial. But whilst often invisible, it **leaves a very physical footprint**. Metaphors such as the 'cloud' hide a global and physical infrastructure of data centres and transatlantic cables.

These data centres operate non-stop and **consume large amounts of energy.** Already back in 2015, they accounted for 3% of total worldwide energy consumption. And estimates put the tech sector contribution at 3 to 3.6% of greenhouse emissions by 2020 (Belkhir and Elmeligi 2018). The cloud data centres also require large amounts of cooling water.

The energy required will further increase as more people and devices are connected to the network. The next generation Internet is expected to be even more energy intensive. For instance, **antennas for 5G consume significantly more energy** than the current ones.

The second myth is that the new digital technologies and business models are extremely resource efficient. While many platforms in the gig economy are indeed effective at outsourcing liabilities and costs, those costs seldom disappear. For instance, maintenance of cars in ride-sharing companies such as Uber and Lyft are **less efficient and more costly** than at taxi companies, because it is done by each Uber driver individually (Horan 2019). They may worsen traffic jams and pollution as well (Hawkins 2019).

Finally, the third myth is that much of the digital consumer devices can be almost fully recycled. The billions of phones and connected devices have a limited life cycle and produce a **large amount of e-waste**, containing highly toxic substances such as cadmium, lead and mercury. In 2017, the amount of worldwide produced annual e-waste was estimated to be 50 million metric tons, most of it ending up in Asia and Africa, often illegally. Many workers processing the waste are literally getting poisoned (Bridle 2019).

Upsides

The potential when directing digitalisation towards fighting climate change is significant and can, if we choose the right policies, outweigh the downsides. Digital tech should help **to curb CO2 emissions**. For instance, digitalisation of production, distribution and consumption of energy ('smart grids') can make our energy usage far more efficient and hence reduce emissions. Precision farming may increase efficiency in harvesting and seeding, as well as the usage of water and fertilizers. 3D printing may reduce CO2 emissions from transport.

Indeed, digitalisation does offer the potential of **a more dematerialised economy**, in which more products become services. As mentioned, this has already happened to music, and much of our media, which now is now consumed as a service, such as Deezer and theguardian.com.

INCREASING INEQUALITY

The last decades, income and wealth inequality has risen (Piketty 2013). This has been linked to globalisation and the outsourcing of jobs, the financialisation of the economy, and the decline in trade union influence. While digital technology has facilitated these trends, it is also closely linked to the rise of the 'knowledge economy', in which intangible investments, such as software, databases, R&D and training become more important than fixed capital. In such an economy, there are large benefits to scale. The network effects and low or zero marginal costs create the **'winner-take-all' dynamics** that we have come to associate with the globalised digital economy (Haskel and Westlake 2018). Accordingly, we are seeing new divisions between

- owners of capital, who win out over those who sell their labour;
- the highly skilled who can command extraordinary salaries, and the rest;
- global super stars in business, sports and entertainment, and everyone else. The 10 top-earning YouTubers made 180 million USD in 2018 (Robehmed and Berg 2018).

" Digital technology also has profound effects on business models, skill needs and inequality. "

Johan Røed Steen (2020)

Many medium and low-skilled workers have seen their incomes stagnate. Or, succinctly put, computer technologies contributed to shrink the size of the middle class, put downward pressure on unskilled workers wages, and **reduced labor's share of income** across many Western countries (Frey 2019).

This is also a political story. In the absence of effective regulation to counterbalance the digital giants, it is getting more difficult, especially for small businesses, to **compete on an equal basis.** This lack of competition has been linked to slower productivity growth and rising inequality in the US (Furman and Orszag 2018), but concentration in IT markets affects Europe too.

Alphabet, Amazon, Apple, Facebook and Microsoft **together own around 70 infrastructural platforms**, from social media, to advertising, cloud services, app stores, payments, login and identification, and much more (Van Dijck, Poell, De Waal 2019). Other platforms, as well as public authorities practically cannot avoid relying on these infrastructures for their functioning, and so have to play by the rules set by these larger firms. Moreover, the data that results from these interactions often accrue to the platform owners, who use them to improve their services, expand into other sectors and strengthen their market power.

Let's take an example. Each time Spotify sells a subscription via Apple's App Store, 30% of the proceeds go to Apple. The latter also can also collect detailed information about Spotify's business and its customers, and can impose all manner of restrictions. Beyond 'owning the marketplace', **Apple directly competes with Spotify**

through Apple Music. These types of dynamics play out on a wide range of platforms, including Amazon's e-commerce platform and Google's search engine. The challenge to compete and survive is harder still for small and medium-sized companies.

The increasingly polarised outcomes in the economy also coincide **with regional disparities**. The highly skilled increasingly cluster in sprawling cities and regions, where much of the innovation takes place.[5]

Increased inequality might have been countered by **redistributive tax policies, social welfare measures and educational or training programs**. But with few or any exceptions, this has not been the case. In fact, there is a trend towards lower corporate tax rates, and not least big tech firms pay low real tax rates (Jacobson 2018).

Upsides

At the same time digital technology can be made a **major driver for inclusive growth**. Much of the services developed by big tech firms contain genuine innovations, and data and knowledge sharing can help to further spur more widespread, balanced, innovation. With new types of governance, there is no reason why many more businesses and people cannot partake in new ways of production (Mangabeira Unger 2019).

Digital technologies such as AI could have broad application across the economy and increase productivity and creativity (Trajtenberg 2018). And they can help to make formerly scarce resources available to a wider range of people. **For example, online courses can bring world-class lectures to people and students everywhere**, translated into their own language.

DATA-DRIVEN DISCRIMINATION

Tightly intertwined with inequality, digitalisation may also have major impact on discrimination. Increasingly, **algorithms control delivery of services in the public domain** (O'Neil 2016). Often with worthwhile intentions, but with little transparency, or by profit-seeking providers, data is gathered, combined and analysed to decide on the delivery of scarce social goods, such as jobs, education, and housing. At the same time, they are used to direct public resources.

While seemingly objective, these systems generally have **in-built biases**. As they are often designed by groups that lack diversity, and rely on existing data, they tend to reproduce the existing social situation or worsen existing inequalities.

In Europe, we often react with astonishment to China's social credit scoring system, but ratings and metrics that may have only a tangential relation to the truth are arriving here as well. **Rating systems are spreading across workplaces** in Europe, reducing worker autonomy and eroding professional standards (Huws and Spencer 2019).

Credit and insurance scores are already a feature in many countries. In addition, experiments with predictive policing, facial recognition and automated decision-making for offenses and social security decisions are underway. Data protection legislation in Europe may prevent the type of penalisation of poor and underprivileged seen in the US and China, but needs further strengthening.[6]

"When automated decision-making tools are not built to explicitly dismantle structural inequities, their increased speed and vast scale intensify them dramatically."

Virginia Eubanks (2018)

"Austria's employment agency, AMS, plans to roll-out an algorithm to decide which unemployed will be eligible for retraining support. Based on published documents, it seems the criteria will penalise women, disabled and people over 30."

AlgorithmWatch (2019)

5 Moreover, within cities, the spillover benefits for less-skilled workers may be lower than previously thought, especially when the rising housing prices are considered (Lee and Clark 2019).

6 Today these do not cover systems that are not fully automated (Martini 2019). In addition, the framework of individual data rights is not fully appropriate for systems that optimise for groups (AlgorithmWatch 2019).

Upsides

Platform technology can be used to **deliver social services more fairly and effectively**, and to bring citizens within the system of social security. Precarious work and exploitation may be made more visible, so that we can more effectively combat abuse from employers.

More generally, with effort and care, **AI and algorithms can be made an aid to just human decision-making**, which routinely produces unfair outcomes. This can stem from explicit prejudice, but also from a range of cognitive biases. One famous example showed judges being more lenient in granting parole at the start of the day or after a lunch break (Kahneman 2013).

