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SITRA

Policy Brief

A Roadmap for a Fair Data Economy

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SITRA

The paper was procured as part of The Finnish Innovation Fund Sitra's IHAN® human-driven data economy project. The project aims to build the foundation for a fair and functioning data economy. The main objectives are to create a method for data exchange and to set up European level rules and guidelines for the ethical use of data. Sitra is a think/do tank that collaborates with partners from different sectors to research, trial and implement bold new ideas that shape the future. Sitra was a gift from the Parliament of Finland to the nation on the country's 50th anniversary. The independent fund has been commissioned with the task of probing the future and promoting qualitative and quantitative economic growth. The Lisbon Council was chosen to co-produce this report as the result of a public call for tender published on the Finnish national portal for tenders on 17 September 2018.

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Foreword

Dear friends,

Since its founding in 1967, Sitra's mission as the Finnish innovation fund has been to promote stable and balanced development in Finland. This mission requires us to be global in scope: Finland can only flourish embedded into a networked and prosperous Europe and a peaceful and sustainably developing world.

Our century's myriad challenges include climate change, ageing populations and complex geopolitics. And our industrial era structures and solutions are no longer up to the task. Despite these challenges, I am hopeful: new technologies and solutions can usher in the next era of well-being, where people will live longer and healthier lives that give them more opportunities for self-realisation and expression. New technologies and solutions can usher in the next era of well-being. I am also confident that Nordic and European values – a marriage of freedom and solidarity – remain the best platform for moving our world in this direction.

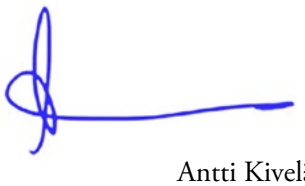
The data economy is a central piece of the puzzle: an important avenue of economic growth but also the setting for public and private spheres alike. How the data economy develops also has bearing on other questions, from the practical feasibility of a circular and carbon-neutral economy to managing the healthcare of our rapidly graying populations.

This policy brief charts a European vision for a fair data economy. It lays out how we can overcome the false dichotomy between individual rights and the imperatives of economic growth with new business models that provide value for users, startups and established companies alike. In recent years, the European Union has already laid the legal groundwork for this evolution with the General Data Protection Regulation and other legislation. This report lays out a roadmap for how to build on that foundation and make Europe into a world-leading data economy.

We launch this discussion at a decisive moment for Europe. A new European Parliament and European Commission will take office later this year, while Finland's Presidency of the Council of the European Union from July to December 2019 gives the country a chance to set out new ideas for Europe. But the fair data economy is not an idea for Brussels policymakers alone – it must draw on the contribution of companies, civil society and citizens alike.

We want to thank the Lisbon Council for their outstanding work and our close collaboration, with particular thanks to Luukas K. Ilves and David Osimo, the co-authors of this paper. Sitra and the Lisbon Council share a common DNA of optimism tethered to pragmatic ambition. We also thank the business leaders, policymakers, politicians and thinkers whose ideas and time contributed to making this paper a success.

We hope you enjoy reading!



Antti Kivelä
Director
Capacity for Renewal
Sitra

Making Europe a World-Leading Data Economy: The Road Ahead

The digital revolution is only getting started.[1] Digital disruption, which thus far has transformed a few sectors, is working its way into every sector of the economy. New technologies and exponential growth in the volume of data being produced by people and machines lend themselves to new business models and new kinds of products, while making everything from schools to hospitals more effective. Used correctly, this data explosion promises to make us healthier, richer, sometimes even more compassionate, and to solve intractable societal challenges like climate change.

Yet there are also clouds on the horizon. Incumbents in a wide range of industries fear disruption from large platforms while upstart competitors sometimes struggle to compete against them. The headlines speak of jobs being lost to artificial intelligence, information bubbles and the hacking of democracy. Citizens feel they have little control over how their data is used and monetised. And Europe also worries about falling behind in digital development, with the United States and China pulling further ahead as they develop a new generation of artificial intelligence technologies and high-powered computing.

However, Europe is taking the initiative. The European Union now has the toughest data protection standards in the world, the general data protection regulation (GDPR), which creates new data rights for individuals and obligations for organisations. The updated payment services directive (PSD2) requires banks to allow third party access to personal data, upon consent of consumers. With this and other legislation, Europe has placed a bet on strong legal standards and ethical norms.

But will these efforts really serve as a competitive advantage, as some have argued?[2] The continent still struggles to produce data-driven companies of world-market leading size – capable of delivering the digital-era jobs to European societies that so badly need them or facilitate the consumer and scientific breakthroughs that many have predicted "big data" will eventually bring.

We believe it is time for policymakers to move more decisively. Europe has shown its mettle with tough enforcement and a fundamentally ethical stance on matters of privacy and data sharing. The world has been forced to take notice. And the legislation has proven to be timely and badly needed. Now it is time to move forward. Alongside this powerful, effective and deeply moral approach to regulating the data economy, it is time to build on early success and create a European data economy that is both fair and effective. In many cases, this means building on successful projects that have already been launched – but not yet taken to scale. In other cases, it means bringing new thinking to a problem that is already far advanced. In all cases, it requires both a strong sense of recognition and pride in what Europe has already achieved – but also a willingness to go forward, adding additional fundamental building blocks to a data-economy regulatory environment that is off to a good start but has yet to deliver in all areas.

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1 The authors would like to thank the nearly 100 individuals who kindly contributed their time and wisdom to this project through a series of structured interviews and a high-level workshop in Brussels in March, 2019. A list of individuals who gave interviews or took part in the workshop – along with friends who contributed ideas or helped to bring the project to fruition – begins on page 54.

2 Vera Jourová, "What Next for European and Global Data Privacy?" *Speech at the 9th Annual European Data Protection and Privacy Conference*, 20 March 2019.

To support this overarching agenda, we introduce a new concept of a "fair data economy." Under this vision, which will be described in greater detail later in this policy brief, individuals would have the ability and confidence to broadly share their personal data through consent and portability. This is, in turn, would enable a new generation of personalised services and greater competition to the benefit of consumers. And the evidence is that major structural changes in the way the service sector – and the data economy – are changing is opening avenues for new, more effective policies in the data-economy sphere, including:

- While the initial growth in the web – and in platforms – was powered largely by free business models based on advertising, consumers are now getting accustomed to different models, including paid subscriptions. These new services are forging higher-trust relationships where data is increasingly used to put the individual in the driver's seat and unlock new value through personalised services, with major benefits for health, finance, efficiency and the environment.
- A new set of technologies has made it easier to share and track the use of personal data seamlessly, making it possible to add in new controls for individuals and build entirely new data ecosystems at a reasonable cost.
- Regulatory action by the European Union and national governments has provided the legal levers to support and develop such ecosystems.
- The public is increasingly aware of its data footprint and is beginning to take advantage of its data rights.

As a new European Parliament and European Commission assume office, the time is right to build a new model – one that harness new technology and delivers the successful, ethical data economy that Europe wants and Europe needs.

A Tale of Two Bank Accounts

Jennifer expected her loan request to her bank to be turned down, but was still disappointed when it happened. Her bank was very risk averse, her savings were divided in two separate banks, and she had had financial troubles since losing her job. She needed funding to retrain as a web designer and to launch her own business. In her search for ideas, she came across a new, promising financial-services app. Once registered, she provided authentication to her bank accounts, all her data from different banks were gathered together and she had a complete picture of her finances. At the same time, the app used her data to create a financial score and put her in touch with other banks that, based on her score, were willing to approve the loan. Thanks to the app, Jennifer could request loans from multiple banks, not just the one where she had accounts on, and finally got a good deal.

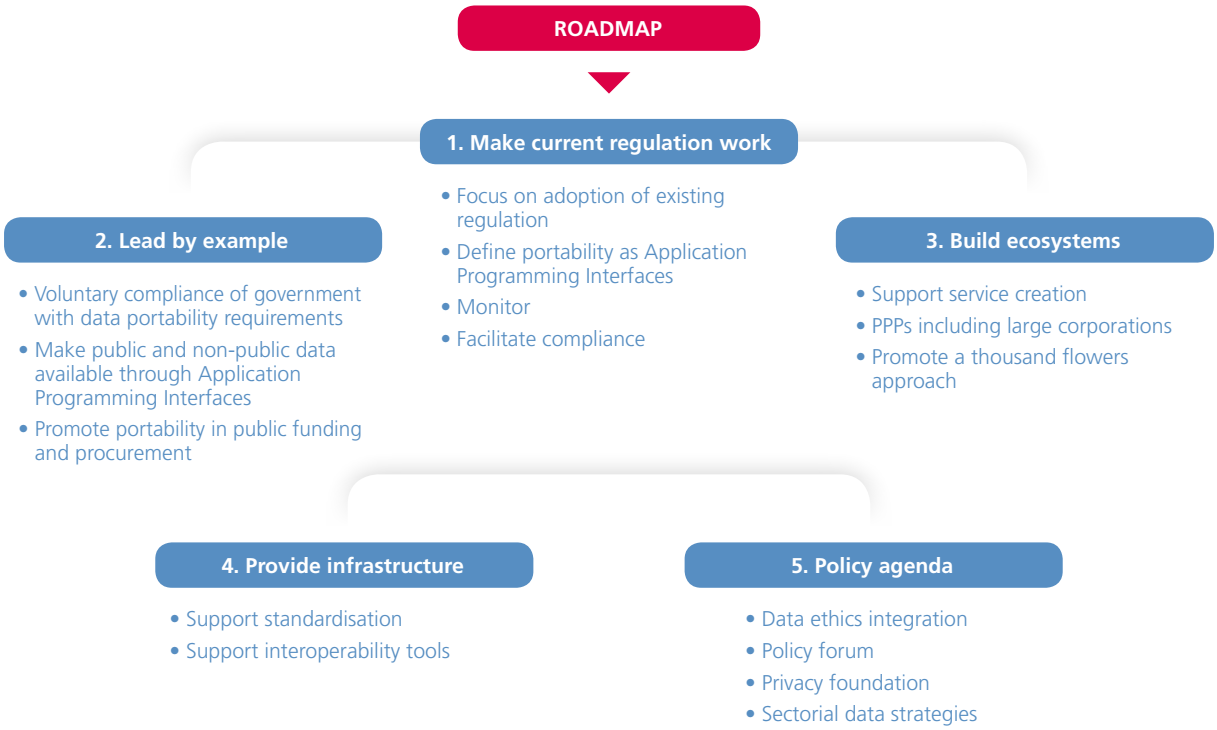
Ultimately, Jennifer could obtain the long-desired loan to fund her re-training as a web designer; the bank could sign a new loan backed up by rich data; and the app obtained a success fee and also could enrich their dataset for providing value added market research data to large companies. A new thought struck Jennifer then: if I can do this with my bank data, why not with energy, health or shopping data? This could be a nice idea for my new business...

Getting there will require experimentation, engaged consumers, politicians and regulators, and main-streaming thinking about data across every domain of policymaking. In order to make a fair data economy an economic success, policymakers will need to employ a broader toolbox of approaches beyond legislation that addresses new technology, new business models, values and public opinion. But the end result could be greater success for Europe in the data economy and even better success in projecting European values worldwide.

In this policy brief, we propose a five-point agenda:

1) build on the already existing EU legal foundation to make the framework more powerful and effective,
2) set an example with the way governments themselves use data,
3) build business ecosystems to take better advantage of data,
4) develop the infrastructure to break through sectoral silos, and
5) spread broader public awareness to create consumer demand and drive change. See Chart 1 for a graphic representation and learn more about the recommendations, beginning on page 44.

Chart 1. Roadmap Towards a Fair Data Economy



In the first section, we analyse the current situation. In the second section, we lay out a new vision for the data economy – one based on expanding and scaling current initiatives and providing more coherence to the myriad programmes already undertaken. The third section reviews underlying trends. And the final section, which begins on page 43, includes a roadmap spelling out what needs to be done to make it happen. Throughout, we also include several short vignettes, showing how personal data can be mobilised to consumers' advantage and advanced data analytics can contribute in concrete ways to better lives.[3]

3 The vignettes are fictitious, though they are based on real technology and known use cases.

Special Report

Data brokers: Their role and market

Despite the discussion over data markets, data is typically not traded. It is managed in-house, or bundled with services, or through partnerships. The main reason is that it is impossible to assign intrinsic value to data *ex ante* – value comes only when data are analysed. Where data is shared, it is often based on barter or occurs in situations where there is a clear win-win for participants (e.g. predictive maintenance of industrial equipment). One big exception is personal data, especially in relation to advertising. Personal data is the reason why today online advertising accounts for almost half of total ad spending – and why Facebook and Google account for about half of this. In practice, it seems that the value of a Facebook or Google user in developed countries is approximately €10-20 per annum. By the most generous estimate (e.g. presuming that Facebook's entire revenue can be attributed to the value of personal data) perhaps €100 in the U.S. These numbers do not reflect the total potential value of these personal data, but how much value Facebook and Google are currently able to generate from them. As a reminder, the business model of existing ad powerhouses such as Facebook and Google does not include data reselling, but is based on selling accurate targeting of messages to desired audiences.

On the other hand, there is a large and well-established market for personal data, managed by so-called data brokers which are often long-standing businesses in the credit rating industry which have expanded their activity including new data sources. Companies such as Acxiom, Equifax, Experian and Oracle aggregate massive amounts of data about individuals from many different sources: Oracle claims to offer through its marketplace around 30,000 data attributes on 300 million individuals.

Because data brokers assemble data from a large number of different data sources (both online and off), they are also the first target of post-GDPR judicial activity related to valid and specific consent: Privacy International has filed complaints against seven data brokers, while the French Data Protection Authority has decided that the practices of the advertising platform Vectaury (which gathers data from 32,000 apps) were illegal because of the lack of "validity of expressed consent."

Yet, this flourishing market is clearly a *wholesale* trade where data brokers sell massive amounts of data. There is no large-scale example of successful trading of individual data – directly from data subjects. The value of data appears not only impossible to define, but also too small to be meaningful: for instance, a researcher purchased the online dating profile of one million people for €136 in 2017. Indeed, the datasets sold by data brokers often contain inaccuracies on an individual level.

1. Digitisation and its Discontents

In brief:

> The value and promise of the data economy continue to grow. Europe is behind the U.S. and China, though it remains an important player

> Users' concern about their personal data is now expressing itself in a refusal to use some services and a slowdown in the growth of others

> To avoid the "techlash," Europe needs a positive vision for a fair data economy

The best is yet to come

The world finds itself on the verge of the "fourth industrial revolution." A process of digital disruption that has impacted primarily a few sectors so far will touch on every facet of the economy and government, from financial services and transport to healthcare. Dematerialisation makes it possible to provide services across borders and allows new champions to take the place of old industries at a growing pace.

At the centre of this transformation is data.[4] Real time, granular data is today available to understand all parts of human behaviour, from listening to music to driving cars to sleeping. And the rate at which we produce data is doubling every 12-18 months.[5] Cloud computing, smart devices and fifth-generation cellular-mobile telecommunication systems (5G) all help generate an exponentially growing volume of data that will in turn feed new artificial-intelligence and blockchain-based services.

The European data economy was worth €330 billion in 2017, or 2.4% of European gross domestic product.[6] According to a recent EU data market study, this "data economy" includes "the overall impacts of the data market on the economy. It involves the generation, collection, storage, processing, distribution, analysis elaboration, delivery, and exploitation of data enabled by digital technologies. The data economy also includes the direct, indirect, and induced effects of the data market on the economy."[7] In other words, the data economy includes not only technological and data analytics companies (the so-called "data market") but also companies in traditional sectors making use of data (the "data users").[8]

There is still much room for growth: in traditional industries, only 6.6% of EU companies are intensive data users.[9] When looking more specifically at data companies, the study estimates the 276,000 European data companies report total revenues of €68 billion in 2017, amounting to about 10% of information and communications technology (ICT) spending in Europe. But the EU data economy is growing rapidly. In an optimistic scenario, the total value of the EU data economy could surpass €1 trillion in 2025.

