

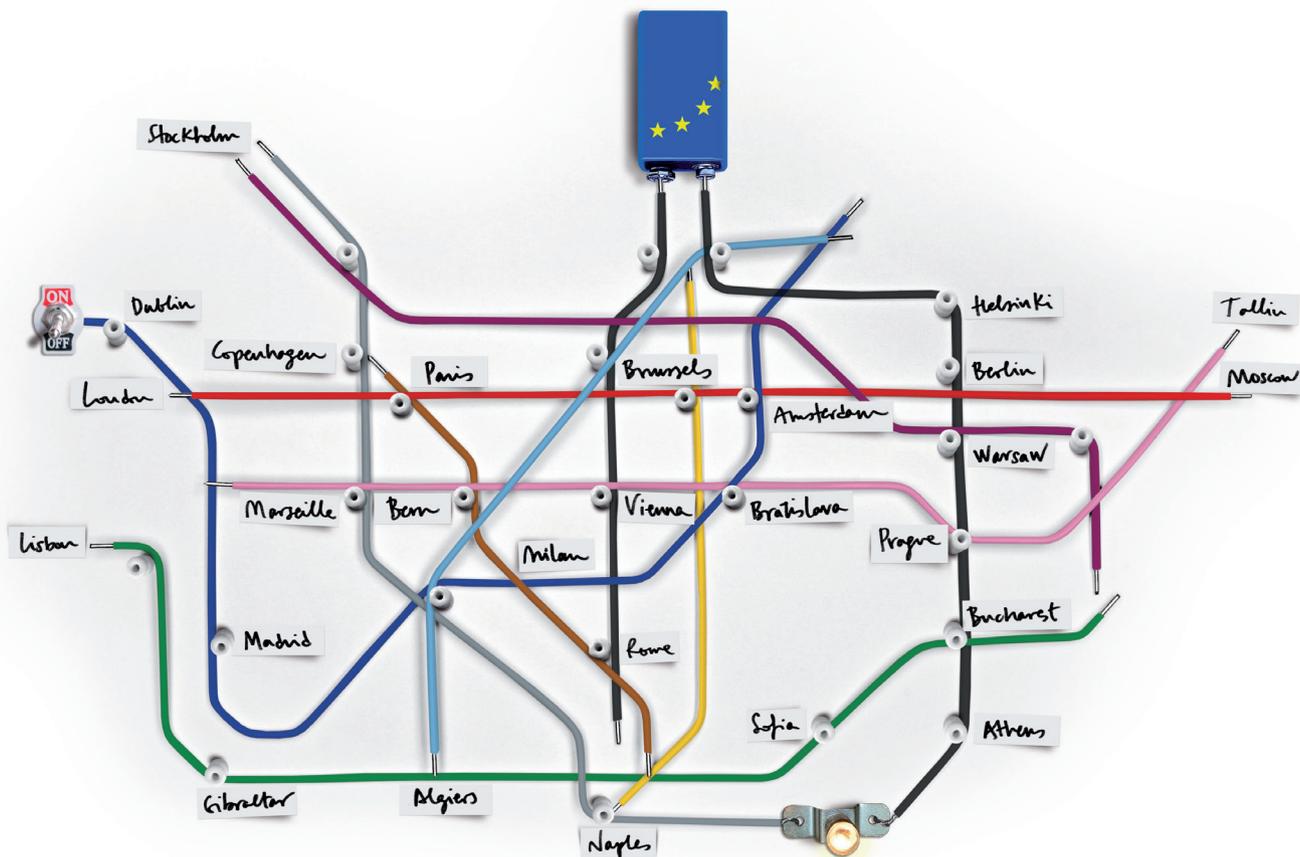


Wilfried
Martens Centre
for European Studies

Rewiring Europe

Five Priorities for a
Lasting Digital Economy

Joakim Wernberg and Jacob Dexe



This research is based on
discussions at the 6th Annual
Economic Ideas Forum 2015





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Credits

Wilfried Martens Centre for European Studies
Rue du Commerce 20
Brussels, BE 1000

The Wilfried Martens Centre for European Studies is the political foundation and think tank of the European People's Party (EPP), dedicated to the promotion of Christian Democrat, conservative and like-minded political values.

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About the Martens Centre



The Wilfried Martens Centre for European Studies, established in 2007, is the political foundation and think tank of the European People's Party (EPP). The Martens Centre embodies a pan-European mindset, promoting Christian Democrat, conservative and like-minded political values. It serves as a framework for national political foundations linked to member parties of the EPP. It currently has 30 member foundations and three permanent guest foundations in 24 EU and non-EU countries. The Martens Centre takes part in the preparation of EPP programmes and policy documents. It organises seminars and training on EU policies and on the process of European integration.

The Martens Centre also contributes to formulating EU and national public policies. It produces research studies and books, electronic newsletters, policy briefs and the twice-yearly *European View* journal. Its research activities are divided into six clusters: party structures and EU institutions, economic and social policies, EU foreign policy, environment and energy, values and religion, and new societal challenges. Through its papers, conferences, authors' dinners and website, the Martens Centre offers a platform for discussion among experts, politicians, policymakers and the European public.

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Executive summary



Most, if not all, economic transactions are digitised to some degree. Most, although not all, enterprises use digital technology in some part of their business. Many, though still far too few, people use digital technology to make their lives richer and easier in everything from shopping and online banking to online dating or streaming music and films. Accordingly, it is becoming increasingly hard to separate the ‘digital’ economy from the ‘non-digital’ one. Rather, the digital economy is the new economy, and the ambition to establish a European digital single market (DSM) is the aspiration to realise an improved single market that makes use of new technologies. This is what makes fulfilling this goal both extremely complicated and very simple.

Rather than a bombastic revolution, digitisation has been a silent, low-key integration process moving horizontally through our economy and society. That is, until now. We have now reached a critical point, having realised that digitisation has been embedded into most, if not all, parts of our lives. Accordingly, a lot is changing as new technologies are no longer just being used to do things the way they have always been done but also to do things in completely new ways. The song has been separated from the CD, bloggers compete with journalists, a mobile gaming company is worth more than a car manufacturer and our cities are being transformed by apps. Times are changing.

How can policymakers in Europe today, in particular in the centre-right, develop conditions that will foster both growth and transparency in this digital age?

Based on our examination of the process of digitisation and digital market integration in Europe, we highlight five specific policy issues that are crucial to promoting a lasting digital economy in Europe. These areas include the need for harmonised regulation; making data borderless and data flows seamless; promoting regional, bottom-up, controlled experimental policy initiatives; growing urban digital markets where digitisation and density accelerate innovation; and establishing an open, coherent framework for data ownership with regard to privacy, personal data and metadata.

In particular, we highlight urban digital markets as a unique opportunity for the EU (and member states) to improve the policy response to digital and disruptive entrepreneurship. Used properly, these markets can generate substantial growth and innovation while aiding the transition to a sustainable and world-leading European digital economy. A rewired Europe fit and able to compete in the twenty-first century global economy.

Introduction



Digitisation is a growing subject of interest and debate everywhere, from politics and academia to business and civil society. In fact, few, if any, aspects of our daily lives are left untouched by it. Yet, at the same time it is becoming an increasingly difficult subject to approach, because digital technologies are being integrated into both the economy and our society. In most cases it is quite difficult to tell where the non-digital ends and the digital begins. In addition, there are many reports on digitisation and the digital single market (DSM) that narrow in and provide detailed accounts and insights on specific subjects. The purpose of this report is neither to cover all subjects nor to provide the most exhaustive account of any specific topic. Rather, the aim is to view digitisation and the DSM from a somewhat different perspective.

Perhaps the best way to understand this digital shift is not to study how it affects behaviour, enterprise or institutions in different sectors or contexts individually but to look for connections and common denominators between these areas across society. That is, to look at digitisation in different policy areas as pieces of a bigger puzzle, where each piece makes more sense when you can see the entire picture. With that in mind, this text aims to provide a coherent account of the opportunities and challenges facing the DSM with respect to digitisation as a new general-purpose technology that is being integrated into business, politics, academia and everyday life. Accordingly, rather than organising the text according to different issues in the market, we start with the basic aspects of digitisation, moving on to the infrastructure of software and data, and concluding with digital market integration. The idea is to highlight the common denominators of digitisation across society and thereby to provide a more holistic, cross-sectoral perspective of the digital shift in the economy.

From this perspective, we highlight five specific policy issues at the end of the report that should be of special interest to policymakers or other stakeholders who wish to promote and engage with the development of a DSM and digital market integration. The first priority is the harmonisation of regulation concerning cross-border transactions, interactions and data flows. The second issue concerns making more data borderless in order to promote innovation and cross-border data flows. The third priority is to promote experimental policy initiatives that are organised from the bottom up across national borders in order to promote adaptive policy development that can scale and spread to other neighbouring countries and the entire EU. The fourth priority is aimed at promoting urban digital markets as drivers of both growth and innovation. Finally, the fifth priority calls for a transparent, cross-border open standard framework for data ownership and privacy.



Readers who are new to the subject will, we hope, find this approach tractable and appealing because it should make it easier to form a general, principled and informed stance on policy issues concerning the digital market. More advanced readers should be aware that this is predominantly intended to be an introduction to digitisation and the DSM. Having said that, the approach may still provide additional or complementary views on familiar issues.



Digitisation: from cyberspace to Main Street



In this section we focus on digitisation—what it is, what it does and why it matters.