WORK IN THE DIGITAL AGE

The first question that springs to mind is: will robots take our jobs? Certainly, **a lot of tasks and jobs can be automated**, and this time that includes both manual and cognitive work. Digital technology is expected to replace quite a few jobs, and fundamentally change many more (Arntz, Gregory and Zierahn 2016; Susskind 2019).

But past predictions of widespread net tech-driven job losses have been incorrect (McKinsey 2017). **New and different jobs will emerge and take their place**. There will still be needs to fill and tasks to be done, in for instance elderly care and creative and personal services. In fact, countries with high levels of automation, such as Japan, South-Korea, Germany and the Nordic countries also tend to have high levels of employment.

That said, with increased turnover and need to retrain and re-educate, the incidence of **shorter spells of unemployment** will probably rise, if not countered by more active labour market policies. And the changes will affect people differently, depending on occupation, gender, and geography.

Beyond that, the big challenge is the quality of jobs. Europe has witnessed a polarisation of the world of work, with **new jobs that are increasingly 'lousy' or 'lovely'**. Mid-level and middle-class jobs, such as office and production work, admin jobs and sales, get scarcer. New digital technologies tend to favour high-skilled workers, while more average skilled workers are pushed to jobs that only require low formal skills, most often in the service sector (Lund Jensen, Nielsen, Christiansen 2019).

" Today's challenge, and likely tomorrow's, is not too few jobs. Instead, it is the quality and accessibility of the jobs that will exist. "

MIT Report: The Work of the Future (2019)

Specifically, digitalisation has spurred a rise in **atypical or precarious platform work**, where businesses most often buy tasks not time, and there allegedly is no employment relationship. This shifts economic risk from employers and collective arrangements to individual workers. The workers take on the risks of an 'entrepreneur', while in reality doing dependent work.

Though still a low share of the employees in the economy, many platform workers **fall outside social protection schemes**. Too many work for less than the minimum wage, have no rights to sick pay, holidays, or pension, and have no protection against arbitrary dismissal (Garben 2019).

Adding to this, most European **workers have not seen technological improvements lead to increased wages** or reduced working time. Instead, with the advent of email, working time has become more elastic, and many platform workers do this type of work to top up income from other jobs (Huws and Spencer 2019).

" I'm not making a living. Almost all drivers are looking for work elsewhere. "

Uber Driver, Interview CNBC (2019)

Moreover, much platform work comes with new forms of surveillance, and a reduction of worker autonomy and room for initiative. Order pickers at Amazon's warehouses are **tracked, monitored and rated at every step they take**. When working through Upwork, the service takes a snapshot of your screen every 10 minutes and shares it with those buying your services. More broadly, platforms have values and management techniques embedded that alter the power relations between employers and employees, HR policies and more.

In addition, labour market trends linked to the digital economy have a disparate gender impact. There is a **distinct gender divide in ICT and STEM jobs**, with low proportions of women in these professions and thus contributing to the gender pay gap (Steen 2020).[7]

" Your recent job performance is not meeting productivity expectations (...). You are expected to meet 100% of the productivity performance expectation (...) [or your] employment will end. "

Feedback report to worker from Amazon's ADAPT worker surveillance system (2019)

At the same time, organising and **bargaining power of labour is reduced,** especially in new Internet-mediated sectors, where technology is used to prevent workers from teaming up, and they are often directly competing amongst themselves. This competition does not stop at borders, with a rise in global freelancers (Baldwin 2019).

BOX 2.1 Everything needs to change, so everything can stay the same?

Many gig workers deliver food, drive people around, and provide personal care, cleaning and other services. For the vast majority, it is a crucial way to earn extra income on top of other jobs they have. When nobody orders a pizza or hails a ride, they are on standby without getting paid.

Is this the pinnacle of innovation? Or does it resemble the industrial revolution, when workers were queuing at the factory gates, eager to work for a few hours or a day, but uncertain if they would be called in?

7 STEM: Science, Technology, Engineering and Math.

Upsides

At the same time, the potential upsides are vast. Smart robots can make life far better for many workers, with **less dangerous and dirty jobs.** By using robots, workers will not need to do as much tedious and repetitive tasks.

In addition, the use of robots could boost worker productivity in large parts of the new economy, making for **increased wages and as well as improved public services**. Just as trade unions and collective bargaining are challenged by polarisation and fragmentation, digitalisation may become a tool to regain and sustain authority. In the long run widespread automation may perhaps free up substantial part of people's time for other pursuits than paid work.

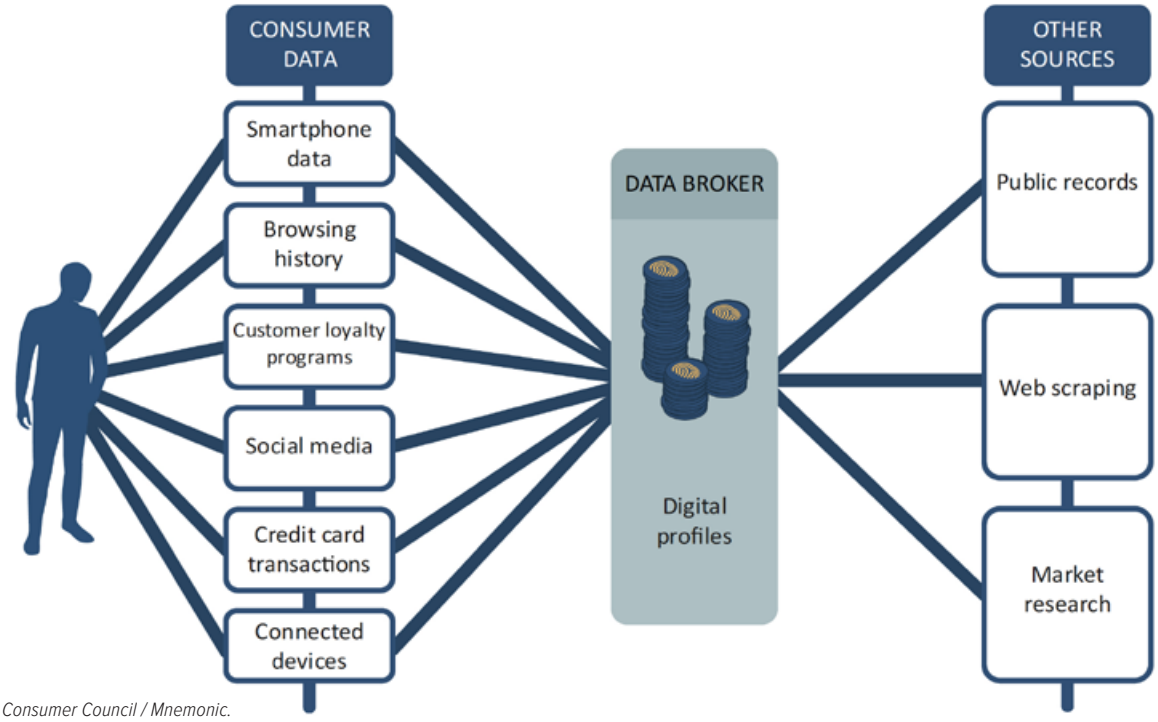
CHALLENGING FUNDAMENTAL RIGHTS AND DEMOCRACY

As mentioned earlier, todays' digital platform business models **extract as much personal data as possible** to better predict and influence people's behaviour (Zuboff 2019). The scale, detail and fully automated manner of online persuasion is unprecedented.

BOX 2.2. A giant second-hand market for personal data has emerged

Many websites share sensitive data about medical symptoms, diagnoses, drugs, with dozens of companies around the globe. This includes the familiar online advertisement giants such as Google, Facebook, Amazon and Oracle, but also the hidden backend of data-brokers. In many cases, this clearly violates the General Data Protection Regulation (Privacy International 2019).