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4 See Organisation for Economic Co-operation and Development, *Data-Driven Innovation: Big Data for Growth and Well-Being* (Paris: OECD, 2015); Nicolaus Henke, Jacques Bughin, Michael Chui, James Manyika, Tamim Saleh, Bill Wiseman and Guru Sethupathy, *The Age of Analytics: Competing in a Data-Driven World* (San Francisco: McKinsey Global Institute, 2016); Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work and Think* (New York: Mariner Books, 2013).

5 For more, visit the DOMO Data Never Sleeps 5.0 platform at https://www.domo.com/learn/data-never-sleeps-5?aid=ogsm072517_1&sf100871281=1. See also IBM, "Ten Key Marketing Trends for 2017 and Ideas for Exceeding Customer Expectations," *IBM Marketing Cloud* (Armonk: IBM, 2017).

6 Throughout this policy brief, all figures and estimates for the EU economy are based on the EU28 including the United Kingdom unless otherwise stated.

7 Giorgio Micheletti, Gabriella Cattaneo, Rosanna Lifonti, Nina Bonagura, David Osimo and Katarzyna Szkuta, *European Data Market SMART 2013/0063: D2 Methodology Report* (Brussels: European Commission, 2014).

8 Ibid.

9 International Data Corporation (IDC) and the Lisbon Council, *First Report on Facts and Figures: Updating the European Data Market Study Monitoring Tool* (Brussels: European Commission, 2018). Available at www.datalandscape.eu.

Other advances have enabled firms and individuals to merge services with production to create hybrid new economic offerings and new ways of producing top-of-the-line goods. Many things that were once routinely bought or sold are now leased and rented in elaborate packages, with companies themselves flogging long-term relationships where short-term products might once have been sold and managing supply chains where design is done in one place, manufacturing in another and the product itself sold to consumers around the world under great quality and price pressure.

'In an optimistic scenario, the total value of the EU data economy could surpass €1 trillion in 2025.'

Growing concerns

Despite the opportunities, when it comes to the data economy, some European citizens are worried. They are starting to be nervous about the amount of personal data circulating beyond their control. One study shows that misuse of personal data is the No.1 barrier to consumers using online services, with the proportion of European Internet users sharing this concern rising to 45 % of the population in 2017, up from 37 % in 2013 – even before the Cambridge Analytica affair revealed the mis-use that could be made of personal data that ought not to have been shared in the first place.[10] Users have started to take action: about four in ten people (39 %) have reduced the personal information they provide.[11] The Mobile Ecosystem Forum Global Consumer Trust Report 2018 is aptly titled "The Grand Awakening."[12] It shows that 76 % of respondents have taken at least one action to increase privacy, such as changing the privacy setting (implemented by 22 % of respondents), and in many cases started doing it in 2018.[13]

Beyond privacy, there is growing concern that the nature of data-driven innovation, which requires infrastructure, a talented workforce and large data sets, lends itself to the creation of natural monopolies and a "winner-takes-all" economy.[14] As the argument goes, a few large data-producing companies have accumulated such a large amount of data as to create a formidable barrier to entry of new players and thereby restrict competition.[15] In the U.S., for instance, 30 firms earn more than half of all corporate profits, mostly in the technology and finance sectors.[16]

Last but not least, Europe is losing competitiveness with the U.S. and China. What used to be a story of catching up and competing with the U.S. is now one of not falling behind China. Europe hosts only 3 % of the platform companies generating most of the world's data (personal and non-personal), against 30 % from China and 66 % from the U.S.[17] While Europe still leads in terms of the number of scientific publications, the U.S. and China report far higher patents and venture-capital investment in artificial intelligence than Europe. [18]

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10 TNS Opinion and Social, *Europeans' Attitudes towards Cyber Security*, September 2017.

11 Ibid.

12 Mobile Ecosystem Forum, *Global Consumer Trust Report 2018* (London: MEF, 2018).

13 Ibid.

14 Patrick Barwise and Leo Watkins, "The Evolution of Digital Dominance: How and Why We Got to GAFA," *Digital Dominance: The Power of Google, Amazon, Facebook, and Apple* (New York: Oxford University Press, 2018).

15 This is a commonly voiced view, but attempts to demonstrate the anti-competitive effects of data in practice have proven more difficult. See Anja Lambrecht and Catherine Tucker, "Can Big Data Protect a Firm from Competition," *SSRN Electronic Journal*, 2015.

16 Kathleen M. Kahle and René Stulz, "Is the U.S. Public Corporation in Trouble?" *Journal of Economic Perspectives*, 31 March 2017.

17 For more, visit the KuBra Consult Blog at https://kubraconsult.blog/2017/11/04/digital-business-models-and-platform-economy/.

18 OECD, *Private Equity Investment in Artificial Intelligence, OECD Going Digital Policy Note* (OECD, Paris: 2018) and World Intellectual Property Organisation, *WIPO Technology Trends 2019: Artificial Intelligence* (Geneva: WIPO, 2019).

But the U.S. and China are poor role models – particularly in this field. In the U.S., weak rights protection and lax data security leave users exposed to frequent breaches and suffering from identity theft and data-driven discrimination. And while Silicon Valley produces user-friendly consumer facing services, public sector digital services are often shambolic. China, in contrast, is the model *par excellence* of digital authoritarianism. The Chinese government has built a massive censorship wall staffed by hundreds of thousands of officials to delete subversive comments and pursue those critical of the status quo, while a new "social credit" system is already subjecting the entire country to artificial-intelligence driven surveillance and control. There is no free market in the Chinese Internet; Facebook and Google find themselves banned.

Unaddressed, the grievances around tech are a political tinderbox. In the last few years, criticisms and concerns about the direction of the data economy have begun to coalesce into a more aggressive political backlash, the "techlash," as some call it.[19] We have seen bolder political proposals, from calls to "nationalise" Facebook or classify online platforms as an essential utility to serious discussions of a "universal basic income."[20] This techlash is likely to get worse. The rise of artificial intelligence has increased nervousness about doomsday scenarios or possible job losses to platforms and automation. All of this sets us on a course to overreact, discarding the positive opportunities of the data economy.

A broader movement to impose rule of law and a rules-based order on tech firms is underway.[21] Traditionally pro-market newspapers, such as *Financial Times* and *The Economist*, have called for greater regulation of tech companies.[22] Even the U.S., with a public traditionally averse to regulating technology firms, has reached a tipping point, with half of the public supporting calls for more tech regulation.[23] And large tech companies are feeling pressure directly from their employees. [24]

We need to move from a negative vision – a long list of ills we wish to avoid, including data leaks, unethical AI and data monopolies – to a broader vision of the world we are trying to build. The ills are not going to go away, there is no *status quo ante* to return to. Nor would we want to turn back the clock. Rather, we need a broader positive vision. This is a vision that needs to make sense not just to philosophers and policymakers, but also to data scientists and innovators. We need to be able to distil the complexity of policy considerations and discontent over the status quo into actionable imperatives for businesses and consumers.

'The idea of a "fair data economy" aims to enable the widest circulation of data not just between the individual and the providers but also between service providers themselves.'

19 Rana Foroohar, "Year in a Word: Techlash," *Financial Times*, 16 December 2018.

20 For instance, see Gianmarco Raddi, "Nationalize Facebook: Mark Zuckerberg Can't Protect Our Data," *Politico*, 10 September 2018.

21 See for instance Marietje Schaake, "A Rules-Based Order to Keep the Internet Open and Secure," *Georgetown Journal of International Affairs*, 30 October 2018.

22 John Thornhill, "There is a 'Third Way' for Europe to Navigate the Digital World," *Financial Times*, 19 November 2018. See also, The Economist, "How to Tame the Tech Titans," *The Economist*, 18 January 2018.

23 Kim Hart, "Exclusive: Public Wants Big Tech Regulated," *Axios*, 28 February 2018. See also Aaron Smith, "Public Attitudes Toward Technology Companies," *Pew Research Center*, 28 June 2018.

24 Google discontinued its work with the U.S. Department of Defense based on employee discontent, and Microsoft has encountered similar pressure from its employees. Will Knight, "Google Won't Renew Its Military AI Contract, *MIT Technology Review*, 01 June 2018. See also Lucas Matney, "Group of Employees Calls for End to Microsoft's $480 Million HoloLens Military Contract, *TechCrunch*, 28 February 2019.

Competition law and data markets

There are limitations to what *ex-ante* regulation alone can achieve. Governments seek to achieve "future-proof" regulation, but technological and market scenarios change. Competition law is one of the flexible future proof instruments policymakers have at their disposal. Since its 2007 antitrust decision against Microsoft, the European Commission has become one of the preeminent global antitrust authorities in technology.

Data is becoming an increasingly important dimension of antitrust policy. In 2014, the European Commission cleared Facebook's acquisition of WhatsApp on the understanding that Facebook would not merge WhatsApp's data with that of the parent company, but recently fined Facebook for not abiding by these terms. In the United Kingdom, open banking rules were imposed on the biggest nine banks by the Competition and Markets Authority as a competition remedy to open up the banking market. And the European Commission is considering whether to treat data as an "essential facility" and employ access to data sets as a possible antitrust remedy. In the future, competition authorities could treat a failure to comply with portability requirements as an instance of abuse of dominant position, whether on its own or as an aggravating circumstance. Strengthened data portability requirements can also be used as a remedy to aid competition against dominant firms.

Nevertheless, competition law has inherent limitations as an instrument for making a better data economy. Competition decisions move slowly, react only to specific cases and injured parties and are subject to judicial review. In a winner-takes-all platform economy, such judgments may come too late. And because competition law only targets dominant positions, it will never undergird a broad right to data access and reuse. Portability mandates can also have unexpected consequences that advantage larger players. The compliance cost of regulation can be met more easily by existing large companies, and early findings after GDPR implementation suggest that small advertisers are experiencing the largest negative impact from GDPR, rather than Google or Facebook. Nevertheless, there is thus far no evidence of portability requirements having this effect.

2. A Vision for a Fair Data Economy

In brief:

> We propose pursuing two goals at once: putting individuals in control of their data and maximising the use of data

> A fair data economy can serve the interests of individuals, existing service providers and data re-users alike, based on data portability and consent

> The societal benefits of permission-driven data sharing include economic growth, individual empowerment and broad societal benefits

Europe's data economy should enthusiastically pursue two goals in a manner that are complementary:

1. **Putting individuals in control of their data**, following the basic principles laid out both in the GDPR and by the MyData movement.[25] This entails a paradigm shift from data protection to giving people control over their data – from negative agency alone to positive agency.
2. **Maximising the use of data**. Data only has value when it is being used. And nearly all uses of data have some kind of social or economic utility. The good news is that data is non-rivalrous, so there is no inherent limitation to how many parties can benefit from any one data point or data set.

These two goals are usually seen as conflicting with each other, requiring a "balance" or "trade-off." More privacy and individual control restricts the usage of data, imposing an economic cost, while innovative products and services require unfettered access to data. It would be easy to simply conclude that we need to choose between ethical values and economic success, between strong regulation and free markets. But decades of economic analysis show that this is a false dichotomy.[26] New technological developments and business models make a virtuous combination possible, where massive data reuse based on individual permission creates a win-win. Greater control can give individuals the trust, confidence and means to share data for new uses, with important benefits from greater reuse of their personal data: healthier lives, better managed finances, more efficient transportation, seamless shopping experiences, a cleaner environment, etc. Companies can access new sources of data, giving start-ups and old economy incumbent companies in particular new ways to compete.

The problems arise over so-called "secondary data," which is data that was gathered for one purpose but which a company (or individual) proposes to use for a new and original purpose. To be sure, most data is gathered in a very straight forward way; a company or machine collects information about customers in order to provide a better service to the person using the service or machine – the data collected in this way is called "primary data" and the activity is called "primary service provision." This is a relatively uncontroversial transaction in the modern world. But the trouble comes when some people and institutions try to go one step further: using the data gathered by themselves or by another company for purposes other than the purposes for which it was originally collected. This

25 For more on the MyData movement, visit https://mydata.org/.

26 Knut Blind, "The Impact of Regulation on Innovation," *Handbook of Innovation Policy Impact* (Cheltenham: Edward Elgar, 2016).

is illegal under the terms of the GDPR. And there is one, big problem with that: much innovation these days – including innovation in services – is based on using data that was collected for one purpose (say to monitor an engine or make a payment) for novel and new purposes (such as running advanced data analytics on how machines are functioning or monitoring the economy in real time).

How, then, can society as a whole reconcile this dilemma – taking concrete steps to ensure that individual data rights are protected while making sure that data is available for new, innovative services? The fact is, recent technological developments have made possible a range of new tools allowing individuals to take control of how and where their data is used and for what purpose: Consent Management Services, Application Programming Interfaces, Personal Information Managers, and more. Taken together, these developments present a new opportunity for the European data economy – and hold out hope that, far from remaining an "also-ran" in the global data economy race, Europe could emerge as a true leader. But getting there will require successful integration of the existing pillars of Europe's data economy, including GDPR, with the new tools and processes. And it will require a renewed commitment to making individual consent a transparent and seamless part of the data-exchange process.

In fact, many provisions of GDPR such as data portability and informed consent open the door to greater reuse of secondary data, if used appropriately and supported by adequate tools. If, instead of making the individual the hub for any data exchange, we make it easy for individuals to provide consent – and for companies to manage consent correctly – we could see the emergence of a new, highly effective data economy in Europe – one based entirely on the values enshrined in the GDPR and using those values, in effect, to drive forward a better, more "human-centric" data economy.

We propose the notion of a fair data economy that accommodates the interests of all types of participants in the data economy while also providing for a high level of overall data usage. Fair is a loaded and sometimes abused term, as the recent EU debates show.*

In this context, a fair data economy is one where:

Individuals know how their data is being used, can freely give and revoke permission for the use of their data and mandate its sharing with third parties. They gain a share of the benefit from their data, typically not in monetary form but in terms of better services.

Service providers share control of their users' data, often investing significant resources to co-produce them. They are able to share personal data with third parties based on a range of legally valid reasons, including consent. They have to provide their customers with portability rights, but they should also be able to build innovative services on users' data. A fair data economy is not a form of data collectivisation: it does not require service providers to give up and share their aggregate datasets as such, only individual data through portability. Service providers in this framework include for instance social media, banks, utilities, hospitals and retailers.

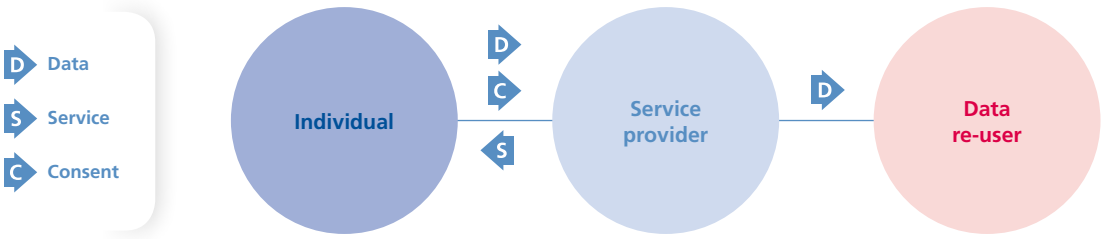
Data re-users are able to access a customer's personal data hosted by the service provider to provide them or others with new services. Data should not constitute an excessive barrier to entry. And researchers and innovators should be able to make the best out of the data. Data re-users include for instance third-party payment providers or independent car repair shops that directly compete with the service provider, but also other parties, such as data analytics companies or researchers, that are in different lines of business and can innovate by re-using the data.