The end of the beginning

From prefix to process

Information technology (IT) is being taken over by digitisation. When the Internet became widely available to households across the world in the middle of the 1990s, it looked like a revolution in the making. In 1996, John Perry Barlow, founder of the Electronic Frontier Foundation, published a paper titled ‘The Declaration of Independence for Cyberspace’, which begins as follows:

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather. . . . Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our world. Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. It is an act of nature and it grows itself through our collective actions.¹

The coming of the IT revolution is a twofold story. First, it was about the introduction of digital spaces for interaction, communication and transactions—that is, the introduction of cyberspace. In an anthology from the late 1990s, titled *Borders in Cyberspace: Information Policy and the Global Information Infrastructure*, scholars engaged with issues relating, for instance, to the regulatory frictions between national borders and network borders, how to legally discriminate between being online and offline, and how intellectual

¹ J. P. Barlow, ‘The Declaration of Independence for Cyberspace’, in P. Ludlow (ed.), *Crypto Anarchy, Cyberstates, and Pirate Utopias* (Cambridge, MA: MIT Press, 2001), 27.



property rights would become the competitive edge between nations in the future.² The second part of the revolution centred on the effects of information and communication technology (ICT) on our physical world. For example, it was argued that ICT would render geographical distance irrelevant as people would be able to communicate and interact with each other instantly in the ‘global village’ envisaged by Marshall McLuhan, and that consequently the importance of location would fade and people would be able to live anywhere they wished.³

However, in the wake of the dot-com crash in the early 2000s, the IT revolution appeared to come to a complete halt. Until then, ICT had fundamentally been treated as if it was a new vertical sector in the economy, and everyone wanted to be on the IT bandwagon. When the bubble burst, it confirmed the creeping suspicion that all things ‘IT’ appeared to be solutions looking for a problem but failing to find one to justify their value. Consequently, people lost interest and IT lost most, if not all, of its hype. Even so, people still had their computers, their mobile phones and their Internet connections. That is, ICT was far from obsolete.

What has happened since then is that the *prefix* ‘IT’ has all but vanished and has been replaced by the *process* of digitisation. Without drawing as much attention as it did during the 1990s, ICT has become increasingly integrated into homes, workplaces and most people’s daily lives. In the opening words of the European Commission’s Digital Single Market Strategy, ‘Information and Communications Technology (ICT) is no longer a specific sector but the foundation of all modern, innovative economic systems’.⁴ In hindsight, it appears that the dot-com crash was not the end. Rather, it may have just been the end of the beginning.

A new general-purpose technology

Digital technologies have become general-purpose technologies, for instance by providing platforms and intermediaries for subsequent applications in a variety of different contexts.⁵ As a result, they are fundamentally transforming our entire society and economy. Consider, for instance, search engines, social networks,

² B. Kahin and C. Nesson (eds.), *Borders in Cyberspace: Information Policy and the Global Information Infrastructure* (3rd edn., Cambridge, MA: MIT Press, 1999).

³ R. Florida, *Who’s Your City?: How the Creative Economy is Making Where to Live the Most Important Decision of Your Life* (New York: Basic Books, 2009).

⁴ European Commission, *A Digital Single Market Strategy for Europe*, Communication, COM (2015) 192 final (May 2015).

⁵ T. F. Bresnahan and M. Trajtenberg, ‘General Purpose Technologies: Engines of Growth?’, *Journal of Econometrics* 65/1 (1995), 83–108.



cloud services, online games and marketplaces for apps, which are all markets of their own for services, products, communication and advertising, among other things. In addition to this, data—whether big, small, open or personal—has become a fundamental natural resource and driving factor in the digitised economy. To illustrate the economic impact of new digital business, consider that the initial public offering of the e-commerce platform Alibaba on the US stock exchange in 2014 was the biggest in history at \$25 billion. Another example is the Swedish mobile gaming company King.com, the creator of Candy Crush, which was acquired by American company Activision Blizzard in November 2015 for \$5.9 billion).⁶ In Swedish newspapers, it was repeatedly noted that the acquisition amounted to four times what Geely paid for the Swedish car maker Volvo in 2010.⁷

The digital market also affects those who have chosen not to take an active part in it. First, customers increasingly expect businesses to provide digitally integrated services, for example to be able to access information and browse a shop's selection of products before going there or to be able to place an order online. Second, businesses that do not have their own online presence will still be talked about and rated without their knowledge by other Internet users.⁸ Third, businesses that do not provide online sales still have to face online competition for their local customers from other firms that do offer online sales. All in all, it is becoming increasingly difficult to distinguish between the digital and the non-digital economy.

Many of the issues and problems that were raised and debated before the dot-com crash in the 1990s have been revived although in somewhat different guises. However, what is new is that it is even more important for policymakers to address these issues this time around, since digitisation has become a vital part of the infrastructure of society and day-to-day life as we know them. Most people today are living in two different but interconnected worlds, online and offline, at the same time.⁹ Traditionally, national telecom markets have meant that network borders have reinforced national borders, with roaming fees being a prime example.¹⁰ Yet, the digital single market, and by extension the Internet, relies heavily on cross-bor-

⁶ D. Olanoff, 'Activision Blizzard Acquires Candy Crush Maker King Digital Entertainment for \$5.9 Billion', *Tech Crunch* (2 November 2015).

⁷ V. Ström, 'Två Mojang, fyra Volvo, ett Skype – så stor är affären i King', *Di Digital*, 3 November 2015.

⁸ C. Li and J. Bernoff, *Groundswell: Winning in a World Transformed by Social Technologies* (Boston, MA: Harvard Business School Press, 2008).

⁹ E. Schmidt and J. Cohen, *The New Digital Age: Reshaping the Future of People, Nations and Business* (New York: Alfred A. Knopf, 2013).

¹⁰ The situation with regard to roaming is likely to change as the EU has set a price limit for roaming charges that will come into force in June 2017. See A. Toor, 'Europe Puts an End to Mobile Roaming Charges', *TheVerge.com*, 27 October 2015.



der communication and interactions. Fragmented regulation of intellectual property and cross-border data flows is becoming a bottleneck for the spread and use of on-demand digital content. The rising generation and use of personal data, both for commercial interests and personal services, as well as for surveillance, is creating a need for clearer regulations on privacy in the information society. School systems across the world have installed computers and Internet connections but have yet to successfully digitise education and make use of the new technology to prepare students for a labour market in transformation. In addition to all of this, as a result of the growing 'Internet of Things', an increasing number of devices will become connected and start to communicate, and not just with us but with each other. Consequently, the number of machine-to-machine communications and transactions will grow rapidly.

Barlow's 'Declaration of Independence for Cyberspace', cited at the beginning of this section, may, at first glance, seem overly naïve and provocative. Place still matters; in fact, alongside digitisation and globalisation, urbanisation is currently reshaping our world in fundamental ways, and more than half of the world's population currently lives in cities. In a sense, although we can travel across the world and communicate globally, physical place matters more than ever. However, digital technologies are also reshaping our cities fundamentally. Smart city initiatives provide new, dynamic ways of understanding everything from traffic flows and air quality to tourism. The collaborative economy provides new ways to connect supply and demand based on density, collaboration and shared or under-utilised resources. For instance, digital service providers such as Uber and Airbnb are challenging how we think about cars, transport and hotels in the city space. People use their smartphones to explore new cities without folding maps, to find a jogging route during business trips, and to pick out good restaurants based on ratings and recommendations from others. In short, digitisation is not only providing the tools to overcome the distances between places but also to fully make use of the potential of close proximity in densely populated places such as cities.

Without digitisation, however, most of the world would grind to a halt. Accordingly, perhaps one of the biggest challenges policymakers now face is finding ways to govern the openness, connectivity and creativity of the Internet and the digital market without stifling it.



The matter of digitisation

Separation of content and physical form

At the core of digitisation lies the separation of content and physical form. Consider two familiar examples: the music industry and the newspaper industry. Digitisation has fundamentally transformed the conditions for both these markets, by separating the content (a song or an article) from its physical media (the CD or the newspaper). In these two cases, it has been game-changing for one main reason: the cost of making copies and moving or disseminating content (including communication costs) is virtually zero. Prior to this, making copies was time-consuming and associated with significant degradation in quality.¹¹ Moving content used to be associated with transporting the physical media, and disseminating content required substantial resources. Accordingly, homemade copies of CDs never made it past local circles of friends and acquaintances. Commercial pirate copying overcame these barriers at the cost of setting up competing production systems and logistics networks to sell illegal copies of copyrighted content. Similarly, citizen journalism never played in the same league as the established newspapers. That used to be the order of the day, and it was a fundamental condition for the business models of record companies and newspaper companies. In a way, they provided the service of overcoming technological and geographical boundaries for copying, disseminating and accessing content. However, when digital technologies allowed users to overcome these barriers on their own, something changed.¹²

At first, copies were still stored on physical media such as CDs, and user-generated content was largely limited to digital billboards. Then, as bandwidth increased and the uptake and use of technology increased, people started sending copies of files to each other and producing their own content. This introduced a third game-changing factor: when content can be copied and propagated indefinitely, people can connect and exchange content effortlessly. Between the arrival of this innovation and now, file-sharing and streaming services have to a large degree replaced the distribution of CDs. File-sharing sites such as The Pirate Bay

¹¹ A. Rydell and S. Sundberg, *Piraterna: De svenska fildelarna som plundrade Hollywood* (Stockholm: Ordfront Förlag, 2009).