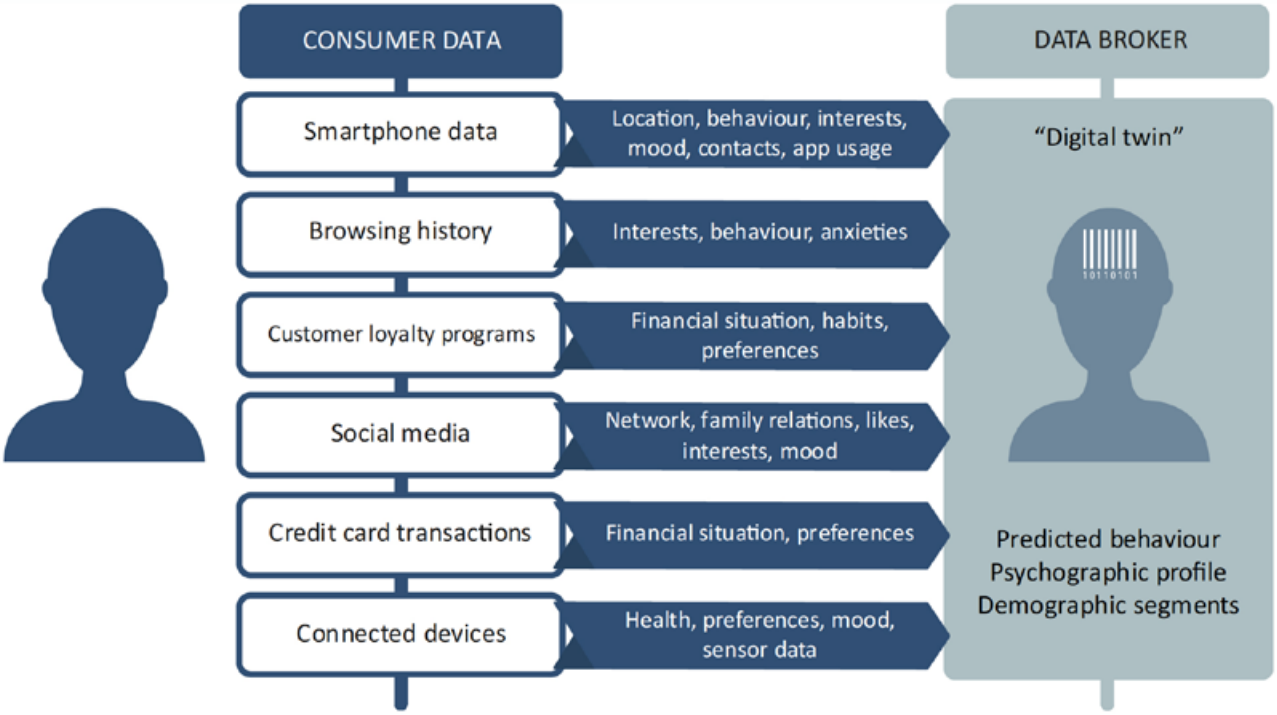
Figure 2.2 Data on yourself and your actions are extracted from "everywhere" and collected



Source: Norwegian Consumer Council / Mnemonic.

The potential consequences for our private lives and selves of this constant surveillance are huge. Though too few seem aware, it obviously undermines people's right to privacy. **Anyone can end up in a dangerous or embarrassing situation** when information of private and working life are made available freely or for sale, to be collected, systematised and exploited.

Figure 2.3 The collected data are used to make your real-time "identical twin" – for sale



Source: Norwegian Consumer Council / Mnemonic.

But even this is too limited a frame. In the final analysis, data is power. If we lose control of our personal data, we **hurt the ability to form our own personalities**, the freedom of self-determination. It may weaken our capacity or willingness to act and communicate freely, and hence also our role as citizens.

When personal data is massively extracted and commercially exploited based on the latest behavioural insights, it may outpace our cognitive abilities to shape our own lives. When **the average smartphone user taps, types, swipes and clicks 2,617 times a day**, do we control technology, or does it control us (Dscout, 2016)?

As we know, people routinely 'accept' online surveillance that they would never accept in the physical world. **Imagine the postal service would copy people's mail, and sell it to whomever paid the most?** The same is happening on the Internet.

This practice is often justified by the fact that in return for their personal data, users don't have to pay for the service, and get more relevant ads. But **this 'data deal' is flawed, as it assumes equal parties in a transaction**. In addition, citizens' privacy is routinely violated without their knowledge, let alone their consent. For example, Facebook admitted to tracking people whether they were actually members or not (Reuters 2018). And, as reported by the Guardian, "Apple contractors regularly hear confidential medical information, drug deals, and recordings of couples having sex", (…) when "grading the company's Siri voice assistant" (Hern 2019).

This is not just a problem for individuals. These firms do not control the distribution of toys or cars. **They control the flow of information**. A handful of firms have major

" We can suggest what you should do next, what you care about. Imagine: We know where you are, we know what you like. "

Eric Schmidt, former Google CEO (2010)

influence on the news people receive, what information pops up when they search online, and how they communicate. This filtering can often occur without users knowing that it happens, or why. This allows these firms to wield an enormous, direct, influence on people's perception, the way they think, speak and assemble, and hence on the public debate.

Given the lack of transparency, it's difficult to gauge the impact of social media on society. But it's clear that financial incentives lead many of them to favour content that grabs people's attention, rather than what's truthful or informative. As a result, social media are rife with **misleading, polarising, and extremist content.** Moreover, the personalised newsfeeds and targeted ads undermine the idea of the public sphere that is fundamental to democracy (Bartlett 2018).

Adding fuel to the fire, the shift to online media consumption and the duopoly of Facebook and Google in the digital advertisement business, supported by a back-end of data brokers, have **diverted profits from the media sector,** to the detriment of journalists. Without idealising the past or downplaying the need for media to adapt, they were – and still are – delivering quality content and perform a crucial function in a democracy.

" What might once have been called advertising must now be understood as continuous behavior modification on a titanic scale. "

Jaron Lanier (2018)

Also, the Internet, and the logic of data accumulation, has changed **political campaigning, raising issues of transparency and manipulation**. Politicians are increasingly driven to exploit big data to profile citizens, allocate organizational resources and send voters tailor-made messages, much the same as companies are targeting individual consumers. The Cambridge Analytica scandal is an apt illustration.

By investing heavily in public sectors as **education and health care** tech firms such as Google, often in a way difficult to gauge, influence choices that should be transparent and made by the relevant professions and elected politicians.

Finally, let's not be naïve: The economic power of the digital giants translates into political power. **The digital giants spend huge amounts on lobbying to influence policymakers**. This comes in addition to the sums for their PR directed towards the public. To be sure, this is not limited to buying political influence in the US.

In sum, there is **perfect reason to be concerned** for fundamental rights and our future democracy, in the wake of digitalisation.

Upsides

The **emancipatory potential of digital technology** is still there. It is undeniable that citizens have much more opportunities to express themselves online, and that previously silenced groups have found a voice in this space. Wikipedia among many others provides quality information for everyone at the touch of our fingertips.

The Internet has allowed direct contacts between citizens, who can more easily self-organise, and set up associations. Famous examples – illustrating downsides as well as upsides – are the Occupy movement, the 'Arab Spring' protests, the "me-too" movement and **Greta Thunberg's efforts for a sustainable climate.** This has added a dynamic, unpredictable element to our politics, as certain ideas or small groups can suddenly gain staggering traction, seemingly out of nowhere.

In addition, public authorities are increasingly using the Internet to **reach out to citizens** when devising and implementing public policy. This has taken a wide variety of forms, from online consultations and participatory budgeting, to crowdsourcing legislation. Although underused so far, this shows there is a genuine window of opportunity to increase democratic participation.

The role of Huawei for 5G in Europe is contentious

SOVEREIGNTY AND SECURITY: LOSING CONTROL?

Europe relies on digital technology **developed, designed and controlled elsewhere.** Most of the software and applications come from the US, and much of the hardware from East Asia, South Korea and China.

Cyber security experts claim that it is **impossible to prove the absence of malicious code** or vulnerabilities in both hardware and software, and that ultimately, it comes down to trusting the manufacturer, and specifically the legal and political system in which it operates (Kleinhans 2019).