Both service providers and data re-users are obviously accountable for mis-using personal data.

* "Fairness" is a goal enshrined in a range of European competition and consumer law. The GDPR calls for "fair" data processing. Article 102 of the European Union treaties prohibits the abuse of a dominant position in "imposing unfair purchase or selling prices or other unfair trading conditions." U.S. consumer law contains a similar prohibition on unfair practices that is the basis of current U.S. privacy case law. A recent proposal on how Internet platforms should interact with other businesses is titled "promoting fairness and transparency for business users of online intermediation services" – though the proposal does not properly define what constitutes "fairness." The European Court of Justice has devoted significant attention to how to interpret the requirement imposed by the 2001 copyright directive that rights holders be given "fair compensation" for the use of their copyrighted material. For an excellent analysis of the concept of fairness, see Harri Kalimo and Klaudia Majcher, "The Concept of Fairness: Linking EU Competition and Data Protection Law in the Digital Marketplace," *European Law Review*, 2017.

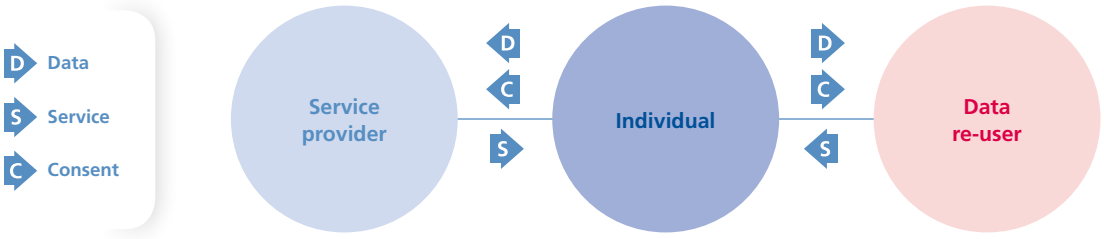
The data economy is today caught between the rock of pro-forma bundled consent and the hard place of "data ownership rights." Prior to the GDPR, a service provider had almost exclusive control over data generated during the use of that service. Once data and a generic consent had been collected, the service provider could freely provide it to re-users and third parties under conditions they set. This has not led to a perfect market, instead spurring on inefficient arbitrage in the use of data and an opaque aftermarket of data brokers (see the box on data brokers on page 9 for more).

Chart 2. Pre-GDPR Data Economy Model: Maximising Re-Use Over User Control



In an alternative vision of **enhanced data ownership rights**, promoted by initiatives such as the Open Algorithm Project (OPAL), championed by Alex "Sandy" Pentland, or Solid, led by Internet founder Sir Tim Berners-Lee, or more recently the EU-funded Decode project, individuals hold exclusive rights to their data and decide selectively what data to share, when, with whom and for what purpose.[27] This model would allow users to centralise their data in a single app or service and allow selective disclosure, including the possibility of exchanging their data for payment. While this basic approach might work in particular conditions, it has so far failed to grow to scale beyond pilots or to offer sufficient value to users. Secondly, such a model fails to recognise the significant value that service providers add to data in generating, processing and enhancing it, which is better reflected by a notion of shared control than one of exclusive ownership.[28] Last but not least, it overestimates the value of raw personal data.[29]

Chart 3. Data Ownership Model: Maximising User Control Over Re-Use



27 For more information on OPAL, visit https://www.opalproject.org/. For more information on Solid, visit https://solid.mit.edu/. For more information on Decode, visit https://decodeproject.eu/.

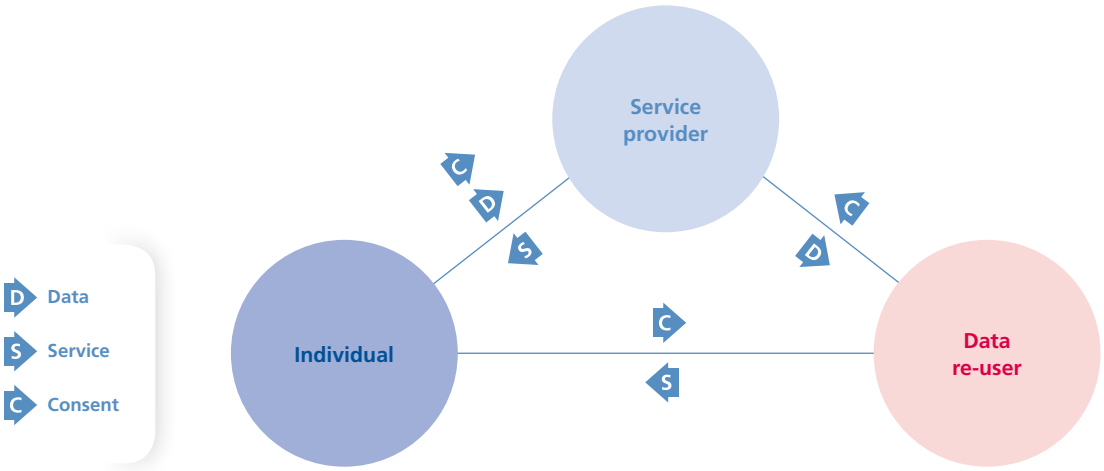
28 Paul Hofheinz and David Osimo, *Making Europe a Data Economy: A New Framework for Free Movement of Data in the Digital Age* (Brussels: The Lisbon Council, 2017).

29 Ibid. In particular, the idea to allow users to monetise personal data proved inapplicable in practice. Individual data are simply not worth enough to generate sufficient interest from companies and individuals. And individuals systematically overestimate the value of their data while there is no large-scale experience of successful personal data reselling by individuals.

The idea of a **fair data economy** is different from both, because it aims to enable the widest circulation of data not just between the individual and the providers but also between service providers themselves, using the full range of options provided by existing rules, including consent. At its heart, it is based on the full exploitation of the principle of **consent-based data portability**, enshrined in GDPR Article 20 as well as PSD2. The goal is to make portability seamless: the individual does not have to act on her or his own to get the data out of the service provider and give it to the re-user.

Much as in the case of telephone number portability, the individual can express the consent and the request for data portability directly to data re-users, who can obtain access to personal data from the service provider. To be scalable, portability has to be seamless and machine-speed. And consent has to be interoperable, managed and transferred between service providers and data re-users. In other words, greater individual control over personal data should be a means towards greater data sharing between data users, not towards creating new data silos.

Chart 4. The Fair Data Economy Model: Combining User Control and Re-Use



What is at stake?

There are some immediate benefits to a fair data economy:

1. Providing more **transparency and control**.[30] With effective tools for consent management and data portability, people will be able to search within and analyse the data that organisations hold about them, to have an overview of who is processing their data and where consent has been given. This ultimately provides a mechanism to ensure greater **accountability** for how data companies use the data they hold.
2. Helping people to **switch service providers** without losing their histories, reducing risk of lock-in. For example, if a person wanted to switch from one physical activity tracker to another (e.g. Strava to RunKeeper), data portability would guarantee that she or he could hold on to her or his run history.
3. Supporting the **growth of third-party data re-users** such as **data analytics** services that provide insights based on data. These include services oriented around providing deeper insights into particular types of activity (e.g. helping people to reduce household energy usage) or that link together different types of activity from different service providers (e.g. bringing together your transport spend with the routes that you travel with your walking activity). Many of these data-analytics services would be offered by so-called "re-users" of primary data gathered elsewhere.
4. Putting pressure on companies to **provide value** for the use they make of consumers' data or face deletion of the personal data they are holding.
5. Give individuals the **means to exercise their rights**. Data can help consumers ascertain discriminatory behaviour, individuals create accountability for large company behaviour, and improve supervision over the effects of autonomous and AI systems.
6. Ensuring the **long-term sustainability** of the data economy by generating broad buy-in from users and economic actors alike and providing insurance against techlash.

The possible long-term economic gains and broader societal benefits are even more impressive, unlocking the potential of the next generation of services based on artificial intelligence and 5G networks, and are detailed across this policy brief in case studies on mobility-as-a-service, smart health, digital financial services and Internet-of-Things ecosystems in the home. A recent study on the global benefits from smart city scenarios – many enabled by the kind of data sharing and re-use envisioned in this study – amount to U.S. $5 trillion (around €4.4 trillion at the 2018 exchange rate) per annum for the global economy.[31]

Common objections

The ideas in this policy brief build on several decades of thinking on data portability, reuse and personal data sovereignty. While the vision of a fair data economy has positive tailwinds, it is not a widespread reality today. Four objections are frequently raised to these ideas:

1. Consent based data sharing creates **new risks** and opportunities for misuse of personal data.
2. Developing the standards and infrastructure for data portability and consent management is **costly**.
3. A fair data economy may end up **consolidating markets**, as big players with the resources to take advantage of consent and portability rules to increase their customer and data bases and

30 For a good overview of benefits, see Barbara Engels, "Data Portability Among Online Platforms," *Internet Policy Review*, 11 June 2016.

31 Dominique Bonte, "Smart Cities, IoT and Cost Savings," *ABI Research*, 19 October 2017.

edge out smaller competitors. Conversely, service providers currently holding personal data of clients could fail to identify a clear business opportunity in data portability.

4. Current tools to help users achieve control of their personal data has **limited adoption** by a few data-savvy users.

Eleni deals with cancer

Eleni made her diet and exercise data from her smartphone available to her doctor, who was also able to access her family medical history and results of a genetic screening done when Eleni was living abroad five years ago. At her annual checkup, Eleni's doctor noticed a reduction in her exercise and water consumption. Given her family history and genetic results, diagnostic software flagged a heightened risk for bowel diseases. On her doctor's suggestion, Eleni underwent a screening test, which revealed very early stage colorectal cancer, highly unusual for women of her age. Because it was caught early, Eleni's expected survival rate for this otherwise deadly cancer was quite high. She recovered quickly from surgery, allowing her get back to her husband, children and job as a chemistry professor at the local university. To help her recovery, Eleni and her doctor put together a diet and exercise plan. Since this plan was fairly strict, she was not always able to keep up with the plan. When she had a bad week, she would get a customised automated reminder to exercise more and eat better. If her results didn't pick up, her doctor would get a notification to call her. This human touch kept Eleni focused and motivated.

Additionally, some question the potential impact of this vision even if successful. They argue that measures to improve individual control over personal data sets may be of only limited value. Consent and portability can work for individual dataset of unique value, such as bank account data, but not for enabling the creation of large datasets needed for the statistics and business intelligence to develop new services or train machine learning that underpin much of today's economy. It remains very difficult to gather data of sufficient quality and quantity through portability.[32]

More broadly, the **obstacles to developing Europe's data economy may lie elsewhere**. Beyond their actual current market size, the greatest competitive advantage large platforms sit on may very well be their sizeable pool of well-paid talent. This talent gap is particularly evident around artificial intelligence, where top researchers can command salaries in the millions of euros. Even analyses of competition in the platform economy have pointed to the scarcity of talent as a relevant dimension of analysis.

These are serious objections. However, in the next section, we outline **four drivers that we believe answer most of these objections**:
1) business ecosystems and services built on the re-use of personal data are generating new, valuable business models and gaining users;
2) technology to enable effective consent management and seamless portability rights has become widely available and relatively inexpensive to implement;
3) a legal environment provides norms and also protections for individuals, and
4) a supportive agenda is gaining traction both among enthusiasts and, more slowly, the broader public.

Admittedly, these changes alone will not solve all issues surrounding the data economy. But we believe the fair data economy can be a lynchpin. By making the benefits of the data economy broadly available to end-users and a wide range of companies, it will raise the adoption rates, consumer confidence and expectations and company base needed to drive other policy changes.

32 As Jeni Tennison, a software engineer who currently serves as CEO of the Open Data Institute, puts it for the example of statistical analysis of societal phenomena: "it would be far easier to realise those benefits if researchers and statisticians were able to access a data from a representative sample of service users, not just a biased subset of those savvy (and generous) enough to donate data." See Jeni Tennison, "Data Portability," *Data Portability Blog*, 26 December 2017.

3. Underlying Trends in Attitudes, Business Models, Regulation and Technology

Policy actions

In brief:

> An emerging EU policy framework of horizontal and sectoral regulation and strategies supports the ideas of the fair data economy

> GDPR creates a new right to data portability. Sectoral rules like PSD2 in the financial services sector also provide requirements and concrete technical standards to support data portability and re-use.

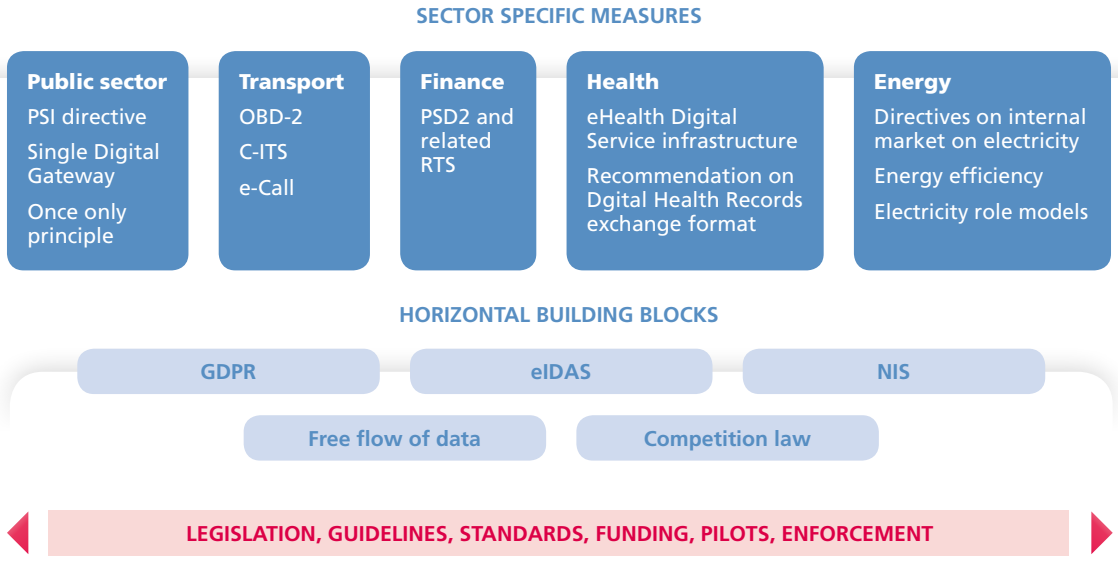
> A broad range of national rules in the EU and globally are also providing policy support for a fair data economy

The EU has undertaken a wide range of measures precisely aimed at achieving the two overarching goals of data protection and re-use. Together, these constitute an emerging EU framework for the data economy that consists of both legislation and other elements, like public funding, the application of competition law and soft strategies (see Chart 5 below). These measures impose additional requirements on those amassing data sets, processing personal data or providing data-intensive services, whether in the public and private sector, or seek to encourage public and private actors to adopt a particular approach to how they share data and build data-intensive services.

This framework is composed of horizontal measures and sector-specific measures. Typically, horizontal measures establish general principles, while sector measures define precisely what kind of data should be shared and how. Sector-based policies are particularly developed in health, finance, transport, energy, environmental and public-sector data.

Chart 5. European Data Economy Regulatory Landscape

For more information on European Union initiatives in this area, see the special report on page 48



Within this large variety of policy measures, two clearly stand out in terms of ambition and impact: GDPR and PSD2 (For an overview of other EU policy actions, see the special report on page 48).