¹² C. Shirky, *Here Comes Everybody—The Power of Organizing Without Organizations* (London: Penguin Press, 2008).



challenge the traditional record companies, while streaming services such as Spotify challenge file-sharing by offering curated content, reliability, ease-of-use and legitimacy at a comparatively low price compared to physical record sales. Similarly, user-generated content has challenged not only journalism but also the entertainment industry. From blogs to YouTube channels, individuals are sharing their interests or building their own brands and careers from the comfort of their own homes, or—as technology becomes cheaper and more easily available—from their own professional studios. This digital shift in the economy is essentially an illustration of Schumpeter’s creative destruction at work. One step towards adequately facilitating the digital shift and the new media landscape is being taken by the EU Digital Single Market Strategy, under which reform of copyright laws is a key point on the agenda.

A bigger picture

The two examples in the previous section—the music industry and the newspaper industry—have been widely and heatedly debated in recent years but are considerably less often thought of as being parts of the same phenomenon. This is unfortunate, since these core aspects of digitisation, and technological development in a wider sense, are influencing the entire economy without discriminating between (old) sector barriers. In a way, entrepreneurial services such as Uber and Airbnb demonstrate a separation between, in one case, transport services and owning a fleet of taxi cabs and, in the other, temporary housing and the physical hotel. It is, in short, the separation of the service from the product. Both companies provide the ability to match between decentralised supply and demand without having to invest in the physical capital traditionally required to provide these services. In addition, this dematerialisation allows both companies to internationalise their services simply by attracting supply and demand in a new market. In a similar manner, online dating has attempted to separate flirting from the bar or the club. Such companies’ competitive advantage lies in providing a matching platform service, not in owning and operating the necessary resources for carrying out the service that is being matched. There are other, even more evident, examples of matching platforms, such as the Indonesian start-up Go-Jek, which provides users with the ability to find several different services such as motorcycle taxis, grocery deliveries, house-cleaning services and moving assistance.¹³

¹³ A. Ehn and L. Enckell, 'Innovation from the East: Mobile Platforms Beyond Operating Systems', *BREAKIT*, 9 November 2015.



From a holistic point of view, digitisation provides an at least partial dematerialisation of the economy. This shift will be pushed further by coming technological developments. With the introduction of 3D printers, it will become increasingly possible to temporarily separate products from their physical form by sending digital blueprints to the location where the product is then printed. Instead of transporting products, companies will be able to transport the necessary raw materials for the printer, which do not have to come from the company producing the design. Another interesting example of the separation of raw materials from the final product is the company Modern Meadow, which produces animal products such as leather by growing them in a lab, thus creating leather without killing an animal.

Convergence: same content, different channels

The separation of digital content from physical media has led to the intertwining, that is, convergence, of different communication channels.¹⁴ Thus the same content can flow across different platforms, such as social media, newspapers and television. This has implications not only for how different media and communication channels work but also for how they are regulated. If there are different regulatory frameworks for different media, these will converge and overlap when the use of these media converge. This could cause friction and contradictions between different sets of regulations. An example of this is the updated Audiovisual Media Services Directive, which is also up for review under the Digital Single Market Strategy.¹⁵ Similarly, digitisation and technological development causes convergence between sectors and industries in the economy.

Perhaps the most recent example of this is the emergence of companies such as Uber and Airbnb in European markets, which has aptly demonstrated how policymakers are struggling to make sense of these new ventures with respect to existing regulatory frameworks. While incumbent actors will often lobby forcefully to uphold current regulation and shut new actors out, policymakers need to consider how regulation can adapt to the accelerating pace of technological development and innovation.¹⁶ To some degree, this is further complicated by international agreements on regulation, for example on copyright, since they rely on

¹⁴ H. Jenkins, *Convergence Culture: Where Old and New Media Collide* (New York: NYU Press, 2006).

¹⁵ European Commission, *A Digital Single Market Strategy for Europe*, Communication, COM (2015) 192 final (May 2015).

¹⁶ N. Elert, M. Henrekson and J. Wernberg, 'Two Sides of the Evasion: The Pirate Bay and the Interdependencies of Evasive Entrepreneurship', *Journal of Entrepreneurship and Public Policy*, forthcoming.



extensive negotiations and by definition inhibit local or regional adaptations of regulations.¹⁷ Accordingly, EU regulation to promote the DSM needs to be a trade-off between harmonisation and adaptability, and this must be taken into consideration.

Customs regulations provide another example of where current regulation is likely to face significant challenges in the future. There are numerous examples of companies attempting to manipulate goods to have them reclassified in a favourable way for customs purposes. For instance, a dairy producer from an Eastern European country mixed powdered milk with fat when exporting it to Japan, declaring it as frozen cheese, before separating the two again once in Japan.¹⁸ More technology-related examples include uncertainties about products such as MP3 players and tablets. In a not-so-distant future, customs regulations will have to consider new issues such as lab-grown leather or the fact that exported or imported products can be 3D-printed on demand and thus never physically pass any border.

All in all, the digitisation of content and communication is making the economy more complex, in terms of both interactions and regulation. However, it is also increasing the availability of products and services, making each transaction simpler, and improving sustainability by decreasing energy use and resource consumption per user. Promoting a DSM means enabling these developments within countries and across borders.

¹⁷ J. Lundblad, *Priorities Towards a Digital Single Market in the Baltic Sea Region*. Baltic Development Forum (June 2012).

¹⁸ B. M. Hoekman and M. M. Kostecki, *The Political Economy of the World Trading System* (3rd edn., Oxford: Oxford University Press, 2009).



**The invisible
digital
infrastructure
reshaping our
lives**



This section zooms out from the specific nature of digitisation to examine the resulting infrastructure of code, or software, and data that follow the digital shift in the economy and society.

Software and data

Software is eating the world

A growing part of our daily lives depends in one way or another on computer code and data. In fact, programming code, software and the data flowing through them constitute a new, invisible infrastructure. Physical infrastructure is necessary to provide broadband access and mobile phone coverage, but beyond that basic connectivity it is this invisible infrastructure that is relevant to the development of the digital market. Marc Andreessen, renowned Silicon Valley-based Internet entrepreneur and investor, coined the phrase ‘software is eating the world’ to describe how digital solutions are outcompeting existing business models.¹⁹ For example, software has by this logic ‘eaten’ much of the record industry, and many bookshops and video rental stores. Another prominent example is the travel and tourism industry, where online sales represent about 40% of total retail sales. One reason for this is that software-based business models tend to scale much more easily than their physical counterparts. An online bookshop can expand to accommodate more customers by increasing the server capacity and improving the logistics. A physical bookshop, in contrast, is limited not only by the physical space that the store occupies but also by where it is located and how many people live nearby or pass by. Interestingly, in November 2015, Amazon opened a physical bookshop in Seattle, Washington, where it will sell books based on reviews and sales data from its online business.²⁰ It is in a sense what a physical bookshop would look like if it was reinvented based on online bookshops. Even though software appears to be eating the world, not everything is likely to become completely virtual.

¹⁹ M. Andreessen, ‘Why Software is Eating the World’, *Wall Street Journal*, 20 August 2011.

²⁰ G. Ruddick, ‘Amazon Begins a New Chapter with Opening of First Physical Bookstore’, *The Guardian*, 3 November 2015.



Hal Varian, chief economist at Google, has pointed to four fundamental ways in which computers and digitisation are reshaping business: new forms of contract, data extraction and analysis, controlled experimentation, and personalisation and customisation.²¹ First, digital communication and transactions allow for new types of contract and contract monitoring across the world. Second, gathering and analysing data on, for instance, sales companies can improve their business and customer relations. This in turn enables businesses to improve their operations continuously by conducting controlled experiments, analysing the data on the outcome and acting on the results. Finally, as a result of increased adaptability and automation, businesses can increase the variability of their products and invite customers to personalise their orders; that is, they can leverage the long tail.²² Varian further coined the term ‘micro-multinational’ to describe businesses that are born digital and international. Whereas traditional firms grow domestically first and then internationalise by opening up shop in new markets, these firms utilise digital technologies to access an international market from the outset. In fact, business models that would not gather sufficient traction to succeed in their domestic markets may flourish by attracting customers from different countries. A better understanding of these new types of firm and their business models will be essential for policymakers, especially as concerns internationalisation and international trade.²³

Datafication and open government initiatives

Data has gone from residue to resource in the information society. Historically, data in the shape of records and archives was necessary, for example to uphold property rights, business transactions and the rule of law. Administering and working with these physical archives was tedious and time-consuming. Accordingly, the primary use of these registries was to provide trust, authentication and control simply by handling entries individually and maintaining the archive. Given these conditions, it would be unthinkable to go through entire archives to look for trends or patterns between entries to any greater extent. In comparison, today most people can access and browse more information in minutes than an individual could previously have hoped to be able to read in a lifetime. What has changed is that digital technologies have made it possible to collect, overview and analyse large amounts of information simultaneously and at increasingly

²¹ H. R. Varian, ‘Computer Mediated Transactions’, *The American Economic Review* 100/2 (2010), 1–10.

²² C. Andersson, *The Long Tail: How Endless Choice is Creating Unlimited Demand* (London: Random House, 2007).

²³ J. Arwidson, P. Dreber and M. Kolsjö, *Searching for the Micro Multinationals*, Top of Digital Europe (Copenhagen, June 2014).



affordable prices. This has opened new avenues for public administration, research and democracy, as well as for business and innovation. This phenomenon is increasingly described as the datafication of the economy.

Data is in some sense the primary natural resource of the digitised economy. This means that public, bureaucratic archives, which are often the largest and most comprehensive data collectors, have been transformed into potential gold mines.²⁴ This is what motivates open government data initiatives. There are three broadly defined goals for open government data initiatives: democratic transparency, improved public administration and innovation. First, allowing citizens to access government data and data on public administration increases transparency and enables better scrutiny of those in power. Improved access can also be used to promote citizen participation by making it easier for people to take part in democratic processes and voice their concerns.