That raises tensions with the US, from a national security perspective, but requires an extraordinary thorough review before accepting **Chinese firms to build 5G infrastructure across Europe**. This is one of the areas in the digital economy where Europe already has world-class expertise.

What's more, many of the foreign tech firms work closely with their respective military and intelligence services, in building the **next generation Internet**, which looks like an increasingly centralised and integrated system.

This emergent infrastructure is often described as the 'the Internet of hackable things' (Dragoni, Giaretta, Mazzara 2018). Yet our hospitals, public transport, energy grids, and university servers are connected to, and critically reliant on it. Moreover, it reaches into the home, with digital assistants, IP cameras, smart locks, meters, toys, wearables, fridges and TVs. The security for many of these systems and devices is virtually non-existent, and this makes citizens, firms and institutions in Europe **even more vulnerable to cyber-attacks, hacks and foreign manipulation and coercion.**

This was illustrated in 2017, when the '**WannaCry' ransomware attack crippled the UK's National Health Service,** with doctors being forced to cancel 19,000 appointments, and turn away patients. The attack has been linked to North-Korean hackers, but the US National Security Agency (NSA) has been implicated in developing the original hacking tool.

" Technology is power in modern societies, a greater power in many domains than the political system itself. "

Andrew Feenberg (1999)

For home devices, underlining the challenges with privacy pointed to above, the security breaches are so numerous it is difficult to pick one example. But for years already, with a simple Google search, anyone can have direct access to tens of thousands of hacked IP cameras, and **spy on people in their homes** (Gizmodo 2014).

This massive surveillance potential is tempting to intelligence and other public authorities, which recognise the power of these systems to monitor and regulate people's behavior. But whereas public authorities are – at least nominally – subject to forms of democratic accountability, the big tech firms with which they cooperate, and outsource tasks to, are not. This has been referred to as **a 'pact' between big tech firms and government** (Howard 2015).

This is not just happening in the US, where Amazon, Alphabet, Microsoft and Palantir work closely with the military and intelligence services on a range of projects, and have systematically handed over user data, but also in Europe, where for example the **UK's national health service illegally shared medical data of 1.6 million patients with Alphabet owned AI firm Deepmind** (ICO 2017).[8]

Upsides

Obviously when the digital development furnishes hackers with new ways and means, **public, corporate and private security organisations and their personnel exploit the very same and other innovations** to step up their efforts. This is by no means a one-way street, but a continuous and complex battle between offenders and security officers.

In the digital environment, people can be more directly forced or nudged to comply with laws and regulations. Think of **cars that won't start when they detect the driver is drunk.** But it removes any flexibility in the enforcement of the law or room for interpretation. Therefore, the shift from human to automatic enforcement does put an extraordinary responsibility on the code and the hardware itself.

AN EXAMPLE: SMART CITIES [9]

Important decisions about our future digital cities are now being made throughout Europe. So-called Smart City systems include **smart lighting, smart grids, tracking systems for people movement, infrastructure for autonomous mobility, 5G networks, air quality sensors, police body cams, CCTV cameras with facial recognition** and much more. Digital platforms for collective decision-making (like Decidim, Barcelona) and public service delivery may also be part of the Smart City.

The Smart City affects us all; **you cannot opt out of public space**. Therefore, when discussing opportunities, risks and impact of a Smart City, the main focus must be on what is best for the citizens, not what is commercially viable. If our future cities in practice are run by global commercial digital platforms, it will mean a major loss of personal autonomy, and certainly erode trust in local governance structures.

Only few main actors in the Smart City industry are of European origin. There is Schneider Electric, a French multi-national, Bosch, a German enterprise, and there are others. However, the field has **long been dominated by US companies**, and recently seen strong global competition from Chinese firms. This has clear drawbacks for European citizens.

Firstly, the industrial origin of these technologies leads to a **too strong focus on tech**. Rather we need more societal, political approaches to get to better outcomes, and this means a focus on governance, participation, and oversights, not technological "quick fixes".

8 Palantir is a California based company used by counter-terrorism analysts at the United States Intelligence Community (USIC) and United States Department of Defense.

9 This section is adapted from Bihr, P. (2020, February). Smart Cities: A Key to a Progressive Europe. Paper commissioned by FEPS and SAMAK as input for the present report.

Secondly, the mostly US origin of these multi-nationals **undermines European city sovereignty.** It prevents, or at least complicates, meaningful oversight, governance, and protection of citizens' rights.

Thirdly, Smart City projects are currently promoted and launched at rapid pace, often under the framing of pilot projects. This leads to quicker approval of these projects, at the cost of meaningful oversight and societal consensus building. Once a company has installed the first Smart City project – something as benign as a connected version of public street lights, or free wifi in the local subway – they have essentially established a foothold in that municipality: **The vendor lock-in has begun**. Often, this happens without even the most basic debate about privacy protections or data policies.

BOX 2.3 **The Oslo Model: 10 Commandments for Progressive Digitalisation**

1. Citizens` needs must be understood and their expectations for user-friendly solutions honoured.
2. Oslo owns its data.
3. Oslo implements digital changes stepwise.
4. Digitally competent employees will be at the helmet when Oslo digitalise public services.
5. Oslo seeks cooperation to solve citizens' needs holistically.
6. Oslo has a culture of relentless learning.
7. Oslo governs its own digital systems.
8. Oslo takes responsibility for information security and personal data protection.
9. Public and private entities are allowed to supply new services using Oslo's data.
10. Oslo offers other cities and municipalities its digital experiences and solutions.

Source: Oslo City. Preliminary version.

Now, there are initiatives taking a critical view of big tech's inroads into city planning and services. **Barcelona is one example where political control and participation in the digital city development has come far**. In Oslo the progressive city council since 2015 has pursued a "taking digital charge"-strategy, setting up a new department for the city's digital development with experts covering technology, law and economics.

" The heavily centralised, platform-knows-best model of the smart city that has conquered many localities in the past decade is a perfect testament (...) such plans often yield only more centralised institutions, transferring power to Big Tech rather than the citizens and making public decision-making even less transparent than before. "

Francesca Bria, former CTO Barcelona (2019)


Smart
Transportation
Education
Smarth
Health
Intelligent
Shopping
SCHOOL
SUPERMARKET
Electric
Vehicle
Charging
CHARGING STATION
Mobility
Public
Safety
Eco
Energy
Smart
Home
Traffic
Management
Smart
Streets Lights

PART THREE

TOWARDS A EUROPEAN DIGITAL MODEL

DECIDING OUR DIGITAL FUTURE

Up till now, the digital infrastructure has been **shaped by commercial actors, and military and intelligence services, from the US and increasingly from China.** They are caught up in a struggle for global digital leadership. Europe is now a battleground for this struggle.

The US relies on its tradition of private entrepreneurship, with little regulation, but close partnerships with security and intelligence interests (Levine 2018). Yet, to thwart the rise of Chinese technology firms, it increasingly relies on overt market interventions, as in the case of ZTE and Huawei. The US approach so far coincides with **high degrees of economic, social, and regional inequality, and political polarisation.**

China has a clear strategy towards technology. **Independent innovation capacity is an overriding goal.** This "needs to be supported by government procurement, favourable taxes, subsidies and favourable insurances", according to the Chinese Ministry of Science and Technology (Holslag 2019). Consistent with that goal, market entry for foreign firms is restricted in a wide range of sectors, and digital technology is used to control citizens and sustain the power of the regime.

" Different versions of cyberspace support different kind of dreams. We choose, wisely or not. "

Mark Stefik (1996)

Against that backdrop of competing visions, it is important for Europe to articulate and execute an alternative path. Europe's most recent effort – the Digital Single Market Strategy – has not been able to fulfil that role. If Europe does not develop a distinct and independent path for the digital transition, we will as countries and continent increasingly be taken hostage by other's commercial and political interests. **What we need is a strategy to regain autonomy, to create a digital and online environment in line with our values.**

Now, nationalistic or authoritarian political forces are hardly better when they are European. In our view **it is crucial Europe's digital way is progressive,** based on social democratic values and democratic governance.