Horizontal initiative: the General Data Protection Regulation (GDPR)

The GDPR is the cornerstone of this European framework.[33] The 120-article, 200-page regulation places strict limits on the processing of personal data. Fines for non-compliance can amount to up to 4 % of an infringing company's global revenue.[34]

A consistent line throughout the GDPR is its emphasis on human agency and control. Whatever the basis for data processing, whether consent, contractual obligations or the "legitimate interest" of the data processor (there are six in total), the data subject has a number of rights.[35] These include the right to deletion (the "right to be forgotten"), to access, correct and port personal data, and to transparency about how a company is processing personal data. Where data is used to make a decision concerning them (e.g. a loan application), the user can also object to automated processing, making the GDPR one of the first laws to explicitly tackle issues related to algorithmic and autonomous decision making. Many of these rights existed under previous legislation, but the GDPR made them more explicit and easier to use.

Consent lies at the core of the GDPR. GDPR Article 4 clearly establishes that consent to data processing should be "freely given, specific, informed and unambiguous." This means that data can only be used for the reasons initially communicated to a user, and that consent should not bundle many different uses by different parties through vague formulations. This is an important safeguard, but it also poses a severe limitation. Much innovation in data science has come from repurposing existing data for new uses. For instance, billing data collected by Netflix might ultimately be used to market new regionally focused programming. Companies report needing to re-collect data they already have in order to comply with purpose limitations imposed by the GDPR, often at significant cost or loss of data quality.[36] Furthermore, Article 7 establishes that controllers have to be able to demonstrate the validity of consent. They need to keep track of consent and allow for consent retraction. A recent ruling by the *Commission nationale de l'informatique et des libertés* (CNIL), the French data authority, suggests that companies processing data should be able to demonstrate the validity of the consent even for data gathered by other companies.[37]

In other words, consent under the GDPR has changed from a one-off, bundled tick-box that could be passed around between companies to a dynamic, meaningful and trackable system where every party has to be able to demonstrate the validity of consent.

'A consistent line throughout the general data protection regulation is its emphasis on human agency and control.'

33 For an excellent overview of European Union rules on personal-data protection, visit https://ec.europa.eu/info/law/law-topic/data-protection_en.

34 GDPR uses the term "data subject" to refer to an individual, "data controller" to refer to the service provider or data re-user. It also establishes the role of "data processor," which deals with personal data under instruction of a data controller. We use different terms for these roles throughout this paper.

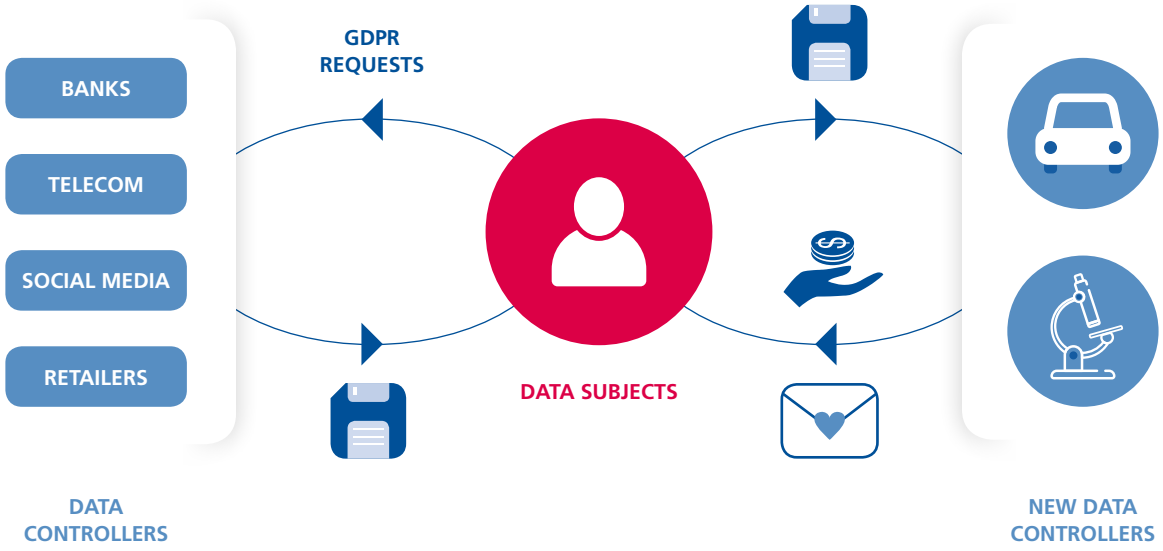
35 Other bases for data processing are compliance with a legal obligation, contractual performance, vital interests and public interest. In many cases, voluntary data processing occurs as a contractual performance, not *per se* on the basis of consent. Indeed, companies are continuing to share and sell personal data under the legitimate interest justification, though this is now facing legal challenges. See Privacy International, "Our Complaints Against Acxiom, Criteo, Equifax, Experian, Oracle Quantcast, Tapad," *Privacy International Blog*, 08 November 2018.

36 Reported in stakeholder interviews undertaken in the preparation of this policy brief. For a list of people interviewed, see the Acknowledgements on page 54.

37 Natasha Lomas, "How a Small French Privacy Ruling Could Remake Adtech for Good," *TechCrunch*, November 2018.

Another fundamental innovation of the GDPR is the concept of **data portability** (Article 20). The GDPR's new data portability goes a step beyond previous rules in putting individuals in control. Access and deletion rights already allow users to decide who can process their data, but this can be difficult to use in practice. The data portability right requires data controllers to share data with third parties in machine readable form when so requested by the user. This creates a broad legal basis for the vision of a fair data economy, where personal control of data not only prevents misuse but enables new, beneficial uses of data.

Chart 6. Data Portability and Portability Rights



Source: personaldata.io

The portability right has several limitations in the GDPR.[38] It applies to a limited set of situations ("where technically feasible") and to a limited data set (data "given by the user"). The latter category remains undefined, with many companies choosing to interpret this narrowly (e.g. data like name, gender, address provided when signing up to a service). Companies have a month to respond to portability requests, limiting the usefulness of the right for building real-time business models. And the public sector is excluded altogether from complying with the portability right.

There are also teething problems: few companies are technically equipped to respond to access and portability requests, with many making data available in PDF or similar formats and responding to requests manually. Consumers have no simple way to manage their personal data footprint over the hundreds of companies they have given consent or data to. Without secure digital identity, the portability request can also be a liability, leading to leaks of personal data (from fraudulent access and portability requests).

38 See Article 20 of the GDPR. For a full inventory of problematic issues with Article 20, see Paul De Hert, Vagelis Papakonstantinou, Gianclaudio Malgieri, Laurent Beslay and Ignacio Sanchez, "The Right to Data Portability in the GDPR: Towards User-Centric Interoperability of Digital Services," *Computer Law and Security Review*, April 2018. See also Robert Madge, "GDPR: Data Portability is a False Promise," *Medium*, 04 July 2017.

Consent based data sharing also creates new risks. The concept of consumer apathy should be familiar – users currently give blind consent to cookie requests and click "accept" on every privacy policy they encounter, so-called "consent fatigue."[39]
If importing data from elsewhere becomes a natural part of signing up for a new service, it could result in personal data proliferating onto multiple services and out of our control. Furthermore, shared data can also include information about other people, from phone records (the identity of the person receiving the call) to genetic data (which can be used to identify parents and descendants). Data portability needs to be accompanied by new services and platforms to track how a consumer's data is being used and to manage consent.

The GDPR is a broad, horizontal legal instrument that sets general norms. Specific recommendations on how to implement these norms are left to industry best practice, voluntary codes of conduct, guidelines signed off on by national data protection authorities and, ultimately, court judgments. While this makes the GDPR more "future-proof," it also introduces a degree of uncertainty. For this reason, the jury is still out on the practical impact of the GDPR. For instance, smaller European tech companies complain of suffering under a high volume of regulation, with compliance costs displacing innovation.[40]

In the long run, it is clear that the GDPR is a necessary but not sufficient measure to establishing a competitive and fair data economy. This will require new forms of **consent management** that help users to exercise all their data rights but also make it easier for companies to approach users with requests for new uses of their data.
The following sections will explore the services and technical standards evolving to make this possible. In determining the legal environment for data sharing and re-use, we will also need to look at sectoral legislation that is approaching similar questions of data re-use and sharing.

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39 For an overview of what consent fatigue is, see Luis Alberto Montezuma and Tara Taubman-Bassirian, "How to Avoid Consent Fatigue," *The Privacy Advisor Blog*, 29 January 2019.

40 For a recent example of European Startups' concerns, see Allied for Startups, "Two Things That Could Make or Break the European Data Economy," *Allied for Startups Blog*, 20 February 2018. For a criticism of the costs of compliance, see Barbara Engels, "Detours on the Path to a European Big Data Economy," *Intereconomics: Review of European Economic Policy*, July/August 2017.

Sector-specific initiative: the updated Payment Service Directive (PSD2)

New regulation in the financial services sector gives us the most visible example of how sectoral policymaking is tackling the same questions of user control over data through a different lens. The updated EU Payments Services Directive 2015/2366 (the so-called PSD2) uses data governance as a tool for increasing competition and innovation among banks and fin-tech startups.[41]

Banks have been experimenting for some time with open banking – using standardised technical interfaces to enable third parties to access account information and execute transactions. Open banking includes the idea of data portability but goes a step further, providing third parties the technical means to execute transactions on banks' information systems. This technical interoperability enables a number of use cases: personal finance managers, like the Fintonic, Spendee and Mint apps, give consumers help in better managing their spending; data can help a lender automatically assess the creditworthiness of a loan applicant; and consumer-facing services that consolidate many providers' financial services into one easy-to-use app.

With the PSD2, the EU has made data portability (based on a user's permission) mandatory for current accounts. Policymakers hope that this will both increase competition and spur on the creation of new fintech business models. Unlike the GDPR, the PSD2 puts into place regulatory technical standards that define data formats, APIs and other technical aspects of data sharing. This standardisation should enable solutions to work across banks in the entire EU, contributing to a single market for financial services that is already more integrated than in the U.S. Standardisation is also needed to address the identity theft and fraud risks inherent in automating banking services.[42] The PSD2 relies on strong electronic identities, a strict system of incident reporting and compliance and a new registration process for authorised third-party payment providers.

As is the case for the GDPR, it is too early to assess the PSD2's impact – access to account provisions only come into force in September 2019. Among banks, some are relatively optimistic, seeing an opportunity to grow their market share and become account orchestrators for all of their customer's finances, while others – most likely smaller, less innovative banks – will struggle to keep up. The PSD2 is currently limited in scope – it only applies to current accounts, not to savings, credit or investment accounts, and is asymmetric – non-bank financial institutions are not required to give banks access to their technical systems.

Even if successful, PSD2 also shows some of the limitations of a top-down regulatory approach. It is a slow and expensive process. It has taken six years, from the legislation's proposal by the European Commission in 2013, for open banking standards to become law. And standardisation in payment services is fairly straightforward, with banks already highly regulated, working on fairly standardised processes and participating in a global standards organisation (SWIFT). Approaching every sectoral case of data sharing in the same manner would take a decade or more.

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41 Directive 2015/2366/EU of the European Parliament and of the Council of 25 November 2015 on Payment Services in the Internal Market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and Repealing Directive 2007/64/EC. This directive defines the role of "Third-Party Providers," which is similar to the "data re-users" concept we use throughout this policy brief.

42 Indeed, many banks have opposed the PSD2 and open banking requirements on the grounds of security concerns. See, for example, Phil Wainewright, "PSD2 Opens Up Bank Accounts to Third Parties. What Could Possibly Go Wrong?" *Diginomica*, 11 April 2018.

Early data portability provisions: OBD2

In the 1990s, car manufacturers began to attach computer monitoring units to car engines, which allowed for the monitoring of fuel efficiency and performance characteristics and created computerised diagnostics of engine faults. The data from these on-board computers could be accessed only with specialised proprietary equipment, which manufacturers frequently made available to their own network. So only a Mercedes dealer could service a Mercedes engine, freezing out much of the market of third-party car parts manufacturers and service centres. The EU intervened with a 1998 directive amending earlier air quality rules to standardise the OBD-II port. In addition to (re-)opening the market, the OBD2 port has allowed a raft of innovative products and services relying on engine data, from apps giving advice on how to optimize fuel economy to cheaper traffic insurance that bills by the day. For more, see Bertin Martens and Frank Mueller-Langer, "Access to Digital Car Data and Competition in Aftersales Services Markets," *SSRN Electronic Journal*, 22 October 2018.

National measures

Many of these individual components are coming together into broader data sharing ecosystems or solutions. A number of **national or governmental** initiatives have set up broader consortia to facilitate controlled re-use of personal data and sharing of data between providers, such as *midata* in the UK, *mesinfos* in France and the *QiY* framework in the Netherlands. Governments have also developed their own architectures for data sharing within public administration, which in many cases also enable users (citizens and businesses) to track who has accessed their data (such as Estonia's x-road, Finland's Palveluväylä [national data exchange layer], Singapore's SingPass) or to collect their own data in a central location (such as Czechia's data boxes).

There is not one leading EU member state in this field. Owing to the wide-ranging nature of this move, concrete discussions around data access and re-use are taking place throughout the EU and in the world at large. Nevertheless, some countries stand out:

- In the United Kingdom, there has been a strong focus on the role of data access and re-use in promoting competition. The UK Competition Authority has begun to use data portability mandates as a remedy (for more on competition policy and the data economy, see the box on page 13). And the UK government has actively investigated the opportunities for data portability, including through its funding of the Open Data Institute and commissioning various reports on the topic.[43]
- In France, the 2016 Law on the Digital Republic created a data access right for consumers of electronic communications services covering broadly any data that would aid a consumer in switching to another service provider.[44] French regulators have also been creative about using data from consumers to better measure service quality and competition.[45]

'Finland has gone further than any other EU member states in making MyData a reality in public services, with pilots in health and public transport.'

43 Ctrl-Shift, *The Personal Data Portability Growth Opportunity for the UK Economy* (London: UK Department for Digital Media, Culture, Media and Sport, 2018); and Digital Competition Expert Panel, *Unlocking Digital Competition* (London: HM Treasury, 2019).

44 "Dossiers législatifs - LOI N° 2016-1321 du 07 Octobre 2016 pour une République numérique," *Legifrance*, 2017.

45 "La régulation par la data," *Arcep*, 2019.

- In Germany, the data protection community is vocally opposed to data markets. The previous German minister of the interior went so far as to suggest that allowing people to sell their personal data would create two classes of citizens, with privacy only for the wealthy.[46] At the same time, German industry is leading the way in building commercial ecosystems to facilitate data re-use. And more than 60 German media and communications companies have combined forces to launch netID, a common identity and consent platform with which they hope to rival Facebook and Google.[47]
- Finland has gone further than any other EU member states in making mydata a reality in public services, with pilots in health and public transport (see the box on IHAN page 37).

Outside Europe too, governments have introduced rules on data portability:

- In the U.S., the government has initiated several projects for data access, including the Green Button, a standardised format for downloading energy usage data in machine readable form, and the Blue Button, an initiative to allow veterans and government employees to download their health data that has now turned into a more comprehensive set of formats and products to enable health data portability within the US.[48]
- In Singapore, the Competition and Consumer Commission is investigating the use of data portability requirements to increase competition.[49]
- Australia has adopted open banking rules. Unlike Europe's, these are symmetrical in nature (covering also non-bank financial services providers) and broader in scope (covering all forms of financial accounts).[50]

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46 Stefan Krempl, "De Maizière Hält Losung 'Meine Daten Gehören Mir' Für Falsch," *Heise Online*, 18 February 2017.