Second, by working with open data, public agencies can share information, enable benchmarking and improve their work processes (this goes for commercial businesses as well). In fact, currently, it is not uncommon for different departments in the same organisation to not know what information others are working with or whether and how they treat the same data differently.²⁵ In one sense, just as most organisations coordinate the economic flows in their budgets they should also coordinate data flows in order to make better use of this internal intelligence. New York City has organised its own Mayor's Office of Data Analytics team to address these issues. Michael Flowers, leading the team, has said from the start that 'half of the effort in becoming data-driven is connecting the data, and that is an organizational challenge, not a technological one'.²⁶ Flowers also noted in his account that it took the team almost one and a half years to deliver their first actionable results. This is a fundamental challenge faced by e-government initiatives.²⁷

Third, open data—as well as big data generally—can promote data-driven innovation. By enabling the reuse of public data sets, for instance those containing detailed geo-data, governments can empower

²⁴ Sveriges Kommuner och Landsting, *Översyn av de nationella kvalitetsregistren, Guldgruvan i hälso och sjukvården, Förslag till gemensam satsning 2011–2015*, Report (October 2010).

²⁵ J. Lundblad and M. Nygren, 'Konsten att se träden trots skogen', *Bonnier IT Management*, February 2015.

²⁶ M. Flowers, 'Beyond Open Data: The Data-Driven City', in L. Dyson (ed.), *Beyond Transparency: Open Data and the Future of Civic Innovation* (San Francisco, CA: Code for America Press, 2013), 185–99.

²⁷ European Commission, *A Digital Single Market Strategy for Europe*.



entrepreneurs and innovators to develop new digital services. In addition, as the cost of collecting and analysing additional data has fallen dramatically, driven, for instance, by the emerging Internet of Things, the scope of potential uses is broadening from static to dynamic and real-time applications.²⁸

Data-driven innovation and software-based solutions, ranging from improved public administration to new apps, will be crucial not only to the economy but to promoting sustainable and competitive development in a wide range of areas. Using sensor technology and data mining, it is becoming increasingly easy and possible to continuously collect data from our surroundings, to learn from this data and to adapt operations, regulations and behaviours as a result. This also applies on different scales. Cisco predicts that there will be 50 billion devices connected to the Internet of Things by 2020, and during that same period Samsung predicts that all their devices will be connected in some way.²⁹ With this massive volume of connected devices and information, families will be able to measure their energy consumption in real time and get predictions about how to lower their costs and save energy, and cities will be able to collect data on traffic jams in order to improve traffic control measures. There are already so-called city dashboards for a number of cities, visualising real-time data on what is happening in the city.³⁰ These developments are often marketed as ‘smart’, but what they really are is ‘learning’.³¹ They provide people with opportunities and tools to measure, learn from and adapt processes or behaviours. In addition, with the arrival of the Internet of Things will come a rise in machine-to-machine communications and transactions, as well as increased automation. Taken together, these developments hold great potential for everything from better service to more efficient markets and long-term growth, but realising these changes will put significant pressure on our ability to adapt the institutional framework and policymaking processes accordingly.

Personal data: ownership and privacy

As the use of digital technologies becomes a more intimate part of our daily lives, people are also becoming some of the most valuable and important data generators in the economy. More data is repeatedly being collected in new ways. Anything from your Internet protocol address to what you write or say, how

²⁸ OECD, *Data-Driven Innovation: Big Data for Growth and Well-Being* (Paris: OECD Publishing, 2015).

²⁹ Cisco, ‘Internet of Things’, n.d.

³⁰ See, for example, *CityDashboard.org*, ‘London’, n.d.

³¹ T. Campbell, *Beyond Smart Cities: How Cities Network, Learn and Innovate* (Oxfordshire, UK: Earthscan, 2012).



long you look at a certain item in a web store, what you search for or even your medical records can be collected and used by both government and private actors. This data can be used to provide you as a user with better service, to conduct research or simply to maintain a record. Collected personal data can also be sold to third parties, for instance for advertisement targeting purposes. This raises several issues relating to privacy but perhaps even more so with regard to ownership. Defining who owns personal data and how that ownership is demarcated and regulated has important implications, for instance on the right of an individual to claim or withdraw his or her personal data from a service provider, or to erase personal data (i.e. be forgotten).

Addressing personal data and privacy issues means striking a balance between the central role that personal data and data-driven services have in the digitised economy and the individual's relationship with data about him or her. A variety of solutions can be provided by actors in a free market economy. However, if there is too much variation in privacy regulation between member states, this will contribute to fragmenting the digital market and prevent the cross-border flow of data and data-driven services.

Governance

Both software and data provide a strong fundament for the digital shift in the economy by overcoming previous barriers, providing unmatched scaling opportunities, and introducing new data-driven ways to learn and innovate. Yet, in order to reap these benefits of technological development, governance and policymaking also have to overcome substantial challenges of their own, for instance in governing digital infrastructure, facilitating institutional change, and adapting or promoting digital skills in education. That is, a micro-multinational enterprise with a scaling business model may very well be hampered by differing regulation or copyright issues, geo-blocking policies or the inability to hire programmers to develop the necessary software.



Transparency and proportionality

The governance of this invisible digital infrastructure has become an elusive issue. Most people today do not think about software, programming code or data when they pull out their smartphone to check their email, post a photo or find a nearby restaurant. In fact, the average Internet user today is probably not even half as tech savvy as the average Internet user in the 1990s, simply because most technical barriers have been overcome by more user-friendly software and interfaces. However, the software and the code behind this software govern our digital behaviour. In 1999, Lawrence Lessig, law professor and renowned Internet thinker, stated that code is law.³² Lessig brought attention to the fact that, within our digital behaviour, code is a regulation that determines what the user can and cannot do. For instance, when a user interacts with a web shop online he or she is primarily governed by the options offered by the user interface in the operating system, the web browser and on the website. The user also leaves digital breadcrumbs behind, which the web shop software will most likely use to recommend additional products, or even to change which products are displayed. In a similar manner, the code behind a search engine determines which results are listed first. This could potentially change, based on your search history, what other people have searched for or even where you are. In a free market economy, this is not an issue as long as customers can choose which software they use, can drop or change software if they are not satisfied, and—perhaps most importantly—can access information on how the software works and makes use of their personal data. In a way, having this information to hand could be compared to choosing a restaurant when you visit a new city. You would certainly want to have a look at the menu and perhaps read reviews to see what others have said about the restaurant. However, you cannot expect to visit the kitchen of two restaurants to see exactly how they make their *pasta vongole* before you make your decision. As long as the restaurant does not violate existing health codes, you simply have to trust the chef with the secret ingredients. That is, there is a need for proportional transparency. More importantly, transparency often plays a more important role than regulation does in the digital market place, especially from a cross-border point of view.

When it comes to government intervention and digital infrastructure, it becomes more complicated, mainly because people cannot easily opt out of dealing with their governments. Accordingly, it is becoming increasingly important to understand how governments interact with digital infrastructure and traffic. From

³² L. Lessig, *Code and Other Laws of Cyberspace* (New York: Basic Books, 1999).



blocking specific content (e.g. geo-blocking) to surveillance, it is not only the often good intentions that matter but also the conduct and the transparency of the actions. Less open and democratic governments could employ the same measures to censor free speech or to persecute dissidents. The crucial difference lies in transparency and proportionality. European countries would do well to be as transparent as possible about how they use or regulate Internet traffic, for instance through annual transparency reports, such as Google's Transparency Report.³³

Governance is not only a matter of government intervention in the digital infrastructure but is also about governing the conditions for creating innovation and growth. Although digitisation, access to data and software-based solutions provide fertile soil for innovation and growing businesses, market size is still a key component in the equation. If data can flow freely across national borders, business models apply equally to different countries, and transactions are governed by the same rules for buyer and seller regardless of their location, then the digital shift moves from lowering thresholds between markets to integrating them. A key component to furthering this integration is interoperability and shared open standards in technical and software infrastructure between countries.

Yet another aspect of governing the flows of data comes down to whether Internet service providers (ISPs) can sell the prioritisation of data flows as a service or not, generally known as the issue of net neutrality. Net neutrality is usually described according to whether ISPs should be allowed to create Internet fast lanes for customers that pay a premium, and in markets with low competition this is indeed a problem. The EU decision on net neutrality leaves room for something called 'specialised services', but there are still voices pushing for this loophole to be closed.³⁴ Being able to offer specialised services is beneficial to a market if there is competition and the ability to choose other actors, and although this is an ideal state for the European ISP market, the market looks very different in different places. Allowing ISPs to develop specialised services in a monopolised or otherwise non-competitive market could infringe on the ability for consumers in that market to gain full access to the benefits of digitisation.

Unlike legal regulations, laws enforced by code cannot be broken, save where the user has the necessary technical skills to do so. This implies two important things. First, most users are in some sense

³³ Google, *Transparency Report*, n.d.