Europeans must decide Europe's digital way, **but the really hard questions are where to go to and how to get there.** Therefore, this part presents a sketch of a progressive European Digital Model.

A EUROPEAN DIGITAL MODEL

A progressive European Digital Model (EDM) should act as **a political framework and an inspiration for progressive policy-makers in Europe** to help shape the digital transition, reap its fruits and tackle its problems. In the same way we look at today's US and Chinese digital models, a distinct European Digital Model should be neither detailed nor static, but serve as a dynamic recipe for a European way of digitalisation. On the national level, practical implementation will of course differ.

At its core, our proposal for a progressive European Digital Model will stimulate a fair and green Europe **by reducing concentration, allowing workers and citizens to thrive, and strengthen public sector capacity.** Before going into specifics, we will briefly describe these as three interacting pillars of the EDM.

Restrict concentration

The first pillar aims to reduce market and political power concentration in the digital economy. We must **assertively reform and apply competition policy.** In sectors where concentration is high, but such scale also comes with major benefits, public-utility motivated regulations are warranted.

Public authorities should **demand and enforce open standards,** especially in upcoming sectors where market concentration is still not too strong, such as the Internet of Things. Beyond that, we need more interoperability between digital service providers.

Finally, we have to **limit opportunities to extract rents and avoid taxes.** It is vital to safeguard our tax base to fund public tasks as health care. In addition, it is necessary to reduce the flows of money that go into the merger and acquisition spree of big tech firms. This entails changes to tax and intellectual property laws.

Put people first

The second pillar of the model implies active measures to spread the benefits of digital technology to all citizens, and to the 100,000 of SMEs active in Europe. That requires new **governance models for non-personal data, to increase transparency and their sharing in the collective interest.**

This is not just a matter of technology. Every economic transition involves social changes. To reduce inequality and ensure quality jobs, workers need **more influence over the use of technology in the workplace, and a stake in its benefits.** Authorities and

" We may have democracy, or we may have wealth concentrated in the hands of a few, but we can't have both. "

Louis Brandeis (1941)

" The future has arrived. It's just not evenly distributed yet. "

William Gibson (1999)

employers need to renew efforts to distribute knowledge and skills to all workers and citizens.

Cities are leading the way. Barcelona, Amsterdam, Oslo and other cities have already experimented with using digital technology to spur meaningful change for and with citizens, and to create more liveable and social cities. These initiatives must be supported and spread, requiring public action at national and European level, the next point.

Strengthen public governance

" The important thing for Government is not to do things which individuals are doing already, and to do them a little better or a little worse; but to do those things which at present are not done at all. "

John Maynard Keynes (1926)

The third pillar of the EDM is an active and competent public sector, to ensure the digital transition supports the greening of our economy and to protect the (cyber)security and rights of our citizens. To do that, authorities must first invest in their capacity, to understand and manage the digital transition. Importantly, this applies to all areas of public interest, as the digital is cross-cutting. Secondly, authorities must provide **strategic investments in new technologies.**

Building on the General Data Protection Regulation (GDPR), authorities should develop **mandatory standards to prevent discrimination, privacy abuses, and improve sustainability and cyber resilience.** It entails binding rules – not just ethical guidelines – for automated decision-making systems (AI).

Finally, it means authorities will have to **invest in quality public services and a decent social security net for all.** The state should provide universal quality basic services to provide citizens and workers the means and security to grow, contribute, take risks and innovate.

To be clear, a progressive European Digital Model does not imply European isolation, but the opposite. As an increasingly autonomous digital power, **Europe should cooperate with other countries** to set digital global standards, and work with like-minded countries for a digital transition without ever present surveillance and data extraction.

Let's try to pin down a progressive European Digital Model further by discussing some major policy issues.

SOME MAJOR POLICY ISSUES

BOX 3.1 **Policy initiatives in a European Digital Model**

1. The goal: digitalisation for a fair and green society
2. Regulate and tax the digital giants
3. Ensure AI and algorithms lead to fair outcomes
4. A main challenge: Decent jobs
5. Protect citizens' rights
6. Strengthen public sector capacity to govern
7. Invest in public infrastructure and public interest tech

The Goal: Digitalisation for a Fair and Green Society

No longer mainly adapting to US commercial initiatives, we must take an active stance on how we want digitalisation to form our lives and societies. Increasing inequality, polarisation and climate change are fundamental challenges. That is why **the quest for a fair and green society should be the main guiding light** for European progressive policymakers when addressing the digital transition. These two issues are closely related: we need a fair as well as green transition and one is not possible without the other.

As we saw in Part Two, the way in which the digital transition has been managed so far has further skewed the income and power distribution in our societies. For progressives, this is a major concern. In the EDM we must **direct and use digital technology to fight inequality and gender-based and other forms of discrimination.**

Digital technology holds great promise to help spur a green revolution. For instance, the combination of 3D printing and data analytics can help create a more sustainable and customised industrial model. Eco-design criteria for electronic products, not least smartphones, will make them easier to repair. Digitalisation may also help increase the proportion of intangibles in the economy, as has already happened in the music, print and film sectors (Perez 2018).

Regulate and Tax the Digital Giants

A major first step is to **reduce the political, economic and cultural power of the giant digital platforms**. A complex and challenging but clearly necessary task, this involves:

- **Strong and updated competition policies.** Authorities should vigorously enforce the rules, while focusing less on short-term consumer prices, and more on data, nascent competition, and privacy, when assessing potential abuses and proposed mergers. The findings of recent reports (EC 2019, HM Treasury 2019) warrant a reform of priorities and doctrines, and possibly a review of EU merger rules.

- **Platforms as public utilities.** A number of online platforms are not just market players, but supervise and regulate the behaviour of other firms in entire market domains: they are 'functionally sovereign' (Pasquale 2018). This power should be regulated with public utility style rules. For instance, is it reasonable that newspapers pay 30% for each subscription made via Apple's Appstore? Or should there be a cap on such fees? Beyond rules for specific sectors there is also a systemic problem of big tech firms owning an essential platform and participating on it. Such structural conflicts of interest should not be merely addressed by incidental decisions based on competition policy.

" We expect that advertising funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers (...) It is crucial to have a competitive search engine that is transparent and in the academic realm. "

Google founders Sergey Brin and Larry Page (1998)

BOX 3.2 **Breaking up big tech?**

US presidential contender Elizabeth Warren wants to forbid big tech platforms with global revenue over 25 billion USD from offering their own services on the platforms they control. This would affect Amazon Marketplace, and Google's ad exchange and search platforms.
For companies with revenues between 90 million and 25 billion USD, she proposes that platforms should ensure fair, reasonable and non-discriminatory treatment of users.
There is a lot to be said for such rules, which would help solve the structural conflicts of interest in parts of the online platform economy. The EU made a small start, by adopting rules requiring online platforms to be more transparent to its business users.

- **Taxing the platforms.** Today many big tech firms do not pay their fair share. This is not just the case for tech or foreign firms, but a fundamental challenge, nonetheless. We have to find a consensus on what counts as corporate profit, and how to allocate it to different countries. Important efforts have been made in the context of the OECD, but if agreement at that level proves impossible, the EU should move ahead unilaterally. This should reduce tax avoidance and the cash piles that fuel take-overs.

BOX 3.3 **Some tax developments in Europe**

- In 2016, the EU ordered Apple to pay 13 billion EUR in back taxes to Ireland, saying it constituted illegal state aid.
- In 2018, the European Commission proposed interim tax rules for digital activities. The proposal was not adopted.
- In July 2019, France adopted a law requiring large tech companies to pay a 3% tax on their digital revenues (implementation postponed).

While these temporary and ad-hoc solutions are understandable, the solution within the EU is known: a common understanding as to what counts as corporate profit (CCTB), and an agreed method to allocate it to different Member States (CCCTB).