47 For more information, visit https://netid.de/.

48 See respectively http://www.greenbuttondata.org and https://www.healthit.gov/topic/health-it-initiatives/blue-button.

49 Competition and Consumer Commission of Singapore, "CCCS to Ensure Markets Work Well for Business and Consumers," *CCCS Press Release*, 09 April 2018.

50 Asha McLean, "Australia to Force 'Big Four' to Open Banking Data by July 2019," *ZDNet,* 10 May 2018. For the Australian Government's background report, see Government of Australia, *Review into Open Banking: Giving Customers Choice, Convenience and Confidence* (Canberra: Commonwealth of Australia, 2017).

Changing business models

In Brief:

> Models of a fair data economy can only work if they are profitable and give value to users

> New subscription and service-based business models are leading companies to establish long-term trust relationships with their customers. Personal data make these services better and give value to users

> A new kind of intermediaries, Personal Information Managers, are helping users track their personal data and stay in control

In just about every sector of the economy, new business models and offerings based on trust, consent-based data sharing and portability are taking hold. These services rely on detailed data about the individual to offer qualitatively better services. Services that offer users value motivate individuals to give them access to higher quality data – data that they know to be authentic and for which they don't separately need to pay. These new business models arise from two significant trends:

1. The emergence across different sectors of business models not based on advertising, such as subscription-based models and servitisation, where a high trust relationship underpins extensive usage of data to improve services, as in the case of Netflix and Spotify.
2. The evolution of specialised services for personal data management away from data reselling towards the provision of value-added services to users by aggregating (through consent and portability) data from different services, as in the case of the fintech company Fintonic and personal information manager Digi.me.

The rise of subscriptions and servitisation

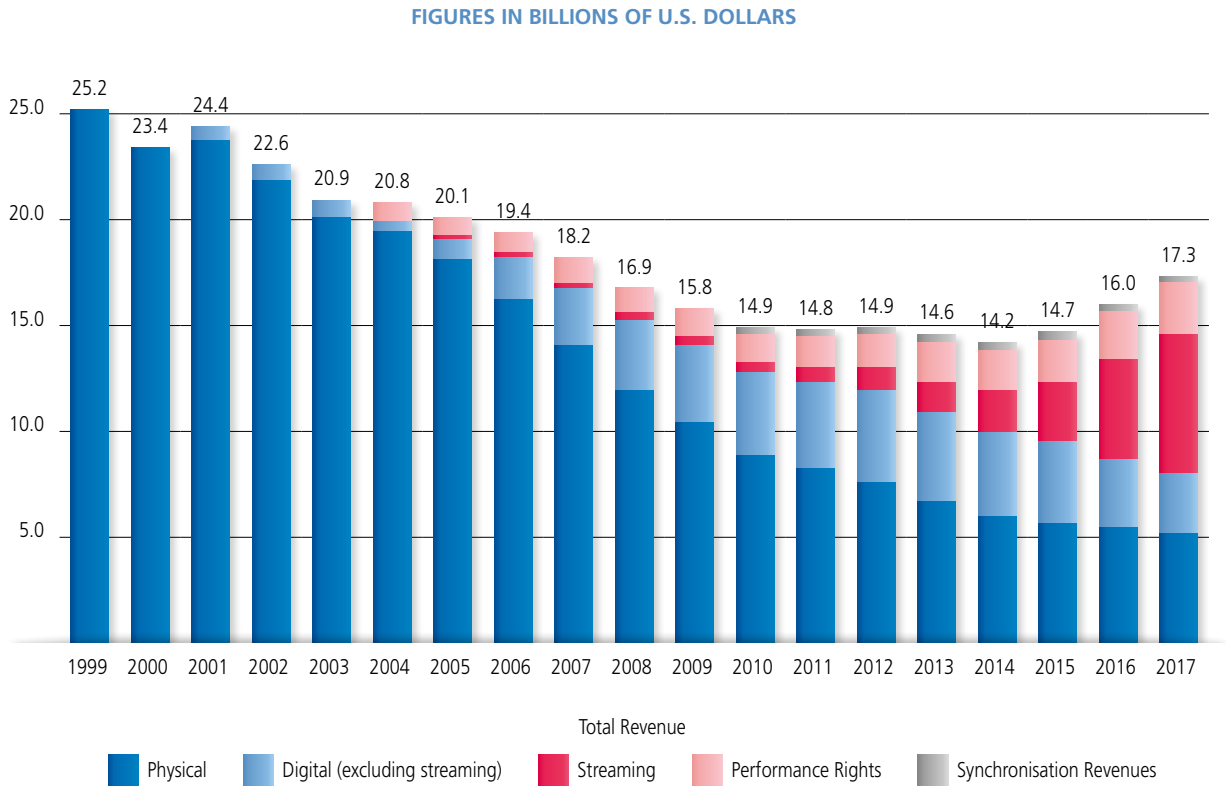
The consumer Internet as we know it has long worked on the notion that content is free, and revenues come from advertising based on large-scale processing of personal data. We are now seeing the emergence of alternative models which have significant implications for how data is used. Consumers are no longer necessarily expecting web content and services to be free.

The **subscription-based model** is making a comeback, starting from the media industry. The two charts below tell a similar story. In the last couple of years, the total revenues of the music industry have started growing again thanks to subscription-based business models, such as Spotify. Similarly, in the last two years, *The New York Times* went back to growth in total revenues, thanks to the strong increase in digital subscriptions.[51]

'The consumer Internet as we know it has long worked on the notion that content is free, and revenues come from advertising based on large-scale processing of personal data.'

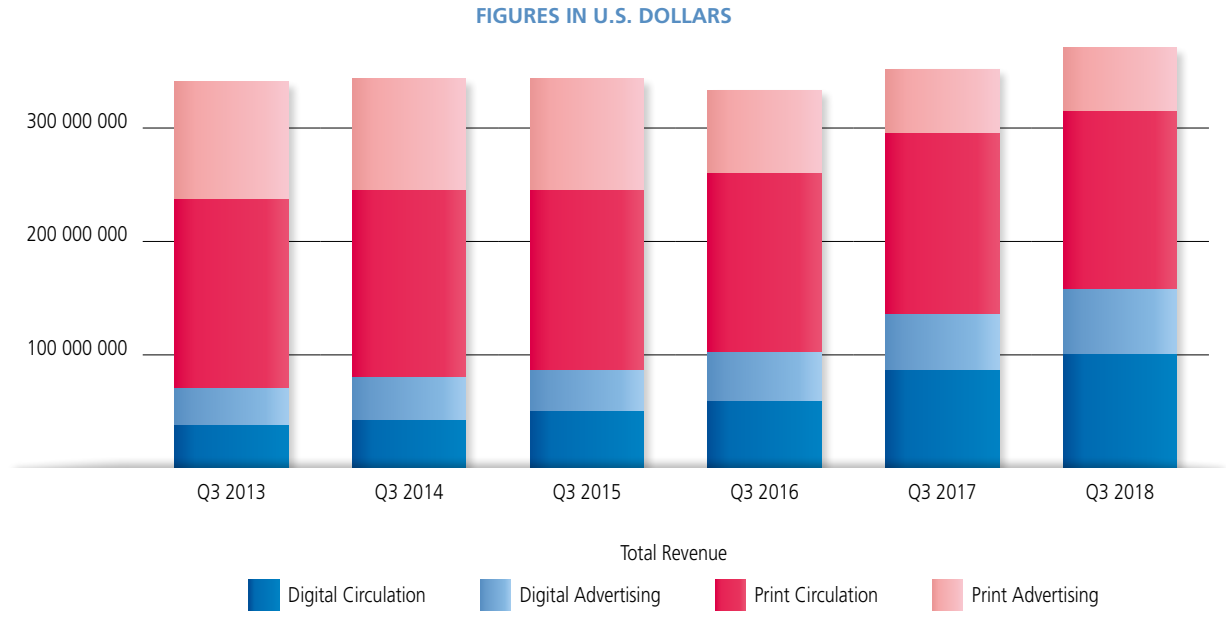
51 Zuora, *The Subscription Economy Index* (San Mateo: Zuora, September 2018).

Chart 7. How the Music Industry Went Back to Growth Through Subscriptions



Source: International Federation of the Phonographic Industry

Chart 8. Growth of The New York Times Revenues



Source: The New York Times

Moreover, this rise of the subscription model is extending beyond media. More and more consumer companies are switching to a subscription-based model. In e-commerce, a recent report from McKinsey shows that 15 % of consumers are now subscribing to product delivery, typically through monthly boxes, rather than by purchasing. Thanks to Spotify and Netflix, consumers are getting used to subscriptions. And the European subscription economy is actually growing faster than in the U.S.[52]

'Companies aim to establish a more in-depth and trustful relation with clients, using the broadest range of data to improve services.'

This trend is even more critical because it's converging with the trends towards "**servitisation**." Companies offer services rather than products. Software as a service is the prime example: Gartner predicts that by 2020 80% of software will be subscription-based. However, this extends well beyond digital products: for instance, Rolls Royce has introduced new "pay by the hour" models for its airplane engines, instead of selling engines.[53] And car manufacturers are preparing for an era where individuals no longer buy automobiles. Servitisation on the one hand generates a far greater availability of data to the service provider because of the on-going relationship; on the other hand, it is enabled by the greater availability of data that allow services to be priced more accurately and reduce uncertainty, for instance by "predictive maintenance" that reduces the risk of product failure by identifying early warnings through sensors.

And consumers are willing to pay: these services and subscriptions are frequently replacing expensive and capital-intensive purchases, from buying a Microsoft Office licence to a car, while offering greater use value. This change has profound implications for how data is used. In the subscription model, companies aim to establish a more in-depth and trustful relation with clients, using the broadest range of data from their clients to improve their services – for instance through predictive maintenance of the engines or advanced content recommendation engines. This also means customers have a stronger incentive to share their data. As we look more broadly, we see servitisation and subscriptions fundamentally changing business models for healthcare, transportation, energy, retail and tourism.

Online advertising is not disappearing; indeed, it is still growing. However, it faces challenges even beyond the issues of data protection. Facebook and Google are capturing the vast majority of growth in the advertising sector. Advertisers worry about whether the ads are watched by people or bots. People are increasingly using ad-blockers. All this is not to say that advertising is dead and the future will lie in subscription, but that advertising is no longer the only game in town, and the future will belong to a variety of business models – which entail a deeper, more conscious and trust-based usage of personal data. Even for the understanding of consumer preferences, GDPR-compliant consent can be a powerful tool to actually increase the quality of data and the range of reuse possibilities (see the case study on YouGov on page 31).[54]

52 Tony Chen, Ken Fenyo, Sylvia Yang and Jessica Zhang, *Trends and Opportunities in the Subscription E-Commerce Market* (San Francisco: McKinsey, 2018).

53 David Opresnik and Marco Taisch, "The Value of Big Data in Servitization," *International Journal of Production Economics*, 2015.

54 Rob van der Meulen, "How GDPR is an Opportunity to Create Business Value," *Gartner*, 24 January 2018. Several of the people interviewed for this policy brief also expressed this opinion.

Case Study on Market Research: YouGov

YouGov Direct is a new blockchain based service developed by YouGov, a well-established market research company. It allows advertisers to access a verified audience of five million active users who participate in panels, based on a trusted and consent-based relationship, for survey or advertising. Companies and advertisers are sure to interact with a real audience, rather than with bots, to gain high-quality insight, and to be fully GDPR compliant concerning consent-tracking. Users are entirely in control of their data and get rewarded for their participation. Concretely, companies and advertisers can send "tasks" to the platform, such as a survey or an ad. Users can accept the task, watching the commercial or answering questions. Ultimately, this results in better quality insight about the consumer, and more targeted and trusted relationship between advertisers, companies and users.

The evolution of services to manage personal data

As these new business models develop, they are also creating demand for a new kind of intermediary to manage users' rich data distributed across hundreds of service providers – personal information managers and personal data stores.

A first group of **Personal Information Management** services (PIMs) started in the early 2000s with the goal of putting individuals in charge of their personal data. **Personal Data Stores** (PDS) and data vaults promised to allow users to aggregate their personal information in one place and share these with other services. Some of these were open source or not-for-profit initiatives, such as Databox and openPDS, while others aimed to generate revenue either through (consensually) offering personal data for sale or requiring a financial contribution from service providers connecting to the PDS.

The first generation of PIMs and PDSs faced significant adoption challenges. Despite years of piloting, they suffered from a lack of services and applications that created value for end-users.[55] As a result of this lack of services, the use case for data portability was limited to giving users access to their raw data "which are not meaningful, difficult to understand or re-use."[56] Nor, it turned out, could this data be sold for a large amount of money. These were solutions in search of a business case which were interesting to a narrow range of engaged enthusiasts.

This, however, has begun to change, with a new generation of PIMs with stronger business cases. Market research firm Ctrl-Shift now finds more than 500 PIMs currently in operation, with on average one being created a week.[57] What these new solutions have in common is a realisation that the value to consumers comes not from third parties willing to pay for their data but from the qualitative shift in the services themselves that access to their personal data enables. They also come at a more opportune time, when citizens are finally becoming aware of data protection and their data rights.

'More than 500 personal information management services (PIMs) are currently in operation, with on average one being created a week.'

55 Ctrl-Shift, op cit.

56 Michele Nati and Crt Ahlin, "Data Portability 2.0 Is Yet to Come," *Medium*, 17 September 2018.

57 Ctrl-Shift, op cit.

Fintech Case Study: Fintonic

Fintonic is a Spanish startup that helps people to take control over their expenses, by aggregating different bank accounts through a single interface. The apps connect, upon consent, all users' bank accounts and aggregates payments in real times, categorising them under a standardised taxonomy. Users can set goals and analyse how they spend. On top of that, Fintonic uses the data to provide value-added services, such as providing users with special offers on loans: by processing a large amount of data about users it can provide a comprehensive, accurate picture of their financial viability through a proprietary algorithm called "Finscore." While banks typically offer loans based on limited information about the account users have with the bank itself, this score enables any bank (even those where the users do not hold an account) to have a comprehensive view on an applicant's financial viability. As such, it creates a more open market for loans.

The app is free for users and is monetised by charging banks for approved loans, and by carrying out market studies based on the data. The app is backed up by venture capital investment from ING bank and has reached 500,000 users already – to put it in perspective, the largest mobile banking app in Spain (BBVA) has three million users. It has achieved all this despite the absence of APIs to access accounts data: the data are "scraped" from users accounts and processed to make it usable by a third party API (Eurobits).

A second generation of PIMs have moved their focus from monetisation of data to putting individuals in the centre of managing their personal data for a wide range of services.
Digi.me and **Meeco** are platforms for individuals to collect their personal data and share it with third parties. Digi.me offers companies access to 15,000 types of data while keeping the individual in control of who has access to their personal data and has built a range of use cases in health, insurance, financial services and others sectors.

In summary, alongside the regular doom and gloom about Europe's digital economy, there is a positive story to tell. The first wave of digital disruption came in areas that have long been American strengths – media, advertising, retailing. But disruption is now touching areas of European strength, where our ability to orchestrate complex ecosystems and bring many partners together has helped Europe build global conglomerates and nimble small companies alike while achieving effective policy outcomes. If these companies can ride the waves of servitisation and subscription-as-a-service, a bright future awaits.