³⁴ J. Brodtkin, 'Why Europe's Net Neutrality Plan is More Controversial Than US Rules', *Ars Technica*, 26 October 2015.



governed by the software they use. Second, individuals who are tech savvy enough to break the code can potentially gain disproportionate and unintended control of the infrastructure. With digitisation comes the integration of programming code into all parts of the economy and society. Software has become a new critical infrastructure. For example, software governs most, if not virtually all, financial transactions, corporate communications and public administration. Despite this, in the mid-2000s, it was still common to hear that IT risks were primarily ‘comfort risks’, that is, that attacks or disasters striking the IT infrastructure would merely result in increased discomfort for most people.³⁵ Since then, it has become evident that this is not the case. In contrast, both disasters and malicious attacks against the digital infrastructure are now deemed priority risks. Groups such as Anonymous, as well as organised cyberwarfare efforts, also demonstrate that the digital infrastructure can be used as a weapon. Software infrastructure is often both connected and decentralised in nature, making it vulnerable to remote attacks via digital networks by those who possess the necessary technical skills.

Governing by software: the potential of e-government

Another important, yet in many respects underdeveloped, area of improvement in digital governance is the use of digitisation in the policy process. This could potentially open up decision-making processes such as public consultations, that is, by scaling them to reach more stakeholders and citizens in general.

Another example is electronic procurement, or e-procurement, which would potentially allow public procurers in every member state to attract businesses and entrepreneurs from the entire European digital market, thereby increasing business opportunities, competition and productivity in the procurement process.

Digital policymaking tools could also make policymaking faster and more adaptive by using decentralised input as a feedback signal that indicates when policies have become outdated, contradict new technologies or generate unintended consequences. The Internet Engineering Task Force provides an interesting example and role model for such processes.³⁶

³⁵ V. Fåk, ‘IT – risker och säkerhet’, in G. Grimvall, P. Jacobsson and T. Thedéen (eds.), *Risker i tekniska system* (Lund: Studentlitteratur, 2003).

³⁶ D. G. Post, *In Search of Jefferson’s Moose: Notes on the State of Cyberspace* (New York: Oxford University Press, 2009). J. Lundblad, ‘Building Openness—The Shaping of the Internet Engineering Task Force and Internet Standardization’, Master’s thesis in the Department of History of Technology, Royal Institute of Technology (KTH), Stockholm, November 2013.



E-skills

Need to know, nice to know

Access to digital skills, or e-skills, is also at the heart of making the most of the positive potential of the digital shift. There are rising worries that the future supply of digital skills will not be able to meet the demand, causing a slowdown in the digitised economy and striking a severe blow against European labour markets. E-skills are needed in a diverse range of areas, which can be broadly categorised into three groups using the skills pyramid developed by the INSEAD Business School: literacy and basic skills, occupational skills, and experts.³⁷ According to a study commissioned by the European Commission to measure digital competences across the EU, 47% of the EU-wide population have low or no digital skills.³⁸ There are significant differences between countries: 50% or more people in 11 of the member states have no or low skills. However, the issue of e-skills goes beyond purely technical skills. Although there is still a high demand for the technical expert, there is also a growing demand for integrated digital skills, that is, individuals who can combine some degree of digital skill with knowledge, for instance in business, marketing or design.³⁹

In some sense, especially when it comes to occupational skills, the shortage in the desired skills could be partially interpreted as a late generational shift in an accelerating digitised economy. As technological development is moving faster, young people who have mastered the basic uses of the new technologies of their generation have not yet grown up and established themselves in the labour market. This is leading to a shortage in business graduates who understand social media, streaming services, apps and the sharing economy. This is in no way a comprehensive explanation, and it is not meant to be. Yet, as digitisation is being integrated into the economy and ICT has become a general-purpose technology, the demand for these types of cross-disciplinary skill will rise significantly in the future. For instance, public procurement experts

³⁷ European Schoolnet, *The E-Skills Manifesto*, Report (Brussels, October 2014).

³⁸ European Commission, 'Does Digital Technology Create or Kill Jobs? Do Europeans Have the Digital Skills Needed to Get a Job and Keep a Job?' Press Release (28 May 2014).

³⁹ Top of Digital Europe, *Coding the Future: The Challenge of Meeting Future E-Skills Demands in the Nordic-Baltic ICT Hub*, Discussion Paper (April 2015).



would benefit greatly from being able to better exercise their expertise both in using digital technologies to improve procurement and in procuring digital solutions. Evaluating the potential benefit, level of security, or implications for data collection and the privacy of a technological solution is difficult without the necessary digital skills.

There are also those who are becoming increasingly excluded from the digitising society, for instance due to connectivity issues or a lack of skills. Senior citizens as a group are recurrently affected by this type of development, for example when banks opt for digital solutions instead of staffed counter services in branches. This is what is commonly referred to as the digital divide, and it is a growing issue as both the size of the ageing population and the pace of technological development are increasing. Estonia has made impressive efforts to combine a fast digitisation process with a high degree of e-inclusion. In 2014, 95.4% of the Estonian population completed their income declaration online.⁴⁰

Addressing the issue of e-skills is no simple matter. For one thing, it requires initiatives aimed at education for children, as well as for adults already in the workforce. In schools, digital skills could be integrated into other subjects or taught as a subject of their own. Knowing basic programming may help people to understand how the digital infrastructure works and thereby empower them democratically in tomorrow's information society. Programming could also contribute to other subjects such as mathematics or science by creating real-time modelling and visualisation opportunities. For adults already in or between jobs, learning programming is even more difficult than it is for children, so thought has to be put into how to facilitate better e-skills in the established workforce.

An approach that is equally likely to work is to integrate ICT as a general-purpose technology into school, just as it is integrated into the world outside of school. That is, as well as some specific basic programming knowledge, general digital skills should be promoted as tools to be used in other subjects. At any rate, teachers will have to be at the centre of the digitisation of education, meaning that they need to have the necessary digital skills in the first place. Also, so far data and evaluations on ICT in schools have predominantly focused on whether ICT is implemented in school and not *how* it is implemented, that is, through adoption rather than adaptation. This prevents benchmarking and the spreading of best practices. Furthermore, long-term strategies aimed at the education system will also have to be complemented by

⁴⁰ Republic of Estonia, Information System Authority, 'Facts About E-Estonia', last updated 28 October.



short- and medium-term solutions aimed at the labour market with respect to both the digital shift in the economy and increased automation. The Commission has declared this as one of the action points in the Digital Single Market Strategy, but what the outcome of the policy will be remains to be seen.

**The digital
market as
a driver of
integration**



In this section, we move from the process of digitisation presented in the second section and the infrastructure of software and data presented in the third section to focus on how the digital shift is affecting the market. More specifically, this section focuses on digital market integration, that is, how digitisation is furthering market expansion and integration between member states.

The digital shift and the market

Positive reinforcement

Digitisation in the shape of the integration of a new general-purpose technology into the economy, the separation of digital content and physical form, and the creation of an invisible infrastructure of software and data are driving the digital shift in the economy. Furthermore, these factors also provide unsurpassed potential for market expansion and market integration. Put differently, digitisation is necessary to realising a European single market, but increased market integration is, in turn, also necessary to fully make use of the potential of the digital shift in the economy. That is, a fundamental part of the value of a DSM lies in having a larger market compared to a smaller one. For instance, it leads to increased competition, greater variety of products and services, lower prices, increased consumer surplus, increased productivity, improved incentives for entrepreneurship and innovation, and improved access to knowledge and matching in the labour market.

The scalability of digital business models allows even small and medium-sized enterprises to reach customers far from their physical location and potentially across the borders from their domestic markets. In a similar manner, customers can access and choose from a wide variety of sellers and supplies from all over the world. For businesses that provide purely digital content, for instance an app for smartphones, geographical location should, at least in theory, not even matter to their business model. According to a study on bilateral trade via eBay, physical distance matters significantly less (about 65%) for online trade than for traditional 'offline' trade.⁴¹ Another study indicates that sellers using online platforms such as eBay

⁴¹ A. Lendle et al., *There Goes Gravity: How eBay Reduces Trade Costs*, World Bank Policy Research Working Paper 6253 (October 2012).



are more likely to export to other markets.⁴² However, there are still institutional barriers to digital market integration across borders. If these are not properly addressed, rather than one DSM, Europe will have 28 smaller markets, digitised to varying degrees. According to the European Commission, the digital economy in Europe even suffers from barriers and fragmentation that do not exist in the physical market.⁴³ It is estimated that dismantling these barriers would add €415 billion to Europe's GDP. The fragmentation in the European market is further emphasised by the fact that the EU is lagging behind the US, both in the ICT-related share of research and development and specialisation in ICT.⁴⁴

There are several aspects to completing the DSM in Europe. For instance, a study from 2012 combined research with input from an advisory board of policymakers and business leaders to compile a list of key drivers for the digital economy.⁴⁵ These included

- trust;
- privacy and data protection;
- cybercrime and security;
- digital content and copyright;
- interoperability and standards;
- electronic payments;
- electronic tendering, contracting and invoicing;
- e-government;
- digital infrastructure;
- e-procurement;
- public sector information and open government data;
- roaming; and
- online intermediaries.

⁴² A. Lendle, *An Anatomy of Online Trade: Evidence from eBay Exporters*, European Trade Study Group Paper 206 (August 2013).

⁴³ European Commission, *A Digital Single Market Strategy for Europe*.

⁴⁴ J. Lundblad and M. Andersson, *State of the Digital Region 2015: Leveraging a Digital Baltic Sea Region*, Top of Digital Europe (November 2015).

⁴⁵ Lundblad, *Priorities Towards a Digital Single Market in the Baltic Sea Region*.