- **Open standards and interoperability.** Developing and promoting open standards in upcoming markets (such as the Internet of Things) will prevent new bottlenecks. Europe should also investigate, and discuss mandating, interoperability for main social media and messaging services, such as Facebook. If users can leave the platform, without leaving their friends, it will dampen the tendency to monopoly and provide incentives for firms to really take user's interests at heart. Europe has done this already for telecoms companies, which is why citizens with different phone providers can still call each other, and why we did not end up with one huge telecoms company.
- **Review of intellectual property laws.** Europe should assess the legal framework for intellectual property rights, which provides extensive monopoly rights to intangible capital, and unduly prevents the spread of knowledge. Many patent claims, especially those allegedly essential for a standard, are difficult to verify or contest, not least for small companies. For smartphones alone, it has been estimated back in 2012 that there are around 250,000 relevant active patents. Similarly, copyright protection can extend until 70 years after the death of the author. Does that really stimulate innovation?

Ensure AI and Algorithms Lead to Fair Outcomes

As described, algorithmic decision-making systems, including AI, are not good or bad, but **a tool in need of public policies and direction.** In fact, automation is often extremely helpful, and without it, the Internet as we know it would not exist. But, when automated decision-making is used to predict human behaviour and fundamentally affects people's lives, we should be very careful.

And indeed, algorithmic systems are increasingly used to collect and analyse data to make decisions for and about citizens and groups of people. They do so in ways that further certain goals, and **inevitably contain biases.** Right now, those systems and their biases tend to negatively affect the poor, minorities, and women.

Much of the risks **depend on the sector and algorithm concerned.** For example, a system deciding which cat picture is shown requires no scrutiny, whereas systems determining whether a citizen receives welfare benefits or where police resources should be deployed warrant careful consideration. Of particular concern are the deployment of face recognition technology across Europe (Kayser-Bril 2019) and systems for targeted advertising and risk scoring.

What is clear, is that **new and binding rules are needed.** The General Data Protection Regulation provides a useful starting point, but it contains gaps, and its focus on individual rights is not always appropriate to protect against systems that affect and influence groups of people. There is much good work done recently to provide elements for such a future legal framework (Data Ethics Commission 2019, Martini 2019).

" You can't control what you don't understand, and that's why you need to understand machine learning – as a citizen, a professional, and a human being engaged in the pursuit of happiness. "

Pedro Domingos (2015)

Especially for systems of public interest, there needs to be more transparency, accountability, and civil society involvement in the implementation and design phase. If that is done, algorithmic decision-making can be used in ways that do not harm the most vulnerable, but also with the explicit purpose **to reduce inequality and discrimination in the labour, housing, credit and insurance markets as well as in public services.**

For instance, researchers from Zurich University created an **algorithm that can help desegregate schools,** by tweaking the boundaries of each school's catchment area (AlgorithmWatch 2019). It is still in pilot phase, but it provides a great example of what is possible when authorities consciously steer for better societal outcomes and would have the technical expertise to do so.

A Main Challenge: Decent Jobs

When it comes to labour, the main challenge of digitalisation, and the main opportunity for policy-makers will probably not be the number of jobs in itself, but **the creation of decent and productive jobs,** which provide stable incomes and careers.

The opportunity and necessity are there: in a Europe of aging populations, there is likely to be more future demand for work than people to carry it out. Therefore, Europe needs to **increase productivity of workers,** by supporting new ways of work, the smart use of technology, and by boosting workers' skills.

This **will not happen by itself.** In a holistic European Digital Model, the conditions for work and workers must take centre stage. A range of recent reports provide elements of a strategy for decent jobs in the future (EC 2019, MIT 2019, ILO 2019). Crucial elements include:

- **Systems and paths for life-long learning.** Given the fast pace of technological change, as well as the more flexible labour market, education and skills training need to be stimulated as well as revamped, and move away from the mass, one-off education system that may have worked well earlier. Creating personal learning accounts would be a first step, allowing workers to acquire skills throughout their working lives.
- **Ensure a decent working environment and fight against social dumping.** This pertains to the whole labour market, but is not least acute in the gig economy. Many public authorities across Europe are starting to apply existing labour laws to online platforms that avoid their responsibility. Work is work, and hence platform work should be regulated accordingly.

" Adjusting to the rapid pace of technological change create real challenges, seen most clearly in our polarized labor market and the threat it poses to economic mobility. Rising to this challenge is not automatic. It's not costless. It's not easy. But it is feasible. "

David Autor (2017)

- **Universal Basic Services.** Europe should ensure that the social safety net covers all workers and citizens, independent of contract form or status. Authorities should aim for more neutral and hence broader social protection systems. For social services delivery, the focus should be on growing peoples' capacity (Cottam 2018), and experimentation with provision via local platforms should be encouraged.

BOX 3.4 **Universal Basic Income**

Universal Basic Income (UBI) schemes will not necessarily address inequality, and may come at the expense of existing welfare state institutions. Ian Goldin asserts "individuals gain not only income, but meaning, status, skills, networks and friendships through work. Delinking income and work, while rewarding people for staying at home, is what lies behind social decay." (Goldin 2019).

- **Trade unions 2.0.** Organised labour has been instrumental in ensuring workers share in the benefits of economic growth. Hence, labour unions should be supported, including and with a special focus on those active in the platform or gig economy. When strong, responsible and legitimate, trade unions can help profitable restructurings and increase productivity while safeguarding workers' rights, as in the Nordic experience.
- **Support worker influence.** When workers have a say in the decisions of companies, they are more likely to support them. It also raises the likelihood that digital technology will complement their skills, rather than replace them. To increase the benefits of automation and strengthen the human-in-control approach in the digital transition at the workplace, well established schemes for worker co-determination should be expanded.
- **Clarify limits of competition rules.** Europe should reflect on the limitations competition law now poses on independents to team up against big online platforms (Boonstra 2019). Collective bargaining rights should be available for these workers.

BOX 3.5 **Riders for rights**

In Spain, 'self-employed' riders working for Deliveroo were banned from the platform, likely for trade union activities. Under the banner of Riders for Rights, they launched their own delivery service, in the form of a non-profit cooperative owned by the workers.

In Norway, bike workers for the food delivery company Foodora recently succeeded in getting an historic tariff agreement with potential international repercussions after five weeks on strike.

Protect Citizens' Rights

Up till now, an incredible amount of **effort, money and talent have been spent to extract people's data and track their online behaviour,** with the purpose of selling advertisements and maximising profits.

With the GDPR Europe took an important step to limit this practice and to protect

citizens' rights online. Europe should build on the potential of these rules and the concepts included, such as portability of citizen's data, the notion of privacy by design, and certification. But in practice, **much depends on enforcement.** In the face of widespread non-compliance, authorities should not shy away from imposing fines.

At the same time, in a EDM **citizens should not be left alone** to enforce their rights against big tech firms, and 'consent' is not an answer to the enormous power imbalances. Therefore, Europe should also foster new data governance models such as data trusts. In a data trust, data from members is pooled, and a data trustee is entrusted to manage it independently, on behalf of all. This could also help unlock the benefits of personal data for research in the public interest, such as to improve healthcare systems.

BOX 3.6 **Personal data ≠ tradable property right**

Some aim to make personal data an individual property right, so people can sell it. This seems ill-conceived. Data are relational, and most value comes at scale. So letting individuals bargain for it is questionable. For instance, Facebook paid users between 13 and 35 years old up to 20 dollars a month to sell their privacy. This is not the way to improve equality in society, rather it is exploitation of the vulnerable.

If the main concern is rising inequality and improving the situation for the less well of, there are better alternatives.

There are a variety of issues at stake, for which the prism of individual rights and **individual consent is too narrow a frame.** Much of the negative consequences, for example for our public sphere and democracy, and positive potential, manifest itself in the aggregate. Therefore, a progressive agenda should address these societal aspects as well.