The technology behind a fair data economy

In brief:

> The diffusion of key technologies has made it significantly easier to develop fair data economy ecosystems and services

> The "API economy" reduces the costs of sharing data and has created new business models that support servitisation

> Development in e-ID, consent management and semantic interoperability are also of key importance

In the 1970s, the invention of the standardised shipping container revolutionised global trade, allowing the seamless and rapid transfer of goods across the globe. The shipping container was the technological innovation that made globalisation possible.[58]

To build out a fair data economy, we again need technology that enables laws and business models to work. Consent management and portability must be scalable and seamless. Consent should be easy to give, transfer between entities, track and retract between different parties through interoperable solutions. It should be flexible, federated and dynamic – not a one-off action that needs to be repeated continuously.

'Application programming interfaces (APIs) are the easier, practical choice for interoperability between two services.'

The **API (Application Programming Interface)** is a technological innovation to make different applications and services work with each other in the absence of standards and full interoperability, notably (but not only) by exchanging data seamlessly. For instance, bank APIs allow other services to provide seamless but controlled access to users to analyse bank data, and even (if so designed) to execute payments. In short, APIs are the easier, practical choice for interoperability between two services.

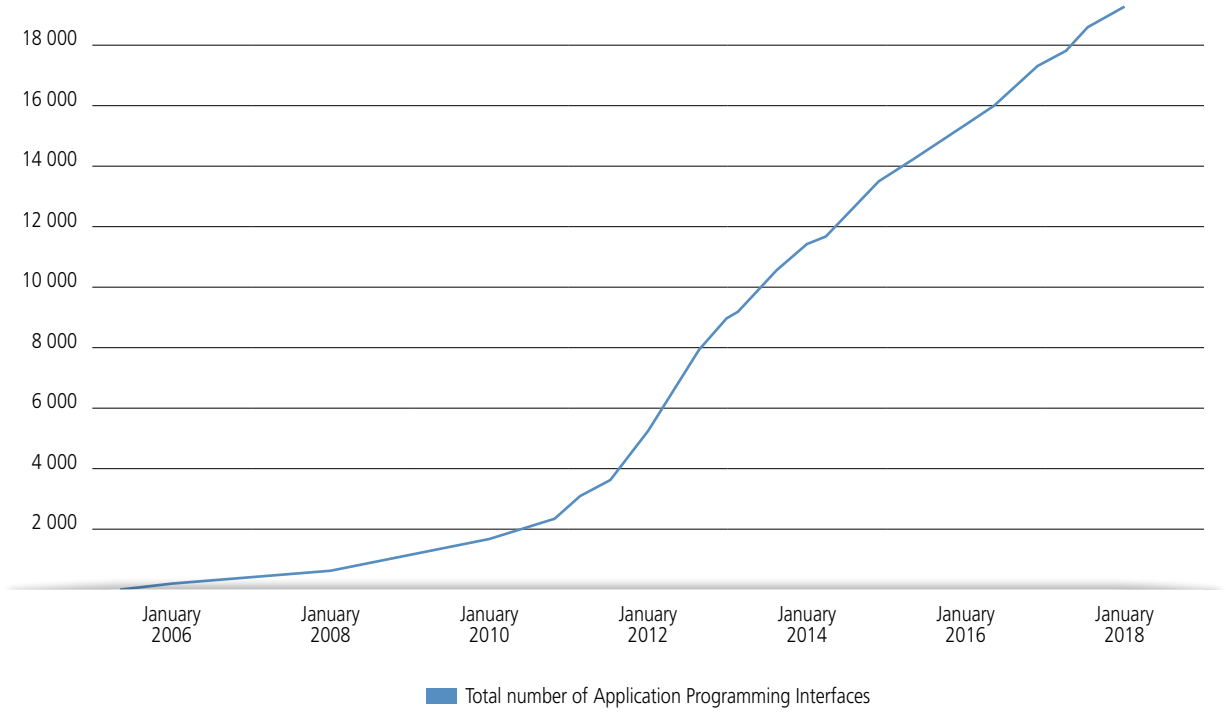
APIs are not a new trend – the first ones were launched by Salesforce and eBay in 2000.[59] As the charts on page 34 show, the number of APIs is rapidly growing. The reason companies deploy APIs is clear – they allow a new level of product integration and attract "blockbuster complements." E-commerce companies eBay, Salesforce and Expedia generate 50-90 % of their revenues through APIs, and many tech companies now field hundreds of billions of API calls per day.[60]

58 Marc Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger* (Princeton: Princeton University Press, 2016).

59 Kin Lane, "History of APIs," *API Evangelist*, 2013.

60 Bala Iyer and Mohan Subramaniam, "The Strategic Value of APIs," *Harvard Business Review*, 07 January 2015.

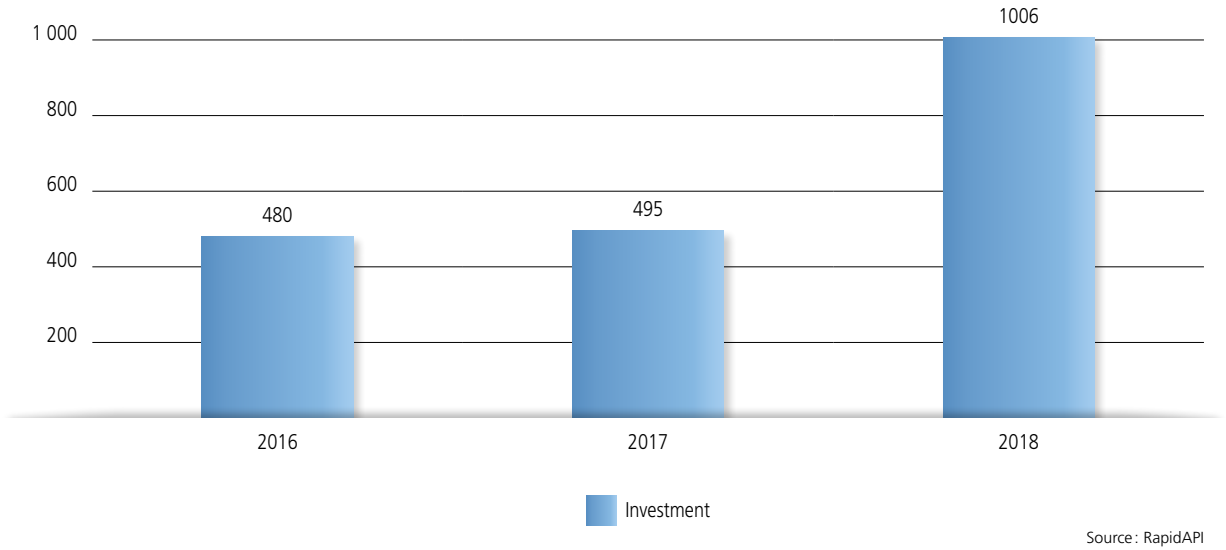
Chart 9. Growth in Application Programming Interfaces (APIs) since 2005



Source: Programmableweb

Chart 10. Investment in Application Programming Interface (API) companies

FIGURES IN MILLIONS OF U.S. DOLLARS



Source: RapidAPI

APIs can be "open" or provided for remuneration. Research based on the RapidAPI data repositories show that 30 % of APIs are provided under a paid model : third-party developers have to pay to have access to the API, either through a pay-as-you-go model or through a fixed quota. However, this is not the only way that data holders can monetise their API. When developers can build seamless integration with some services, final users gain better services from using the original services. Finally, APIs can provide fresh data about how final users are using the service, hence providing a kind of "real-lab environment" for potentially developing new services.[61]

Let's take the example of a bank releasing APIs for fintech companies to access customer account in a controlled environment. Banks can charge fintech developers for advanced services : for instance, they can provide basic services for free and make developers pay for more advanced, comprehensive services such as access to investment data. Third party providers such as Eurobits charge banks and fintech companies for curating and categorizing expenditure data. The bank will also benefit from increased customer loyalty because customers will be able to have a more convenient user experience thanks to third-party apps. Finally, banks will gain access to unique data about the different ways that users interact with the bank from a variety of different apps, obtaining unique insight and lowering the costs of innovation.

'A number of initiatives seek to open up this market, including the decentralised "self-sovereign ID" concept, where each individual manages how their ID is used in different services.'

While APIs have changed the basic economics of data exchange, several other technological developments are maturing to the point where they support complex data reuse and permission management scenarios : digital identity, semantic interoperability and consent management platforms.

Digital identity is the key to having trustworthy high-stakes interactions online (e.g. those involving personal data). A number of open standards exist for the interoperability of identities (such as SAML, oAuth, OpenID). While national e-IDs are a 20-year-old tool, they are finally beginning to gain broad user adoption in many EU countries, in part thanks to the e-IDAS regulation.

Outside of national electronic IDs, the largest identity providers are currently Google and Facebook. A number of initiatives seek to open up this market, including the decentralised "self-sovereign ID" concept, where each individual manages how their ID is used in different services. National ecosystems in Europe have arisen out of cooperation between banks, telecoms, e-commerce sites and others working with the government (notably in Scandinavia, the Baltics and the Benelux countries).[62]

61 Lindsey Kirchoff, "The Ultimate Guide to Pricing Your API," *Nordic APIs Blog*, 07 September 2017.

62 For a current overview the self-sovereign ID movement and the state of the decentralised ID standardisation process, visit https://w3c-ccg.github.io/did-spec/. See also, Microsoft, *Decentralized Identity : Own and Control You Identity* (Redmond : Microsoft, 2018).

Marc saves on renewable energy

Marc's home energy costs have been rising. In order to find a better deal, he made his energy consumption data available in anonymised form on his Personal Information Manager (PIM). Within minutes, he had five personalised offers from various power companies. After making the switch to a new provider, Marc's PIM automatically closed his previous service provider's access to his appliance and energy data. Marc selected a renewable energy package that would save him on average €50 per month. His new power company gave him a €1,500 credit to buy new smart appliances. Based on usage patterns, it recommended a new smart refrigerator that would save another €20 per month. Using dynamic load balancing, Marc's new energy company was able to idle his fridge and heating for short amounts of time during peak usage periods without affecting performance. Packages like Marc's allowed for the closure of a coal power plant, which was replaced by a combination of solar and wind power.

In contrast to technical interoperability through APIs, **semantic interoperability** remains a far more complicated challenge (semantic interoperability involves the standardisation of formats that data is kept in as well as the data fields. For instance, the difference between a text field titled "Name" vs "First Name").

There is no easy, cross-sectoral problem to harmonising semantic interoperability. Nevertheless, a wide range of industries have been developing common standards and formats for exchanging data. Some noteworthy examples include health data, business reporting and the Internet of Things (IoT).[63] Companies can also offer solve semantic interoperability issues as a service. For instance, Digi.me ingests and categorises data with different semantics into a single schema, allowing data exchange even where semantics have not been agreed.

Consent management is one of the most difficult aspects of making a "fair" service stack work. Even here, various protocols have been developed that help users track how their data are being used and to give and withdraw consent for specific data uses. The Interactive Advertising Bureau (IAB) has developed a framework for tracking consent and allowing users to make preferences on how they are tracked that has been taken up by the majority of online advertisers.[64] The iShare protocol provides a decentralised scheme to manage consent and data access in large-scale data markets.[65]

'Consent management, semantic interoperability, open APIs and electronic identity are starting to come together in comprehensive architectures to manage ecosystems using personal data.'

63 Health data: HL7's Fast Healthcare Interoperability Resources (FHIR) Specification, which has been used by smartphone and smart device manufacturers, makes it possible to move health sensor data into medical records and between devices. For an overview of HL7, visit http://www.hl7.org/about/index.cfm?ref=nav. Regarding business reporting, the XML-based XBRL business reporting format, broadly used by regulators and accounting software, makes it easy to automate compliance checks. XBRL has its own dedicated organisation at https://www.xbrl.org. Regarding IoT data, a potential standards war was forestalled by the merger of two competing initiatives in 2016 into the Open Connectivity Foundation, whose 300+ industry members are developing data models and interoperability specifications for smart home, smart car, healthcare and other applications. See Monica Alleven, "AllSeen Merges with Open Connectivity Foundation," *FierceWireless*, 10 October 2016.

64 The IAB's consent framework has a dedicated website at https://advertisingconsent.eu.

65 For more information, visit https://www.ishareworks.org/.

Consent management, semantic interoperability, open APIs and electronic identity are starting to come together in comprehensive projects and architectures to manage ecosystems using personal data.

- In the U.S., Facebook, Google, Microsoft and Twitter all contribute to the Data Transfer Project, which was formed in 2017 to create an open-source, service-to-service data portability platform to enable individuals to move their data between online service providers.[66]
- In Germany, the Fraunhofer Society has developed an International Data Spaces reference architecture to facilitate the secure and standardised exchange and easy linkage of data in trusted business ecosystems. The International Data Spaces Association is developing this architecture with the aim of supporting new smart-service scenarios that also ensure participating companies maintain sovereignty over their data.[67]
- Going a step further, Sitra's IHAN framework proposes a comprehensive architecture for identity and consent management, laying out the different functionalities and technical capabilities that a data sharing ecosystem must provide for.
  It also funds pilot projects that experiment with consent-based data sharing and portability in traditional sectors.[68]

IHAN

Sitra, the Finnish Innovation Fund, has launched IHAN, an initiative on a "human-driven data economy." IHAN takes a multi-disciplinary approach to developing ecosystems for data re-use, covering technical, regulatory, legislative and values aspects, as well as funding research, pilots and standardisation. The IHAN Blueprint spells out the technology problems that need to be solved for a fair data economy ecosystem to work. These include developing a governance model, and specifying data formats to support data exchange use and service standards for real-time data transfer. The technology stack for a fair data ecosystem should include the following components:

- A personal identity wallet to provide identifiers for entries of personal data and connect them to the data subject while maintaining privacy
- Data adapters to provide semantic interoperability between different datasets
- Consent management directories and an interface to keep track of authorisations to access data in various system on both a one-time and continuous basis
- Service directories that help discover what data-enabled services are available
- Logging of all data use by the end user, service provider and data provider

For more, see IHAN blueprint https://www.sitra.fi/en/articles/ihan-blueprint/

66 For more information, visit https://datatransferproject.dev/dtp-overview.pdf.

67 For more information, visit https://www.internationaldataspaces.org/the-principles.

68 Antti Larsio, Juhani Luoma-Kyyny, Jyrki Suokas and Teemu Karvonen, *IHAN Blueprint 2.0 v2610018* (Helsinki: Sitra, 2018).

Civil society and citizens

In brief:

> A wide range of civil society movements are now coalescing into a MyData movement that provides the intellectual underpinnings and networks of people to build fair data economy models globally

> Consumers are increasingly aware of some of their data rights and are actively asserting control over their data

> Awareness of data portability remains low, though it is likely to grow

A number of movements brought together academia, activists and companies over the previous decades to help shape the ecosystem of what our digital economy looks like today: data protection and privacy campaigners and researchers uncovered misuses of personal data and helped develop laws, norms and technology to give users greater control over their data. The open source and open data movements have shown that openness with code and data can also make good business sense. Activism on net neutrality has shown that citizen movements can also mobilise around technology policy with meaningful political agendas. And the swift progress from academic inquiry to policy proposals in the EU, United Nations and other international organisations on the ethical and human rights-centric use of artificial intelligence suggests that the world's collective attention to the societal implications of new technologies has grown.

For more than a decade, researchers and developers have been developing concepts to fill the gap between privacy and openness, looking for approaches that increase human agency and control over technology in a way that makes economic sense and also contributes to openness. These have expressed themselves in proposals on data portability, data ownership, personal data stores and management. Consolidating these ideas, MyData is a human-centred approach to personal data management that combines digital rights with commercial needs. In 2018, MyData Global was founded as a nonprofit organisation to carry these ideas forward, with 20 MyData hubs in 16 countries.

'MyData is a human-centred approach to personal data management that combines digital rights with commercial needs.'