These drivers all contribute to digital market integration although they play out and are governed on different scales. Some are strictly cross-border issues, such as electronic payments and contracting, whereas others are highly national issues, such as broadband expansion. This list was partially reviewed in 2015, and it was noted that, apart from roaming, which is to be phased out completely by mid-2017, these drivers still pose significant challenges to European policymakers, both nationally and internationally.⁴⁶ What has also happened is that each policy issue has been gradually divided into subcategories to address specific policies and reforms. This makes policy work on digital issues significantly more tangible and contributes to real change in the market. However, it also risks fragmenting the policy approach to digitisation and the DSM by creating specialisations in several policy areas related to their traditional sectors rather than horizontally integrating digital technologies into the economy and society. The European Commission is pioneering a holistic approach by aggregating specific challenges in the Digital Single Market Strategy for Europe and the Digital Agenda for Europe. Beyond this, stakeholders in the digital shift will have to cooperate across sectoral borders to fully maximise the potential of digitisation.

Platforms

A central part of the digital market is the so-called platform providers, or intermediaries. In a digital market with a substantially increased amount of information and a remarkable variety of products and services, there is an increased need for coordination and the matching of supply and demand. These platform providers are two-sided markets.⁴⁷ Consider for example a social networking platform that provides a service to its users and gains a network effect as a result of its growing user base, that is, the more people there are on the network, the more likely it is that additional members will join. At the same time, there is a second network effect at play, as more advertisers and application providers are attracted by the growing user base, which can in turn spur additional user attraction caused, for instance, by the availability of popular applications. These platform providers include Google's Android and Android Market, and Apple's iOS and App Store, but also operating systems such as Microsoft Windows or Unix. There are other examples of platforms that are streamlined for a specific service, such as Uber and Airbnb or search engines such as

⁴⁶ P. Johansson and J. Lundblad, *A Digital Single Market: Growing the Baltic Sea Region*, Top of Digital Europe (November 2015).

⁴⁷ J-C. Rochet and J. Tirole, 'Platform Competition in Two-sided Markets', *Journal of the European Economic Association* 1/4 (2003), 990–1029.



Google or Bing. These are essentially providers of an algorithm for on-demand matching—between drivers and riders, renters and rooms, or queries and information.

Platform providers appear to be an especially weak segment in the European digital market, indicating that a central cog in the digitised economy may be failing.⁴⁸ An illustrative example of this is streaming services for cultural and entertainment content. Due to copyright limitations, it is substantially harder to provide streaming of European films to an international market than it is to provide US content. A representative from the Swedish film streaming start-up Voddler stated in the early 2010s that, in order to provide a wide range of European content, they would need to obtain the rights for each film and each track of the soundtrack in each individual country. Apart from making it harder for European platform providers to ensure domestic content grows, this inhibits the preservation and propagation of European cultural content and heritage, impacting the digitisation of the entire cultural sector.

A digital market needs platform providers of many different kinds, and Europe needs to figure out how to promote the growth of European platforms to compete with international ones. However, this will likely not be accomplished by inhibiting or disadvantaging international platform providers from operating in Europe (quite the opposite, because of the benefits of market expansion) but by improving the conditions for utilising European content on an international market. In fact, since any future European platform provider would have to begin as a start-up or an SME, it could be argued that having international firms and platforms present will increase their chances of succeeding, since most small firms cannot afford to reinvent the entire digital wheel for themselves. It cannot be stressed enough that, even though we talk about a European DSM, the digital market does not stop at the EU border, nor should it. Proponents of different forms of digital protectionism tend to end up advocating some form of digital mercantilism, which is more likely to hamper than to help the digital market.⁴⁹ Yet, current indicators point to an increased distrust in platform providers in the digital market. For instance, in April 2015 the European Commission opened a formal anti-trust investigation into Google's Android operating system and into Google Search.⁵⁰

⁴⁸ R. Veugelers, 'New ICT Sectors: Platforms for European Growth?', Bruegel Policy Contribution 14 (August 2012).

⁴⁹ F. Erixon, *The 'Google Case' and the Promotion of Europe's Digital Economy*, European Centre for International Political Economy, ECIPE Bulletin 1 (2015).

⁵⁰ European Commission, 'Agreement on Commission's EU Data Protection Reform Will Boost Digital Single Market', Press Release (15 December 2015).



Bottom-up trust

At the heart of digital market integration lies trust between people and firms. It is also a recurring priority among policymakers and business leaders when talking about the DSM. Yet, trust is not something that can be fixed directly through policy. Rather, it is a receipt of a well-functioning policy framework. However, there are institutional barriers which can cause friction in interactions between countries, for instance, in consumer rights and trade regulation. Addressing these is one of the pillars of the European Commission's Digital Single Market Strategy.⁵¹

There are also cultural barriers to trust-building, for instance due to language or norms, that result in a high degree of heterogeneity between European countries. Perhaps the best way to overcome these barriers is to promote social ties and interactions between people across borders. The digital market is potentially global, but it still has a lot to gain from integrating neighbouring markets and growing regionally. For instance, two recent studies have investigated the potential of growing a DSM from the bottom up, starting regionally in the Baltic Sea region.⁵² By combining the Nordic countries of Sweden, Denmark and Finland with the Baltic countries of Estonia, Latvia and Lithuania, as well as Poland, this region gathers a market of more than 65 million people. Furthermore, by integrating their digital markets, these countries could not only make use of each other's strengths but also potentially accelerate their own development in the process. This approach lays the foundation for living digital market laboratories, that is, local cross-border collaborations between countries that can overcome specific barriers but also generate solutions that can be scaled to neighbouring countries and the entire EU. This is a complementary approach to EU-wide initiatives but also a way to introduce adaptability and learning into the making of a DSM.

Trust also depends on size. The completion of a European DSM means more people, more technological systems, a larger geography and ultimately increased complexity, which in turn presents challenges to how people traditionally build trust among themselves. Bruce Schneier, a renowned security technologist, argues that the same scaling that is an economic advantage also presents a disadvantage in trust.⁵³ Schneier argues that, as the scale of our society increases in size, population, intensity and technology,

⁵¹ European Commission, *A Digital Single Market Strategy for Europe*.

⁵² Lundblad and Andersson, *State of the Digital Region 2015*.

⁵³ B. Schneier, *Liars and Outliers: Enabling the Trust that Society needs to Thrive*, (Indianapolis, IN: John Wiley & Sons, 2012)



people are being forced to shift from personal relationships to impersonal trust provided by predictability and compliance. This adds to the argument that rules and regulations need to be harmonised and enacted in a predictable way across borders to promote trust.

Urban digital markets

A bottom-up approach to a DSM is further strengthened by the shifting geography and urbanisation across Europe. Urbanisation and digitisation go hand in hand. Cities are becoming hotbeds for new digital services that utilise density and proximity. Although digitisation has primarily been seen as useful to overcoming long distances, digital technologies also boost the potential to make use of the physical closeness between people and firms. The ride-hailing app Uber, the room-for-hire app Airbnb and the dating app Happn are all examples of businesses that rely on many people being close together to gather critical mass for their services. In turn, they contribute to facilitating and promoting interactions and transactions between people, something that is widely considered to lie at the very heart of the success of urban economies. These are the characteristics of an urban, or dense, digital market, which sets it somewhat apart from general theories about digital markets.

Cities can crudely be considered to be accelerators for social interactions that facilitate the spreading of ideas, innovation, entrepreneurship and social capital between people and firms.⁵⁴ These are described as positive agglomeration effects, driven by micro-foundations such as the *sharing* of infrastructure, better matching in the labour market, and learning between people and individuals and organisations.⁵⁵ There are of course also negative agglomeration effects, such as congestion, rising crime and the spread of infectious disease. At any rate, there seems to be some potential in proximity and face-to-face interactions, or ‘buzz’, which has not been removed by digitisation.⁵⁶ Urbanisation appears to be on the increase, and now more than half of the people in the world live in cities. Rather than counteracting place and proximity, digital

⁵⁴ E. L. Glaeser, *Non-Market Interactions*, National Bureau of Economic Research, NBER Working Paper 8053 (December 2000).

⁵⁵ G. Duranton and D. Puga, *Micro-Foundations of Urban Agglomeration Economies*, National Bureau of Economic Investigation, NBER Working Paper 9931 (September 2003).

⁵⁶ M. Storper and A. J. Venables, ‘Buzz: Face-to-Face Contact and the Urban Economy’, *Journal of Economic Geography* 4/4 (2004), 351–70.



technologies can enable and boost their value, adding a digital layer to city life and the urban economy.⁵⁷ The perhaps the best-known example of this digital layer is the many smart city initiatives emerging around the world, aimed, for instance, at reducing pollution and congestion or increasing our knowledge about how cities work. These are both promising and important, but they do not tell the whole story.

Cities everywhere are already being transformed from the bottom up by the people living in them. For example, with apps such as Waze, drivers coordinate in real time to reduce their driving time, thereby also decreasing congestion and improving the overall transportation system. This is, in a sense, decentralised urban planning, and it works. In relation to markets and economics, digitisation is helping people to reduce transaction costs and improve the matching of supply and demand, which could otherwise prove complicated in a large city with many inhabitants. This is the traditional and familiar case for a European DSM, but within a city it extends to include small transactions and services that are bound to be local in space and/or time, such as cab rides, dates, pizza deliveries or dog-walking services. The growing collaborative economy, including non-commercial transactions, is also an important example of this. Taken together, these small transactions make up an impressive economy and will have a significant impact on the future of our cities. That is, digitisation makes density simpler.