For instance, the way people talk to each other and gather information should not be fully commercialised. This **commodification of information** lies at the heart of many of the pathologies that are tearing up our public sphere. For broadcast TV, authorities safeguarded the public interest, with public channels, must-carry obligations, and limitations on the quantity and quality of advertisement. We should start a similar reflection about ways to protect public interests and citizens' rights for online media. An urgent first step would be transparency and restrictions for political advertisements. But beyond that, Europe should consider restricting the model of tracking people's browsing habits for targeted ads more broadly.

In the meantime, the European Commission's announced Digital Services Act is an opportunity to review the status quo. The new rules may revisit the exemption of liability that online platforms currently enjoy. And indeed, **big social media platforms can no longer pretend that they have no editorial responsibility** for the content they host.

However, potential major legal or institutional changes will involve a careful **balancing of rights and interests,** not least the freedom of expression. And a possible worst long-term outcome would be to further cement big tech's grip over the online infosphere and public debate. Generally, the recommendation made earlier, to promote a form of interoperability for large social media and messaging services, may be more promising by allowing decent alternatives to flourish. That said, this is a challenging issue.

" It is time for a serious debate about whether the surveillance-driven advertising systems that have taken over the internet, and which are economic drivers of misinformation online, is a fair trade-off for the possibility of showing slightly more relevant ads. "

Conclusion, Report of the Norwegian Consumer Council "Out of Control" (2020)

BOX 3.7 **Social media – decentralised alternatives?**

Mastodon is a social network that is decentralised. Instead of having a central site, like Facebook or Twitter, it consists of many different sites that can be created by users, but which are all linked to each other and use the same open source software.

The moderation and community rules are entrusted to the individual sites, not the network as a whole. In addition, the network relies on donations, instead of paid advertising.

This model radically reduces the privacy infringements, polarisation and manipulation plaguing large social media platforms.

Ultimately, the goal in a European Digital Model should be to **reclaim space where surveillance and manipulation is reduced to a minimum;** a social and cultural online sphere that is safe and open to experimentation.

Strengthen Public Sector Capacity to Govern

To grasp the opportunities, tackle the problems and give a new direction to the digital transition, public authorities have to take a more active approach. This can only succeed if they are allowed to strengthen their capacity. **Increased digital governance capacity is a robust investment for the future.**

Hence, politicians, at the EU, national, cities and local levels, must all address their digital policy making, monitoring and enforcement capacity. This means **enough funding, but also redirecting staff's attention and training.** For example, many data protection authorities are underfunded, making it difficult to fulfil their enforcement tasks under the GDPR, let alone to foresee and assess future risks for privacy and the protection of citizens' personal data (EDPB 2019).

To succeed, this will require authorities to better understand the potential of the current and upcoming digital technologies, and to execute policies and effectively cooperate, on **a more or less equal general knowledge level with market players**.

This also involves considering the use of non-proprietary solutions for software. When public authorities commit to using software that they (and others) can study, modify and share at will, it will increase their understanding of – and control over – crucial infrastructure. By using such **free or open source software**, they also avoid dependency on a single supplier to deliver crucial services. Furthermore, it can help to reduce costs, improve security, and increase competition in the IT sector. Finally, it stimulates public sector innovation, as code can be tweaked and shared across departments, and with citizens.

BOX 3.8 **Examples in Europe**

The French Gendarmerie is switching to the open source Ubuntu Linux operating system for most of its desktops. They reported big cost savings on software licenses and IT management (40% between 2008-2014).

Barcelona has committed to investing more than 70% of its software development budget into free and open-source software and services.

The UK government makes all new source code open and reusable by default.

In addition, **public authorities should use their buying power** to create new markets and nudge existing sectors towards societal goals, not least towards a sustainable economic model. This means for instance a drive to lower energy-use and e-waste and enforcing those norms throughout the supply chain. Public procurement amounts to 16% of EU GDP, if it is used in an accountable way to support or demand sustainable, interoperable solutions, that will make a difference.

Moreover, it should be common sense that **public authorities procure services from companies or non-profits that are transparent and respect people's privacy** and other fundamental rights, and that authorities observe these rules themselves. Whereas Amnesty International has identified Facebook's and Google's surveillance practices as a danger to human rights, many European governments websites still contain their and other companies' trackers (Cookiebot 2019). What message are authorities sending?

Public services must remain public, meaning they must remain under democratic control. The risk is that main elements of our education, health care and other systems become crucially reliant on commercial platforms, the values and architecture of which may be at odds with the public interest.

BOX 3.9 **Google in education**

Google has been expanding swiftly into the classrooms, with a host of apps, cloud services and cheap hardware solutions. Close to 70% of schools in the Netherlands already use free Google software (Bouma and Van der Klift 2019).

While digital tools may be a boon to education, the influence of big tech firms on what is now being learned and how is worrying. To what extent is the current push for personalised learning in the interest of students, and to what extent is it a fig leaf for big tech's drive to accumulate more data for their own business purposes?

Invest in Public Infrastructure and Public Interest Tech

Europe cannot only regulate its way to more digital autonomy. An EDM will need to have a clear idea of the direction it wants to take and provide sufficient investments in research and infrastructure. This requires the EU to decide, in a level-headed manner, **which infrastructures it wants to control, how and to which degree.**

Public authorities must take action to **translate Europe's prowess in basic research into concrete innovation in the public interest.** What is important is not just to increase investment, but to do so in areas that raise productivity in important sectors or help solve societal issues.

Therefore, the plan at EU level to develop **missions to guide funding under Horizon Europe** is a good initiative. The point is to make research more useful for society and individuals by defining needs and setting more explicit goals, without directing the methods or specific technological solutions. We need public interest technology.

BOX 3.10 **The DECODE project**

The EU has funded the DECODE project, which concerned applied research into privacy-friendly and open technology to manage online identity, personal and other data, and collective governance in a citizen-friendly manner. Results have been tested via pilots in Barcelona and Amsterdam.

Aware of our current strengths and weaknesses, Europeans should broach the sensitive question of strengthening strategic tech sectors, whilst shielding them from hostile take-overs and unfair competition. Europe should take **a more strategic approach towards data itself, the next generation of mobile communications (5G), artificial intelligence and high-performance computing (HPC).**

Specifically, the EU should **consider setting up an agency that can invest in strategic sectors such as AI and HPC and the necessary data infrastructure.** Its role would go beyond addressing market failures, or simply spending money on 'shovel-ready projects' to offset a lack of private sector spending. It should be allowed to invest in risky but promising digital research areas. Initiatives such as the European Open Science Cloud, a cloud for research data in Europe, can be built upon (European Commission 2019).

At another level, the EU could invest in the infrastructure at the heart of how people connect to the Internet, their online identity. Europe could **put in place systems that would allow citizens to regain control,** and selectively share the minimum amount of aspects of their identity to use a service. Such a digital trust infrastructure could cover online identification, authentication, consent and security. This would no longer force people to have a multitude of passwords and would be a decisive step away from the current ubiquitous surveillance. Different parties across Europe are building and testing elements of such infrastructure, such as Itsme.be in Belgium, and IRMA in the Netherlands. To scale this, authorities need to support these initiatives and develop appropriate standards.

BOX 3.11 **Estonia's digital identity system**

Can Europe learn from Estonia, and build a digital identity system that both facilitates citizens interaction with the government, but also with private parties in a manner that guarantees their privacy and autonomy? Europe's rules for digital identity will be reviewed in 2020, which provides an opportunity.

A vital question for the development of a European way for the digital transition, is to ask **who owns and controls data** and what they do with them. At the moment, most data are simply presumed to be owned by those who collect them, in most cases big tech companies. This data is then stored, aggregated, and treated for profit. Although it serves as a crucial input for firms' AI applications, well-structured data could also benefit the public interest, in for instance health.