MyData

The key shifts MyData is calling for are outlined in the MyData Declaration:

1. From Formal to Actionable Rights

In many countries, individuals have enjoyed legal data protection for decades, yet their rights have remained mostly formal: little known, hard to enforce, and often obscured by corporate practices. We want true transparency and truly informed consent to become the new normal for when people and organisations interact. We intend access and redress, portability, and the right to be forgotten, to become "one-click rights": rights that are as simple and efficient to use as today's and tomorrow's best online services.

2. From Data Protection to Data Empowerment

Data protection regulation and corporate ethics codes are designed to protect people from abuse and misuse of their personal data by organisations. While these will remain necessary, we intend to change common practices towards a situation where individuals are both protected and empowered to use the data that organisations hold about them. Examples of such uses include simplifying administrative paperwork, processing data from multiple sources to improve one's self-knowledge, personalised AI assistants, decision-making, and data sharing under the individual's own terms.

3. From Closed to Open Ecosystems

Today's data economy creates network effects favoring a few platforms able to collect and process the largest masses of personal data. These platforms are locking up markets, not just for their competitors, but also for most businesses who risk losing direct access to their customers. By letting individuals control what happens to their data, we intend to create a truly free flow of data – freely decided by individuals, free from global choke points – and to create balance, fairness, diversity and competition in the digital economy.

For the full text, visit www.mydata.org/declaration.

The ideas behind MyData are finding expression in political agendas, notably among consumer protection bodies and in the automotive sector.[69] And the quantified-self movement has stimulated interest in the large data footprints we leave and how to turn these to individual benefit.

Consumers and citizen attitudes

If activists and academics have begun to develop a well-formed set of norms around personal data portability and re-use, consumers more broadly aren't there yet. Nevertheless, there are signs of a significant shift in consumer awareness. Scholars long identified a "privacy paradox," where individuals would voice concern about data protection and privacy but take few steps to ensure it.

European citizens are increasingly aware that they have certain rights regarding their data. A recent survey by Sitra in four European countries found that 58 % of respondents know of a right to deletion of personal data and a right to know how and for what purpose their data is used. In contrast, only 21 % knew of a right to data portability. These numbers match other surveys, such as a recent survey of French consumers that found twice as many people know of their rights to objection and deletion versus data portability.[70] And European data protection supervisors have been flooded with consumer complaints and inquiries since the GDPR came into force in May 2018, but few are on data portability.

69 The pan-European consumer body BEUC has organised consultations and studies on personal data access and re-use. Euroconsumers launched the "My Data is Mine" campaign. Agustín Reyna, *BEREC Public Consultation on the Data Economy: BEUC Response*, 21 November 2018.

70 IFOP, *Regard des Français sur la protection des données personnelles* (Paris, France: Renaissance Numerique, April 2018); Jaakko Hyry, *The Use of Digital Services* (Kantar TNS, January 2019); London Economics, "Research and Analysis to Quantify the Benefits Arising from Personal Data Rights under the GDPR," *Report to the Department for Culture, Media and Sport*, May 2017; Access Now, "GDPR in Numbers," *GDPR Today*, 28 January 2019.

Frederik ditches the company car

Taking advantage of a change to Belgian tax law, Frederik's employer offered to replace his company car with a mobility budget. Every morning, Frederik's mobility app looks at his calendar and traffic conditions to propose the best way to commute into downtown Brussels from his home in bucolic suburban Overijse. Sometimes it's the bus; other days it's a bike ride or ride-share to the train station three kilometres from his home. If Frederik still has a personal car, it sits at home and is used mainly on the weekend. On the days it's not used, Frederik gets a small refund from his insurance company, which adds up to €200 per year. Last week, Frederik had an early morning flight to Helsinki, so his mobility app automatically booked a taxi. Frederik made his favorite music playlists available to the driver, so he listened to La Traviata on the way to the airport. When he landed in Helsinki, his train ticket to the city centre for his meeting popped up on his phone. Afterwards, his app recommended five exciting local restaurants for lunch that could accommodate his gluten sensitivity. At the end of every month Frederik receives a bonus of €50 euros, which consists of savings compared to his previous use of a company car and a credit for reduced CO_2 emissions. His employer has also realised significant savings across the company, which it invested into raising employee digital skills and bigger year-end bonuses.

When consumers do know about their right, they are also keen to act on it. For instance, the right to be forgotten has proven to be very popular. Google has fielded 2.4 million European right to be forgotten requests in 2014-2017.[71] In contrast, when they don't feel in control, they will refrain from sharing their data. For instance, a survey by mapping company HERE Technologies found that while nearly 70 % of users will share location data if they feel in control, only 20 % currently feel that way and 80 % feel nervous or vulnerable.[72]

Policymakers need to take the next step, giving citizens sufficient confidence in their control and safeguards on the use of their data to share that data. Furthermore, without trust, consumers may not be ready to take advantage of their portability right. Policymakers must also recognise that consumers will not exercise their right to portability out of sheer academic interest – they will need to be clearly motivated by services that add real value to their lives.

71 Michee Smith, "Updating Our 'Right to be Forgotten' Transparency Report," *Google in Europe Blog*, 26 February 2018.

72 HERE Technologies, *Privacy and Location Data: Global Consumer Study* (Amsterdam: HERE Technologies, 2018).

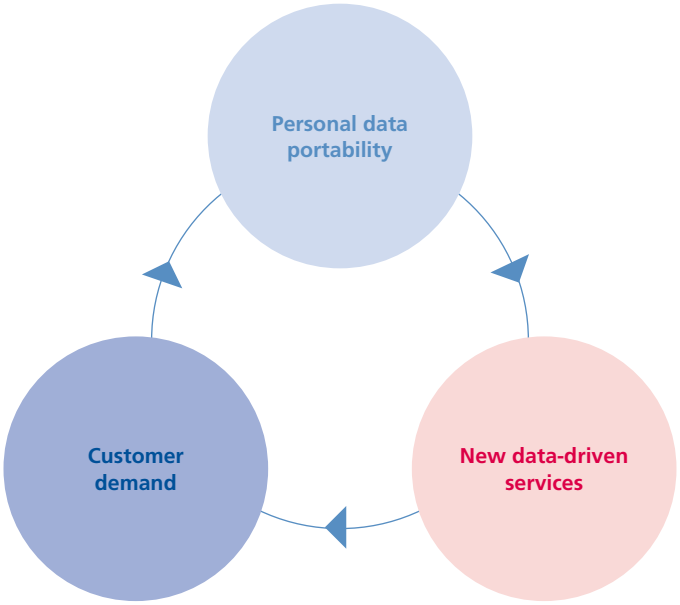
4. A European Agenda

Objectives and approach

The vision is clear: service providers offer consent-based access to and portability of personal data to third parties; these third parties create services on top of these data; consumers benefit from these services and demand greater data portability.

'Data access and portability are no longer just a geek's affair.'

Chart 11. The Virtuous Circle of the Fair Data Economy



Europe has been successful in **designing** and **implementing** a robust and innovative legal framework, but this *per se* is not sufficient to deliver a fair data economy. Now comes the hardest part, the challenge of **adoption**: ensuring that all stakeholders have incentives to buy in to this vision and participate in making it happen. For Europe to realise these benefits at scale, we need to turn the current promising but still nascent situation into a virtuous cycle where:

1. Consumers gain concrete benefits and value from services using their data and feel confident enough in safeguards to share their data. Data access and portability are no longer just a geek's affair. Consumers expect data portability and effective consent management from their service providers.

2. As a result, service providers have more incentives to make data available to third party data re-users, lest their customers "vote with their feet" and choose a competitor that offers better control over their data, from access to portability.
   In turn, this data availability creates pressure to innovate and more experimentation in business

models as markets become more competitive. APIs make it possible for market participants to collaborate on providing more complex services, and can turn data re-users into clients of service providers (for instance for advanced APIs).

3. New service providers can enter the market, obtaining the data they need to provide innovative services. Portability of customer data allows them do so in a secure and cost-effective manner, spurring on innovation that in turn entices new customers. And the innovative services are not necessarily in competition with existing service providers – there is a much wider opportunity beyond zero-sum competition.[73]

There is no silver bullet to building virtuous cycles of this kind, it requires patience and cooperation. We can learn from the multi-pronged approaches honed in areas like public health, environmental sustainability, education or gender equality. Regulation, business models and norms all build on each other. The evolution of environmental policy from a simply regulatory paradigm to a more complex agenda that also stresses new business ecosystems (the circular economy), an R&D pipeline (green tech), consumer behaviour (values and daily habit like recycling), regulation and incentives (carbon pricing, emissions standards) point the way. As this comparison also makes evident, there will be setbacks.

A similar process is ahead of us for how our society handles data. We need to move from a negative vision – a long list of ills we wish to avoid, including data leaks, unethical algorithms and data silos – to a broader vision of the world we are trying to build.

Roadmap: principles for the next decade

This roadmap proposes realistic steps for policymakers and companies alike to take in the next five years to put this vision of a fair data economy to work for us all.

To be clear, this roadmap does not present an exhaustive list of what must be done to promote the data economy. Other key challenges remain digital skills, a broadly enabling regulatory framework for the single European market, a framework to encourage entrepreneurship and scale-ups, that have been treated at length by these and other authors.[74]

What this roadmap does do is point to a wide palette of action by government and companies alike that can help push along the development of a fair data economy that fully exploits the opportunities of consent and data portability, tilting the playing field in favour of business models that work but also create more user control.

I. Put the EU data economy framework to work

The basic regulatory building blocks are there. Now governments (in collaboration with consumer groups and companies) need to put Europe's new rules for the data economy into practice in a way that promotes the widest possible data reuse and individual control. This requires major activity on adoption, clarification, support and enforcement. There is lots of uncertainty about how these regulations will play out in practice, and uncertainty reduces willingness to invest. For instance, simply mandating data portability and sharing is insufficient: to achieve an impact there is a need for machine readable and machine-speed data access.

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73 For instance, Stripe, arguably the most successful Fintech unicorn, is a payment service that does not disintermediate the payment services for the final customers – in fact, it is totally invisible to the final users.

74 See, for instance, Paul Hofheinz and Luukas K. Ilves, *Digital Europe: Next Steps: A European Agenda for the Digital-9+* (Brussels: Lisbon Council Research, 2018).

1. Data protection supervisors should carry out robust oversight over the implementation of GDPR rules on data access and portability and work closely with sectoral and competition regulators. Regulators should have the resources to test service providers to see whether they are supporting data rights, much in the same way that telecoms regulators test the signal strength and connection quality of telecoms operators. Oversight can also draw on the wisdom of the crowd. Users are best placed to discover shortcomings, but it needs to be easy for them to report their findings to regulators, consumer groups and the companies themselves. This process need not be adversarial – companies are often ill-informed about their regulatory obligations and regulators can help fill them in.

2. Make it easy to comply by following good practice. Industry and data protection supervisors need to jointly develop guidelines and industry codes of conduct that recommend emerging standards and protocols for data portability and consent management.

3. Promote the use of "well-formed APIs" to achieve portability. This should initially take form of soft recommendations, but a review of the GDPR and sectoral legislation could make this a firm requirement.

II. Lead by example with data held by government

Government – from the local to the national and supranational level – can set an example with how it treats data and help create demand for technology, standards and services. Government can exercise influence not only on its own public services, but also on sectors with strong government involvement, like healthcare and transport.

1. The public sector should set an example with its data. Steps can include voluntarily complying with Article 20 of the GDPR (currently, the GDPR has an exception for the public sector to requirements on data access and reuse) and implementing standardised APIs for both public data and non-public data (for those with a right to access the data, e.g. a company accessing its compliance and tax data).

2. **Procurement** contracts and funding grants can include requirements on data availability or formats for data generated in the course of providing a service, e.g. quality and availability data from a municipal water or waste services supplier or live visitor information for the operator of a public pool. The same principle can apply to EU funding (e.g. for agriculture, regional, structural funds).[75]

3. The EU proposes to make open access publishing a requirement of future **scientific funding**. Data sets from all publicly funded science could similarly be made available.

4. In areas where government is a major buyer or market actor, such as healthcare, they can **use their market power to open up data markets**, for instance requiring suppliers to government to make their data available under market conditions to smaller players. Similarly, in network industries, working with regulated market participants, e.g. telecoms or energy, data availability is a potential remedy for addressing significant market power.

'The public sector should set an example with its data.'

75 For instance, the EU recently introduced requirements on transparency for CAP funding. For more, visit https://ec.europa.eu/agriculture/cap-funding/beneficiaries/shared_en

'Governments should support innovative projects for data and consent sharing and developing innovative services in sectors where demand and regulation already exists.'

This is not to call for free data in all areas. There may be good reasons to allow market actors to monetise their data and charge for access.

III. Grow commercial ecosystems to use data better

Accelerate the creation of new services and ecosystems, particularly in sectors with public involvement and regulation, e.g. health, transport, environment, education, finance.

1. Government should work with companies to develop **holistic sectoral data strategies** with implementation plans and reviews. Certain policy areas point the way – national, regional and EU strategies for connected and automated mobility are a good example.[76] In other policy areas, government will need to force the question in the first place. While there are EU-level strategies, action plans and declarations in many areas, including energy, health and fintech, many of them are only beginning to initiate action. Some good examples of such sectoral strategies include the detailed plans worked out by the EU's international consortium for personalised medicine.[77]

2. **Support innovation projects** to stimulate the creation of data-driven services in strategic areas. In order to raise awareness and expectations among consumers, there is the need to showcase the importance of services stemming out of data portability. Taking inspiration from the work carried out in the context of the Finnish IHAN initiatives, governments should support innovative projects for data and consent sharing and developing innovative services in sectors where demand and regulation already exists (e.g. finance), building partnerships of service providers and re-users. Consumers will start to see the benefits of effective portability.

3. **Catalyse processes**: alliances and public-private partnerships can do the heavy lifting to define standards, agree on sector-specific roadmaps, and even operate data sharing cooperatives. Government can support these with seed funding, listening to them in the policymaking process. But government can also use its leverage over such groups to encourage them to take open approaches, e.g. by making membership open and accessible or encouraging them to develop their approaches with a broader geographic scope (pan-European, but also global). This should be done by bringing big business on board, in particular co-opting the tech companies with parts of this agenda. Large tech companies have shown an openness to contributing to wider use of data and open standards, e.g. through Google's data transfer project, Amazon's embrace of APIs or Microsoft and Mastercard's embrace of decentralised e-ID.

76 For an overview, visit https://ec.europa.eu/transport/themes/its/c-its_en.

77 International Consortium for Personalised Medicine, *ICPerMed Action Plan* (Cologne: *Deutsches Zentrum für Luft- un Raumfahrt,* 2017).

IV. Develop the infrastructure to break through sectoral silos

Thanks to the cloud-driven API revolution, many components of this stack already exist. But governments, standards bodies, private companies should collaborate to ensure a full stack of open standards and implementations for identity, consent interoperability and sector specific APIs is available. In particular:

1. Promote the interoperability of consent management frameworks. While GDPR has generated a wealth of solutions, current models are typically based on organisation-level management. But the fair data economy requires machine speed sharing of data across organisation, and automated management (including tracking and revoking) of consent across different consent management solutions. This requires support for project piloting consent management across organisation, and for industry level effort to promote interoperability.

2. Support standardisation efforts for portability and consent management. For the fair data economy to exist, portability needs to be scalable. This does not necessarily require the creation of a formalised standard, but some form of agreement on data models and workflows

V. Promote the idea of a fair data economy

As with any broad policy shift, we need a concerted effort to make citizens aware of their new data rights and companies aware of the opportunities these offer. The heavy lifting will come from companies offering new services models and from litigation of data rights by citizens and companies. Success is easy to define – when consumers themselves start articulating their expectations and demand control over their data from service providers.