Cities could, and should, form excellent policy domains because they are relatively small compared to nations, they are dense, and they rely on a common infrastructure and built environment. There is an immediate proximity between policymakers and their voters. As such, they should be ideal environments for adaptive policymaking and experiments designed to learn from and align public policy with technological development. However, this is far from a given today. The policy response to new digital businesses varies greatly, both between cases and between countries or even cities. This is a weakness and a threat in fragmenting the digital market but also an opportunity in improving the policy response to disruptive, and often evasive, entrepreneurship.⁵⁸

⁵⁷ C. Rabari and M. Storper, 'The Digital Skin of Cities: Urban Theory and Research in the Age of the Sensored and Metered City, Ubiquitous Computing and Big Data', *Cambridge Journal of Regions, Economy and Society* (2014).

⁵⁸ Elert, Henrekson and Wernberg, 'Two Sides of the Evasion'.

Five priorities for creating a lasting DSM in Europe



This section contains five subsections, each devoted to highlighting a specific policy area which is crucial to promoting a European DSM, based on the arguments and information provided in previous sections. Each subsection contains a description of the policy issue and ends with a set of suggested policy approaches.

Predictability through harmonisation

Establishing trust in a growing market is a huge challenge. As a market grows beyond the local community, personal relationships and reputation are increasingly replaced by formal institutions, rules and regulations. As the market grows beyond national borders, there is an increased uncertainty due to differences—perceived or real—in regulations between countries. A DSM will still rely heavily on relationships and reputations, but to build and maintain these, fully utilising the reach and scaling potential of digital technologies, requires reliable and predictable rules of conduct. This is heavily emphasised in the European Commission’s Digital Single Market Strategy, especially in the first pillar.

However, the strategy predominantly focuses on e-commerce and harmonising regulations concerning trade with goods and services. This is a fundamental start, but there is also a need to broaden the ambition to cover a larger variety of online cross-border behaviours and transactions. Personal identification, health records, open government data, procurement processes and payment standards are just a few examples of activities that would benefit from harmonised regulation, interoperability and open standards.

A potential caveat with harmonisation that has to be considered to promote a well-functioning digital market is the scope of regulation. Simply ensuring that regulation looks the same in each member country will not make the market efficient. That is, sometimes the answer is not just harmonisation but also deregulation, or at least the reformulation of regulation. Too sector-specific regulation tends to rely, sometimes heavily, on established technologies, and the introduction of the new general purpose technology of digitisation is at odds with such reliance.



Policy approaches:

- Harmonise e-commerce regulation related to cross-border transactions in accordance with the DSM strategy.
- Establish open technical standards for electronic identification, drawing on the experiences of, for instance, Estonia's e-residency programme.
- Establish open standards for open government data across sectors, for instance in health care and education, in order to promote the scalability of the services relying on this data across borders.

Borderless data and platform providers

Open standards and harmonised rules provide a fundamental framework for digital market integration. Yet, data and digital content are a basic resource flowing throughout the digitised economy. Accordingly, when data cannot cross borders nor can large parts of the digital market. Such a situation can occur, for instance, due to geo-blocking and copyright issues, which have been identified as barriers in the European Commission's Digital Single Market Strategy. It is not only an issue of harmonisation but also of providing regulation that promotes the access, flow and reuse of data. This would in turn generate growth, both through existing services and future innovation. Providing or accessing digital content or data should be seamless with the European DSM. This pertains, among other things, to European cultural content, which is significantly less accessible and disseminated than, for instance, US cultural content is.

These issues also relate to platform providers. Rather than restricting existing, often international, platform providers, Europe should promote them. They play a key role in coordinating and matching information, content and services in the digitised economy. There is also a need for European platform providers, but not to outcompete or push out the existing providers. Rather, European platform providers would be well poised to utilise European content and thereby promote its dissemination and preservation. However, platform providers, whether they are European in origin or not, should not be promoted through subsidies



or exemptions. Instead, they should be promoted by improving the seamlessness of data flows within the EU and providing modern, equal rules across all member states.

Policy approaches:

- Promote border-free rules for digital content and data flows through harmonisation and modernisation, for instance of geo-blocking and copyright regulation.
- Further the ambition to provide open government data to cover more areas and more data. Open government data should also be provided in open standards across the EU, making it possible to scale data-driven services between countries, to combine data across borders and to promote increased government transparency.
- Investigate the barriers to platform providers in the European digital market and promote reforms to lower these barriers.

Bottom-up experimentation and adaptability

Although harmonisation of standards and regulation is an important approach to promoting a DSM on an EU-wide level, there is also a need for a complementary approach from the bottom up, based on transnational and regional cooperation. The digital market is potentially global in reach, but in some member states it appears that people find it easier, or more reliable, to make purchases online from countries across the globe than from a seller in a neighbouring country. These issues are partially related to cultural barriers, language and trust-building. EU-wide policy measures and regulation will go some way to addressing these issues, but they must also be approached from the angle of individual member states working to integrate their markets. Accordingly, there is a need for regional experimentation between member countries, for in-



stance along the lines proposed for the Baltic Sea Region in Lundblad and Andersson's study.⁵⁹ In a sense, these regional approaches could be interpreted as digital market test beds for policy. An important example is e-government services and e-procurement, where open standards could be generated and spread from controlled experimentation.

There is no predefined plan for establishing a flourishing DSM. Accordingly, regional adaptability and experimentation may result in important insights and scalable regulatory solutions that can be translated to other countries or to the entire EU. Two important examples are education and the digital divide, where digitisation has yet to be fully utilised in most, if not all, member states. Controlled experimentation, comparison and adaptability may provide a way forward.

Policy approaches:

- Establish a common framework for conducting and reporting controlled experimentation in policy initiatives aimed at a set of target policy areas, for instance e-government, e-procurement and education, with the ambition of collecting and disseminating experience and insights from regional variation. These initiatives should be aimed at furthering the integration between at least two member states, either by joint experimentation or comparison.

Growing urban digital markets

In addition to promoting controlled experimental policy initiatives between member states, there is a need to improve the policy response to digital entrepreneurship. A case in point is the urban digital market, that is, digital services that rely on densely populated local markets, which are, in turn, connected globally. Companies such as Uber and Airbnb have been received by policymakers and regulation in a wide variety of ways in different countries and cities. This risks fragmenting the digital market and creates an uncertainty which inhibits entrepreneurship in these segments of the digital market.

⁵⁹ Lundblad and Andersson, *State of the Digital Region 2015*.



However, if member states could use the urban digital market as a living lab to improve the policy response to digital, disruptive or evasive entrepreneurship, this threat could be turned into an opportunity. Used well, these urban digital markets can generate substantial growth and innovation, a healthy collaborative economy and long-term sustainable transitions in our cities in the future.

Failing to enable and promote urban digital economies is equivalent to removing a significant part of the urban economy, which in turn constitutes a substantial part of each country's economy, from the digital market. This would be a loss both to cities across Europe and to the European economy as a whole.

Policy approaches:

- Enable and empower city leaders in each country to shape local policy and policy experiments to accommodate and promote entrepreneurship, especially with respect to urban digital markets.
- Map and investigate the barriers to scaling urban digital services with the aim of lowering the thresholds to scaling these services between cities across borders.
- Establish a framework for collecting and sharing experiences from policymakers and city leaders engaged with urban digital entrepreneurs, as well as from the entrepreneurs themselves.

Data ownership

Data and the free flow of digital content across borders are imperative to a DSM. However, there is a balance that has to be struck between data and trust pertaining to personal data and privacy.

Dealing with the issue of privacy, the key question is what measure of control should an individual have over his or her personal data or data about him or her. This holds true both for data that the person provides and for metadata, that is, data about communications and interactions rather than the content of these. Personal data and metadata are crucial to a growing number of digital services, and most people appear to



be willing to submit data about themselves in order to get improved, personalised and free digital services. Yet, there is also a growing worry among policymakers and citizens with respect to personal data, not least because of the uncertainties about the impact of privacy issues, the regulation of personal data and data ownership.

The answer to privacy issues and the use and reuse of personal data is not necessarily more detailed regulation, especially not on the member state level, since this would risk counteracting the free flow of data and fragmenting the digital market. The details of specific agreements should be left to the market actors. However, there is a need for a better understanding of and an open, coherent standard for data ownership. This would also promote better processes for individuals who might potentially donate their data to research or to entrepreneurs voluntarily.

Regulation on who owns personal data must deal with two very different questions that have to be solved at the same time: how can we make sure that individuals can maintain control of their privacy and their personal data? And how can we make sure that researchers, businesses and governments can use personal data for research, record keeping and the development of better services?

Policy approaches:

- Investigate data ownership with the ambition of formulating an open standard framework for personal data and metadata with regard to ownership, use and reuse.
- Establish a framework for this standard, to which academic researchers, businesses and government agencies can subscribe when working with personal data.



Appendix



Ongoing policy initiatives

A European DSM has been declared a political priority area by the European Commission. This has generated a wide variety of initiatives, debates and proposals, both general and very specific, at all levels of governance. For the scope of this report, the Digital Agenda for Europe 2020 and the European Commission's Digital Single Market Strategy are the policy initiatives of main concern.

Andrus Ansip, Vice-President of the European Commission, leads the Digital Single Market initiative, together with, among others, Commissioner Günther H. Oettinger, who holds the 'Digital Economy and Society' portfolio as part of a team of 15.⁶⁰

The key proposals from the Commission are compiled in the Digital Single Market Strategy and consist of 16 initiatives sorted into 3 pillars (planned year of completion in parenthesis).⁶¹

1. Access

Have better access for consumers and businesses to Internet goods and services across Europe.