Therefore, Europe should have a serious reflection about the default policy of the so-called free flow of data, which is now being pushed by the US at the World Trade Organisation. Such a policy seems ill-advised for industrial policy reasons. Moreover, data is not just a product like any other, it has social value and human rights implications. To be able to protect its citizens privacy and security, and retain a measure of autonomy, the EU should exactly build coalitions to advance alternatives to the status quo of unlimited data extraction (Singh and Vipra 2019). In other words, **no digital sovereignty without data sovereignty.**

A first step is to improve transparency in this area, to better understand the data value chain, and what happens to our data. This would require some form of rules on the traceability of data. On a shorter time frame, it may make sense for authorities to consider **access rights to already existing databases,** which provide key competitive advantages to big tech firms, but which are essentially socially produced knowledge.

BOX 3.12 **Data commons**

To spur the availability of data for public interest purposes, 'data commons' may prove to be a way forward. These provide an alternative to platforms holding on to socially produced data for their exclusive use, or authorities giving access to valuable datasets without setting any conditions.

Data commons involve a community of actors that share data and cooperate to manage it as a collective resource, based on commonly agreed rules. Wikipedia and Linux are examples of commons-based production in other areas.

A 2030 SUCCESS STORY

In the previous sections we highlighted elements that could get us towards a more sustainable and fair digital society and economy. But what does this mean for peoples' work, the economy, and our democracy? Bearing in mind that the digital is far from the only driving force, this section tries to **imagine what such a 2030 future might look like** – if we succeed in devising and implementing a progressive European Digital Model.

Economy and work

In the 2020s Europe did impose **structural solutions** for a number of big platform businesses, in tandem and close cooperation with the US, who undertook similar, but more drastic actions, including corporate governance rules limiting the one-man rule so emblematic for big tech. This created the conditions for new competitors to emerge.

By consciously investing in digital technology to raise worker productivity, notably in the personal services and care sectors, Europe managed to **bridge the widening gap between low- and middle-class incomes.** Investments in digital technology to combat climate change have also created a sizeable amount of quality green jobs.

Thanks to effective trade union organising, **existing labour laws have been increasingly applied** to gig economy platforms across Europe. Some withdrew from European markets in response, as they had no value proposition without the regulatory arbitrage. Local cooperative platforms have sprung up instead, unburdened by the management overhead and incessant growth demands that characterised Silicon Valley platforms. This has boosted local economies, and hence local employment, creating a virtuous circle.

Trade unions also pushed for worker influence over automation decisions in firms and in-company retraining, making workers much more eager to **accept and work with new technological applications.** This also raised the demand for technologies that complemented workers' skills, and better fit local contexts. Europe has not witnessed the backlash against digital technology that plagued many other countries in the 2020s.

Approaching the 2030s, there is **more entrepreneurship.** Thanks to the comprehensive shift to interoperable infrastructures, data-sharing and open source software and procurement that takes on board social and environmental

" Every individual should have the opportunity to develop the gifts which may be latent in him. Alone in that way can the individual obtain the satisfaction to which he is justly entitled; and alone in that way can the community achieve its richest flowering. For everything that is really great and inspiring is created by the individual who can labor in freedom. "

Albert Einstein (1936)

considerations, there are more opportunities for small firms. The EU's insistence on the right to repair for all electronic products has created a sizeable sector of repair workshops and artisans that customise and tweak products on demand.

Europe set up a broad range of public and non-profit institutions to **collectively manage data.** This allowed Europe to foster useful innovations in healthcare, mobility and sustainability, without the loss of rents paid to private platforms. The approach has been pioneered at city level, in the spirit of the governance of the Barcelona Digital City program.

This has all been underpinned by serious **investments in – and changes to – our education systems,** which now focus less on rote repetition, and support life-long learning, via personal learning accounts that people can access throughout their lives. This has allowed people to have the resources to grasp the opportunities in a changing economy.

As the **social security systems have been adapted** to a more flexible labour market, workers were not penalised for switching jobs, taking a study break, or working multiple jobs. Increased corporate tax revenues have been used to provide elderly care and a skills boost to citizens. For health and care services, digital technology has helped to discover user needs, foster relationships, and better link demand and supply to increase satisfaction and efficiency.

Equality and democracy

Once the EU mandated **interoperability for social media,** the ecosystem became much more diverse as people found it easy to switch. A number of new – and existing – players stepped up, which competed on data protection, privacy, and the quality and characteristics of their moderation. This has brought back some of the community feeling and participatory element of the early Internet.

Because the EU put in place infrastructure that guaranteed citizens' full control of their own online identity, the **surveillance model of the internet came crashing down.** Together with the strict enforcement of the GDPR, this dissuaded big tech firms from entering or further expanding in the education and healthcare sectors. After all, they were not that interested in the service delivered to users, but mainly in the underlying data, which became way more costly or impossible to obtain or use.

Europe took **early and binding steps to enforce transparency, accountability and limit bias of autonomous decision-making systems.** Thanks to its intervention, it influenced regulatory actions in other Western jurisdictions, and made sure that development of AI focused on explainability. This has enabled public authorities to make judicious use of algorithmic systems, and also led to the decommissioning of certain systems, when it proved they did more harm than good, in social terms.

European rules allow citizens to know the algorithmic inferences made about them, and to contest automatic decisions. This has increased citizens' trust in these technologies, and **they now utilise AI in a range of fields to help them in everyday life.** In fact, most citizens have their personalised AI assistant, that trains on their data, and takes care of tedious administrative tasks. But thanks to strict rules on online identity and data protection, unlike the old virtual assistants, these ones act in citizens' interests, and in their interests alone.

Concluding Remarks

Developing and implementing a distinct European Digital Model is a vast task. However, with digital technology getting so immersed in society as well as our private lives, there is no alternative if we do not want to leave governance to US and Chinese commercial and national interests.

We should remember Europe has a lot to build upon. Though not at the forefront of all digital innovation and products, and though marked differences within Europe persist, technological competence is generally high, many citizens are highly skilled and educated, and we have functioning institutions both at EU and national level for the kind of collective action needed to succeed with a European digital approach.

The point is not to "win the digital race". The point is to safeguard and develop the societies of Europe, to improve the lives of European citizens and workers. Digital technology has the potential to make lives better for millions of future Europeans. But also to leave us worse off, in the hands of commercial digital giants with values far from ours.

That is why European progressives must take charge of Europe's digital future.

"If the digital future is to be our home, then it is we who must make it so."

Shoshana Zuboff (2019)

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ANNEXES (online only)

Annex 1 Key Technologies in the Digital Transformation: Towards a Social Science Taxonomy of Digital Technology. By Johan Røed Steen, Fafo. Paper commissioned by FEPS and SAMAK as input for Report 'A Progressive Approach to Digital Tech (2020, February).

Annex 2 Smart Cities: A Key to a Progressive Europe. By Peter Bihr, The Waving Cat. Paper commissioned by FEPS and SAMAK as input for Report 'A Progressive Approach to Digital Tech (2020, February).

MORE ABOUT THIS REPORT

Kristian Weise (Secretary General, Oxfam Ibis) contributed with the first draft on digital consequences for the world of work while he was Secretary General at Cevea. In addition, the report has benefitted from workshops in Oslo in December 2018, in Brussels in May 2019 and in Stockholm in September 2019.

The following have participated in one or more workshops and/or contributed with written comments and input: Peter Bihr (The Waving Cat), Meike Büscher (Friedrich Ebert Stiftung Nordics), Hans Petter Dahle, Jon Erik Dølvik and Johan Røed Steen (Fafo Institute for Labour and Social Research), Nick Frosst (Cohere), Daniel Färm and Torsten Kjellgren (Tankesmedjan Tiden), Hannah Gitmark and Hilde Wisløff Nagell (Agenda), Paul Keller (publicspace.online), Linda Larsson (LO Sweden), Maija Mattila (Kalevi Sorsa Foundation), Paul Nemitz (European Commission), Kaisa Vatanen (Kalevi Sorsa Foundation), and Kristian Weise (Cevea). Bjørn Taale Sandberg (Telenor) gave a presentation at the Oslo workshop. None of the above are responsible for errors, deficiencies or opinions in this report.


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