There are some concrete steps that can speed up this process:

1. Governments, NGOs and policymakers should speak up more about the opportunities of a fair data economy. It can be as simple as describing the rights and benefits of the GDPR. Journalists, politicians and trustworthy actors like consumer protection bodies should all take part.

2. Teach citizens to use their data rights by including a module on data protection and data rights in digital literacy and cyber hygiene courses and awareness campaigns.

3. Develop and market a "fair data label" to inform consumers about services' compliance with basic principles and standards of data protection and reuse.

4. Create institutional architecture. GDPR and PSD2 shows the importance of dedicated institutions to accompany the implementation of policies. For instance, there should be a European or global version of the German *Stiftung Datenschutz*, a European foundation to explore questions of data protection and good governance, with a dual mandate to promote ethics and a high degree of data use.

Drawing on what social scientists and policymakers have learned in domains like environmental sustainability about how to generate ethical and inclusive but also robust growth, we need a broader process iterating between political decision making and regulation, market, and consumer/citizen expectations. Above all, we need a new set of norms that can draw everyone along, norms that are not just abstract but concrete and easy to understand. And this process cannot be uniquely European but is rather a question of showing leadership in initiating global change.

The European Union: A cornucopia of initiatives and action

The EU is acting in a broad range of areas to bring about new data re-use scenarios, using both hard legislation and soft instruments (like voluntary standardisation or funding pilot projects). Data re-use and portability are not goals unto themselves, but means to achieve various policy ends:

- The EU has a long-standing policy of standardising data interoperability in cars. The directive on intelligent transport systems (C-ITS) creates a broader framework for data interoperability in transport services. Recently adopted e-call rules specify a standard dataset for cars to forward to emergency services, and political discussions are underfoot to consider much broader requirements on the access and reuse of the large volumes of data that semi-autonomous and self-driving cars will generate.
- The European Commission's next generation Internet (NGI) initiative aims to build a resilient, trustworthy and sustainable internet by investing in technologies like electronic identity and blockchain.
- The EU has long mandated governments to make most publicly available data available as open data. The updated directive on public sector information (PSI) will now make real-time public data available through APIs.
- The single digital gateway regulation creates the legal framework to provide 20 cross-border e-government services in accordance with the once-only principle, which requires public administration to re-use data that citizens and companies have already provided. Achieving this entails standardising data sets, semantics and providing an infrastructure for real-time cross-border data exchange.
- In order to harmonise e-procurement proceedings, the EU has standardised a European single procurement document with a wide range of harmonised data fields. In practice, this will make it easier to exchange data between business and tax registers, accounting solutions and procurement portals.
- The EU has developed a single electronic format for prescriptions and is now considering developing a single European format for electronic health records. Together, these will allow EU citizens to fill their prescriptions anywhere in Europe and port their medical data to providers across the EU, facilitating both emergency healthcare and chronic care for an increasingly mobile populace. The new EU medical device regulation will also set interoperability standards for medical devices.
- The recent regulation on the free flow of data has tasked the European Commission with working out industry best practices for sharing and re-using non-personal data. The European Commission is mapping bottlenecks for re-use and will look at model contracts and clauses for B2B data sharing arrangements.
- The European Commission has been a major source of funding for pilots on data access and reuse, including of multiple personal information managers and public sector data building blocks. The current CEF and ISA2 programmes fund the digital infrastructure for cross-border public services to work, the proposed Digital Europe programme would up funding in these areas. Public funding can also be used as a lever to mandate opening up data sets, as the European Commission intends for EU-funded scientific research post 2020.
- The EU has funded and provided political leadership for similar initiatives in digital transport, e-health, big data for research, industrial data, satellite and space, training data for artificial intelligence and other areas.

Additionally, European legislation has also tackled market failures around cybersecurity. The GDPR and network and information security (NIS) directive require data processors and providers of essential services and digital platforms to put in place security requirements and notify users or regulators of incidents. The e-ID and services regulation (e-IDAS) requires all providers of trust services (e.g. encryption, digital signature) to notify users of breaches and technical errors and also creates a system of mutual recognition of electronic identities, albeit only for the public sector. And the new EU cybersecurity act creates a framework for pan-EU cybersecurity certification of goods and services.

5. References and Additional Reading

Access Now. "GDPR in Numbers," *GDPR Today*, January 2019 Issue

Alleven, Monica. "AllSeen Alliance Merges with Open Connectivity Foundation," *FierceWireless*, 10 October 2016

Allied for Startups. "Two Things That Could Make or Break the European Data Economy," *Medium*, 20 February 2018

Arcep. "La Régulation par la Data," *Arcep*, 19 February 2019

Australian Government. *Review into Open Banking: Giving Customers Choice, Convenience and Confidence* (Canberra: Government of Australia, 2017)

Barwise, Patrick, and Leo Watkins. "The Evolution of Digital Dominance: How and Why we got to GAFA," *Digital Dominance: The Power of Google, Amazon, Facebook, and Apple* (New York: Oxford University Press, 2018)

Bonte, Dominique. *Smart Cities, IoT, and Cost Savings* (Oyster Bay: ABI Research, 2017)

Cattaneo, Gabriella, Giorgio Micheletti and Rosanna Lifonti. European Data Market SMART 2013 / 0063 D2: Methodology Report (Milan: IDC, 2014)

Chen, Tony, Ken Fenyo, Sylvia Yang and Jessica Zhang. *Trends and Opportunities in the Subscription E-Commerce Market* (New York: McKinsey, 2018)

Competition and Consumer Commission of Singapore. "CCCS to Ensure Markets Work Well for Business and Consumers," *CCCS*, 09 April 2018

Ctrl-Shift. *Data Mobility: The Personal Data Portability Growth Opportunity for the UK Economy* (London: UK Department for Digital Media, Culture, Media and Sport, 2018)

De Hert, Paul, Vagelis Papakonstantinou, Gianclaudio Malgieri, Laurent Beslay and Ignacio Sanchez. "The Right to Data Portability in the GDPR: Towards User-Centric Interoperability of Digital Services," *Computer Law and Security Review*, April 2018 Issue

Digital Competition Expert Panel. *Unlocking Digital Competition* (London: HM Treasury, 2019)

Engels, Barbara. "Data Portability among Online Platforms," *Internet Policy Review*, 11 June 2016

----------. "Detours on the Path to a European Big Data Economy," *Intereconomics - Review of European Economic Policy*, July/August 2017 Issue

European Commission. *Commission Recommendation to Establish a Format for a European Electronic Health Record (HER) Exchange* (Brussels: European Commission, 2018)

----------. *Commission Implementing Regulation (EU) 2016/7 of 05 January 2016 Establishing the*

Standard Form for the European Single Procurement Document (Brussels: European Commission, 2016)

----------. "Digital Single Market: EU Negotiators Agree on New Rules for Sharing of Public Sector Data," *Press Release*, 22 January 2019

----------. "Mergers: Commission Fines Facebook €110 Million for Providing Misleading Information about WhatsApp Takeover," *Press Release*, 18 May 2017

----------. *Special Eurobarometer: Europeans' Attitudes towards Cyber Security*, 19 September 2017

European Parliament and Council of the European Union. *Regulation (EU) 2017/745 of the European Parliament and of the Council of 05 April 2017 on Medical Devices* (Strasbourg and Brussels: European Parliament and Council of the European Union, 2017)

----------. *Regulation (EU) 2017/746 of the European Parliament and of the Council of 05 April 2017 on In Vitro Diagnostic Medical Devices* (Strasbourg and Brussels: European Parliament and Council of the European Union, 2017)

----------. *Regulation (EU) 2018/1724 of the European Parliament and of the Council of 02 October 2018 Establishing a Single Digital Gateway to Provide Access to Information, to Procedures and to Assistance and Problem-Solving Services and Amending Regulation (EU) No 1024/2012* (Brussels and Strasbourg: Council of the European Union and European Parliament, 2018)

----------. *Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a Framework for the Free Flow of Non-Personal Data in the European Union* (Strasbourg and Brussels: European Parliament and Council of the European Union, 2018)

Gabriel, Mariya. "Keynote Video Message," *European Dialogue on Internet Governance (EuroDIG) in Tbilisi, Georgia*, 05 June 2018

General Secretariat of the Council of the European Union. *Council Conclusions on the Digitalisation of Transport* (Brussels: Council of the European Union, 2017)

Government of the Republic of France. *Loi N° 2016-1321 du 07 Octobre 2016 Pour une République Numérique* (Paris: Legifrance, 2016)

Graef, Inge. "Mandating Portability and Interoperability in Online Social Networks: Regulatory and Competition Law Issues in the European Union," *Telecommunications Policy*, 19 August 2015

Graef, Inge, Damian Clifford and Peggy Valcke. "Fairness and Enforcement: Bridging Competition, Data Protection and Consumer Law," *International Data Privacy Law*, 08 December 2018

Greif, Björn. "Study: Google is the Biggest Beneficiary of the GDPR," *Cliqz*, 10 October 2018

Hart, Kim. "Exclusive: Public Wants Big Tech Regulated," *Axios*, 28 February 2018

HERE Technologies. *Privacy and Location Data: Global Consumer Study* (Chicago: HERE Technologies, 2018)

Hofheinz, Paul, and Luukas K. Ilves. *Digital Europe, Next Steps: An Eight-Point Action Plan* (Brussels: Lisbon Council, 2018)

Hofheinz, Paul, and David Osimo. *Making Europe A Data Economy: A New Framework for Free Movement of Data in the Digital Age* (Brussels: Lisbon Council, 2017)

Hyry, Jaakko. *The Use of Digital Services* (London and Helsinki: Kantar TNS and Sitra, 2019)

Institut français d'opinion publique and Renaissance numérique. *Regard des français sur la protection des données personnelles* (Paris: IFOP and Renaissance numérique, 2018)

International Consortium for Personalised Medicine. *ICPerMed Action Plan for Personalised Medicine* (Cologne: Deutsches Zentrum für Luft- und Raumfahrt, 2017)

Iyer, Bala, and Mohan Subramaniam. "The Strategic Value of APIs," *Harvard Business Review*, 07 January 2015

Jia, Jian, Ginger Zhe Jin and Liad Wagman. *The Short-Run Effects of GDPR on Technology Venture Investment* (Cambridge, Massachusetts: National Bureau of Economic Research, 2018)

Kahle, Kathleen M., and René M. Stulz. "Is the US Public Corporation in Trouble?" *Journal of Economic Perspectives*, Summer 2017 Issue

Kalimo, Harri, and Klaudia Majcher. "The Concept of Fairness: Linking EU Competition and Data Protection Law in the Digital Marketplace," *European Law Review*, Issue 2 2017

Kelly, Éanna. "The 'Plan S' Blog: Is the EU's Open Access Plan a Tremor or an Earthquake?" *Science|Business*, 28 February 2019

Kirchoff, Lindsay. "The Ultimate Guide to Pricing Your API," *Nordic APIs*, 07 September 2017

Knight, Will. "Google Won't Renew its Military AI Contract," *MIT Technology Review*, 01 June 2018

Krempl, Stefan. "*De Maizière hält Losung 'Meine Daten Gehören Mir' für Falsch*," Heise Online, 18 February 2017

Lambrecht, Anja, and Catherine E. Tucker. "Can Big Data Protect a Firm from Competition?" *SSRN Electronic Journal*, 18 December 2015

Larsio, Antti, Juhani Luoma-Kyyny, Jyrki Suokas and Teemo Karvonen. *IHAN Blueprint v 2.0* (Helsinki: Sitra, 2018)

Leetaru, Kalev. "The Data Brokers So Powerful Even Facebook Bought their Data - but They Got me Wildly Wrong," *Forbes*, 05 April 2018

Levinson, Marc. *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger* (Princeton: Princeton University Press, 2016)

Lomas, Natasha. "How a Small French Privacy Ruling Could Remake Adtech for Good," *TechCrunch*, 21 November 2018

London Economics. *Research and Analysis to Quantify the Benefits Arising from Personal Data Rights under the GDPR: Report to the Department for Culture, Media and Sport* (London: London Economics, 2017)

Martens, Bertin, and Frank Mueller-Langer. "Access to Digital Car Data and Competition in Aftersales Services Markets," *SSRN Electronic Journal*, 22 October 2018

Matney, Lucas. "Group of Employees Calls for End to Microsoft's $480 Million HoloLens Military Contract," *TechCrunch*, 23 February 2019

McLean, Asha. "Australia to Force 'Big Four' to Open Banking Data by July 2019," *ZDNet*, 10 March 2019

van der Meulen, Rob. "How GDPR is an Opportunity to Create Business Value," *Gartner*, 24 January 2018

Mobile Ecosystem Forum. "The Grand Awakening," *MEF Blog*, 04 December 2018

Moll, Joana, in collaboration with Tactical Technology Collective. "The Dating Brokers: An Autopsy of Online Love," accessed March 2019

Montezuma, Luis Alberto, and Tara Taubman-Bassirian. "How to Avoid Consent Fatigue," *The Privacy Advisor*, 29 January 2019

Murgia, Madhumita, and Aliya Ram. "Data Brokers: Regulators Try to Rein in the 'Privacy Deathstars,'" *Financial Times*, 08 January 2019

Nati, Michele, and Crt Ahlin. "Data Portability 2.0 is yet to Come," *Medium*, 17 September 2018

Organisation for Economic Co-operation and Development. *Data-Driven Innovation: Big Data for Growth and Well-Being* (Paris: OECD, 2015)

Open Banking. "UK's Open Banking Project Expanded," *Open Banking*, 22 November 2017

Opresnik, David, and Marco Taisch. "The Value of Big Data in Servitization," *International Journal of Production Economics*, Issue C 2015

Privacy International. "Our Complaints against Acxiom, Criteo, Equifax, Experian, Oracle, Quantcast, Tapad," *Privacy International*, 08 November 2018

Pujol Priego, Laia, David Osimo and Jonathan Douglas Wareham. *Data Sharing Practice in Big Data Ecosystems* (Barcelona: ESADE, 2019)

Raddi, Gianmarco. "Nationalize Facebook," *Politico*, 09 October 2018

Reyna, Agustín. *BEREC Public Consultation on the Data Economy: BEUC Response* (Brussels: BEUC, 2018)

Schaake, Marietje. "A Rules-Based Order to Keep the Internet Open and Secure," *Georgetown Journal of International Affairs*, 30 October 2018

Smith, Aaron. *Public Attitudes Toward Technology Companies* (Washington, DC: Pew Research Center, 2018)

Tennison, Jeni. "Data Portability," *Jeni Tennison Blog*, 26 December 2017

The Economist. "How to Tame the Tech Titans," *The Economist*, 18 January 2018

Thornhill, John. "There is a 'Third Way' for Europe to Navigate the Digital World," *Financial Times*, 19 November 2018

Tremosa i Balcells, Ramon. "Question for Written Answer E-000408-19: Competition, Data and the Market Power of Digital Platforms: Is Data an Essential Facility? The Tools Competition Authorities Can Use to Restore Fair Competition," *European Parliament*, 25 January 2019

Ujhelyi, István. *Report on a European Strategy on Cooperative Intelligent Transport Systems* (Brussels: European Parliament, 2018)

Wainewright, Phil. "PSD2 Opens up Bank Accounts to Third Parties. What Could Possibly Go Wrong?" *Diginomica*, 11 April 2018

Zuboff, Shoshana. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: PublicAffairs, 2018)

Zuora. *The Subscription Economy Index* (San Mateo: Zuora, September 2018)

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