- Establish new contract rules to facilitate cross-border e-commerce (2015).
- Review the Regulation on Consumer Protection Cooperation (2016).
- Improve price transparency and regulatory oversight of parcel delivery in the EU (2016).
- Review to prepare legislative proposal aimed at ending unjustified geo-blocking (2015).
- Identify competition concerns affecting e-commerce (2015).
- Reform copyright law (2015).
- Review the Satellite and Cable Directive (2015/2016).
- Develop legislative proposals to simplify varying VAT regimes (2016).

⁶⁰ European Commission, 'Digital Agenda Scoreboard', last updated 18 June 2015.

⁶¹ M. Szczepański, *A Digital Single Market Strategy for Europe*, European Parliamentary Research Services (September 2015).



2. Environment

Create the right conditions and a level playing field for digital networks to flourish.

- Overhaul the EU telecoms rules (2016).
- Review the Audiovisual Media Services Directive (2016).
- Analyse the role of online platforms and ways to combat illegal content (2015).
- Review the e-Privacy Directive (2016).
- Initiate a public–private cybersecurity partnership (2016).

3. Economy and Society

Maximize the growth potential of the digital economy.

- Launch ‘Free Flow of Data’ and ‘European Cloud’ initiatives (2016).
- Define key priorities for standards and a revision of the European Interoperability Framework (2015).
- Make digital skills and expertise key components of the Commission’s future initiatives on skills and training, and presenting a 2016–20 e-Government Action Plan (2016).

These proposals are all set to be delivered in part or in full during 2015 or 2016. Many have been, are or will be, up for public consultation. As this is being written, the public consultations on contract rules, the Audiovisual Media Services Directive and cross-border parcel delivery have closed, but the results are not yet available for public viewing.

The DSM is also a pillar in the Digital Agenda for Europe, a framework for positioning the EU in the digital arena until 2020, as part of the Europe 2020 strategy adopted in 2010. The Digital Agenda for Europe consists of seven pillars covering many of the necessary initiatives that will have a leading role in digitisation:

- Pillar I: DSM;
- Pillar II: Interoperability and standards;
- Pillar III: Trust and security;



- Pillar IV: Fast and ultra-fast Internet access;
- Pillar V: Research and innovation;
- Pillar VI: Enhancing digital literacy, skills and inclusion; and
- Pillar VII: ICT-enabled benefits for EU society.

Pillar I has been covered above, but there are some aspects of the other pillars that also pertain to the scope of this report. Thus, the pillars are described briefly below. For each pillar, a number of actions have already been implemented by the EU.

Pillar II covers measures to make devices, things and applications connect and be able to work together without the need for huge technical expertise. The actions connected to the pillar deal with setting up common EU frameworks for interoperability and standards, proposing legislation for ICT interoperability, and seeing how the EU can make significant market players license information about their products and services.

Pillar III deals mainly with online transactions and quelling threats such as malicious software and online fraud. Actions cover the prevention and detection of cybercrime, rules on privacy and the setting-up of alert systems.

Pillar IV proclaims the goal that, by 2020, all Europeans should have an Internet connection of at least 30 megabits per second and that at least 50% of the population should have access to 100 megabits per second. Actions deal with increasing incentives for different actors to build more broadband and safeguarding an open Internet.

Pillar V links world-class research with better research infrastructure and the ability to turn ideas into viable products and services. Actions deal with research initiatives, a European Cloud Computing Strategy and other similar projects.

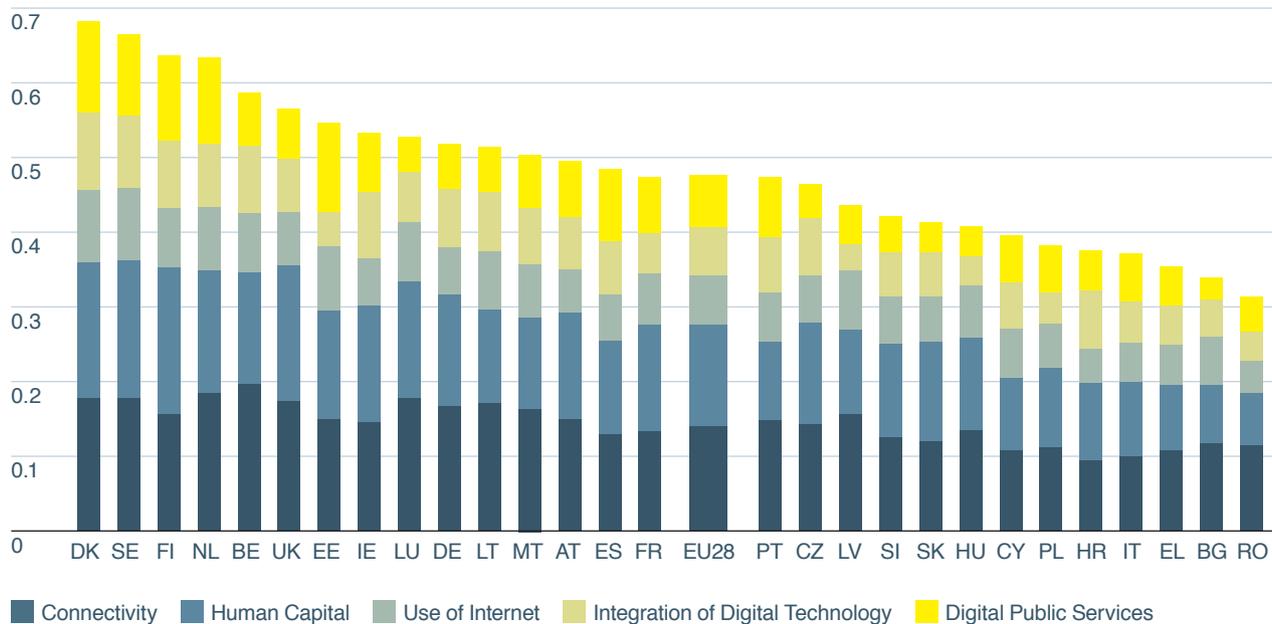
Pillar VI is trying to bridge the digital divide. The latest figures show that over 60% of Europeans use the Internet daily, but 18% have never used it at all. At the outset of the 2020 strategy, those numbers were 50% and 30% respectively.



And finally, Pillar VII looks at how ICT can increase the quality of everyday life and help to create a more sustainable world.

The Digital Agenda for Europe also includes the Digital Agenda Scoreboard, which is a specialised statistical body dedicated to measuring the status and progress of digitisation in the EU. For instance, the Digital Agenda Scoreboard presents an overview of the member states by connectivity, human capital, use of the Internet, integration of digital technology and digital public services (Figure 1).⁶²

Figure 1 The Digital Agenda Scoreboard



Source: European Commission, 'Digital Agenda Scoreboard', last updated 18 June 2015.

⁶² European Commission, 'Antitrust: Commission Sends Statement of Objections to Google on Comparison Shopping Service; Opens Separate Formal Investigation on Android', Press Release (15 April 2015).



There are also several forthcoming initiatives that will be very relevant to the development of the digital market. As of 15 December 2015, negotiators from the Commission, Parliament and Council have agreed on a new data protection regulation.⁶³ At the time of writing, the regulation is yet to be voted on. The agreement consists of two parts, a regulation on data protection that will create common rules for data protection in Europe, and a directive for the police and criminal justice sector. Some of the new rules in the regulation include

- an extended right to be forgotten, or a right to erasure, whereby persons who no longer want their data to be processed can have that data deleted from a registry under certain conditions. This also includes a right to data portability to make it easier to switch to and from different services and maintain your data. In general, more control is being granted to citizens over how their data is being processed;
- a requirement for corporations and organisations to report any breach of their data;
- the ability for data protection authorities to administer fines for actors who fail to comply with the rules; and
- the requirement that companies and private citizens will only have to deal with the data protection agency of their home country in Europe.

While these rules will most probably improve the ease with which products and services can be established in the European market as a whole, they will also increase the threshold for companies outside of Europe to enter the market, especially for smaller actors. As mentioned in the report, raising barriers is more likely to harm than to help the digital market. It is therefore important to also establish new Safe Harbour-type agreements such as the EU–US Privacy Shield announced in February 2016.⁶⁴ Expanding such agreements to other markets will not only improve the access to services for European citizens but will also ensure that European businesses can expand to larger markets with greater ease.

⁶³ European Commission, *Digital Single Market: Bringing Down Barriers to Unlock Online Opportunities*, 2015. European Commission, 'Questions and Answers—Data Protection Reform', Fact Sheet, 21 December 2015.

⁶⁴ European Commission, 'EU Commission and United States Agree on New Framework for Transatlantic Data Flows: EU–US Privacy Shield', Press Release (2 February 2016).

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One of the biggest challenges facing policymakers today is finding ways to govern the openness, connectivity and creativity of the Internet and digital economy without stifling its unprecedented potential for economic progress. How can policymakers in Europe today, in particular in the centre-right, develop conditions that will foster both growth and transparency in this digital age? How can the digital economy be utilised as a further driver of single market integration?

Based on an examination of the process of digitisation and digital market integration in Europe, this paper highlights five specific policy issues that are crucial to promoting a lasting digital economy in Europe. These areas include the need for harmonised regulation; making data borderless and data flows seamless; promoting regional, bottom-up, controlled experimental policy initiatives; growing urban digital markets where digitisation and density accelerate innovation; and establishing an open, coherent framework for data ownership with regard to privacy, personal data and metadata.

In particular, this paper highlights urban digital markets as a unique opportunity for the EU (and member states) to improve the policy response to digital and disruptive entrepreneurship. Used properly, these markets can generate substantial growth and innovation while aiding the transition to a sustainable and world-leading European digital economy. A rewired Europe fit and able to compete in the twenty-first century global economy.



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