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The Challenges of Making the EU Fit for the Digital Age

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Rapid digitalisation of the global economy mobilises the European Union to adapt to the new reality. Emerging competition from the United States and China poses a risk of stifling European economic growth potential and, in the longer term, also the sustainability of its welfare system. The main challenges include tackling the untapped potential of the digital single market, increasing monopolisation of the platform economy, and differentiating the interests of the Member States. The ongoing COVID-19 pandemic (SARS-CoV-2) may be a turning point in accelerating digitalisation and innovation on an unprecedented scale. Projects such as Common European data spaces, digital skills education, "Destination Earth," or European supercomputers can both improve the EU's global competitiveness and have a positive effect on the everyday life of its citizens.

The pace of development of digital technologies is unprecedented, driven mainly by the increased ability to collect, analyse, and use data. Global Internet Protocol (IP) traffic, a proxy for data flows, grew from about 100 gigabytes (GB) per day in 1992 to more than 45,000 GB per second in 2017. And yet, the world is only in the early days of a data-driven economy. By 2022, global IP traffic is projected to increase threefold due to the growing number of internet users and rise in the Internet of Things (IoT).[1] This phenomenon has resulted in the emergence of completely new business models, including digital platforms that have revolutionised traditional value chains. Today, seven of the world's top eight companies by market capitalisation use platform-based business models.[2] These few platforms manage 80% of world data. The EU acknowledges that 90% of the Union's data is stored outside of the continent, posing possible threats to security or economic dependence on third companies.

The EU has been conducting its digital policy for many years mainly through the single-market regulations. The priority was to remove barriers (such as cross-border charges, geo-blocking[3]) and harmonise national standards and regulations. Getting rid of the limitations of national markets combined with the classical four freedoms of the single market have been perceived as a prerequisite for the intensive growth of the digital economy. Another angle of the EU approach has been providing its citizens with broadband internet connections and enhancing education in the information and communications technology (ICT) sector. These priorities correspond well with the recent OECD estimates on the future of the labour market. Digitalisation also means about 14% of workers face a high risk that their jobs will be automated. Another 32% will face major changes in the tasks required in their job[4] in the foreseeable future.

Although the U.S. has the reputation of providing the best environment for grassroots innovation and China is perceived as the biggest public investor in new technologies, the EU has been dubbed a regulatory superpower. The opinion is well-deserved, taking into consideration flagship projects such as the recent General Data Protection Regulation (GDPR), which had a global impact in the domain of protection of personal data. The new Commission aims at regulating the platform economy where the network effect means the more users the more data, and more data means a stronger ability to outcompete potential rivals and capitalise on first-mover advantages. The EU is thus becoming more vocal about threats and competition violations within this particular business model.

This paper aims at assessing whether the EU's cautious and slow approach to its digital transformation is adequate to the main challenges posed by the digital age. In the first place, the EU is seeking sustainable ways of uncapping the full

[1] "IoT" is a system of interconnected computing devices that can transfer data over a network without human interaction.
[2] These are Apple, Microsoft, Amazon, Alphabet (Google's owner), Facebook, Alibaba, and Tencent Holding.
[3] Restricting access to internet content based upon the user's geographical location.
[4] "The Future of Work," OECD Employment Outlook 2019.

potential of the EU's digital single market while providing fair competition for the digital sector. Second, in pursuit of becoming technologically viable, the EU has to mitigate the sometimes divergent interests of its Member States. And finally, it stands for the protection of its own values, and in doing so it should not only provide for a sound economic environment but, most importantly, for the prosperity and wellbeing of its citizens.

Evolution of the EU's Digital Agenda

The Digital Single Market (DSM) has been high on the European Commission's agenda for at least the last decade. In 2010, Neelie Kroes from the Netherlands received the first-ever digital agenda portfolio as a Commission vice-president. Being the competition commissioner in the prior term of the Jose Manuel Barroso Commission equipped her with a proper understanding of the telecom market and emerging digital enterprises. The appointment of Kroes was shortly followed by the announcement of the first European Digital Agenda (EDA). This comprehensive plan, which was part of the Europe 2020 strategy, had a goal to stimulate the growth of the digital economy within the EU, which would benefit households and companies. The emphasis was put on ensuring wide access to broadband infrastructure (in particular for rural and underdeveloped regions) and increasing the volume of cross-border e-commerce, which was very limited back then. The digital agenda set itself measurable targets, which have since been monitored by the Digital Agenda Scoreboard.[5] All in all, the Digital Agenda set the background for the creation of the Digital Single Market Strategy (DSM)[6] advanced by the next Commission. The strategy served as a roadmap for the EC in the political process of coining compromises (with the Member States) over particular legislative proposals. The DSM tackled a wide range of issues related to the digitisation of European societies, but the over-arching theme was the facilitation of cross-border electronic commerce within the EU.[7] The document repeated many goals already put forward in the previous strategy (EDA) since their outcomes were far from satisfactory. In the new approach, the fragmented digital market has been tackled with 30 legislative proposals, of which 28 were agreed by the co-legislators (EP and the Council) by the end of the Commission's term.[8]

The mid-term review of the strategy conducted in 2017 revealed several success stories but admitted a lack of achievement of the overreaching aim of the strategy—a true digital single market (deregulated, with harmonised legislation

[5] See: "EU Digital Scoreboard," European Commission, http://ec.europa.eu/digital-agenda/en/scoreboard.

[6] "A Digital Single Market Strategy for Europe," European Commission https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52015DC0192.

[7] J.S. Marcus, Dr. G. Petropoulos, Dr. T Yeung, "Contribution to Growth: The European digital Single Market. Delivering Economic Benefits for Citizens and Businesses," Policy Department for Economic, Scientific and Quality of Life Policies, January 2019, retrieved from: https://bruegel.org/wp-content/uploads/2019/02/IPOL_STU2019631044_EN.pdf.

[8] https://ec.europa.eu/digital-single-market/en/policies/shaping-digital-single-market#Achievements.

and rules across the Member States), which would create the proper conditions for domestic companies to grow.

The Juncker Commission in 2016 presented new strategic connectivity objectives for 2025, preparing Europe for the 5G era by requiring much more efficient networks. Also in 2016, the Commission presented a set of measures for digitalising European industry.[9] Proposed initiatives included a European cloud initiative, digital innovation hubs, and several measures aimed at boosting digital competitiveness.

On the financial side, the Juncker Plan (officially called The European Commission's Investment Plan for Europe) was initiated by the beginning of the term. By the end of 2018, the investments triggered within the framework of the plan were estimated to reach €335 billion, of which around €21.3 billion concerned the digital sector.

By the end of Juncker's term, experts assessed that further initiatives are needed, especially in artificial intelligence (AI), cybersecurity, supercomputing, digital public services, and advanced digital skills, in line with the new Digital Europe funding programme proposed by the EC for the 2021-2027 period.[10] Although several motions in these domains were already functioning (such as the High-Level Expert group on AI, which was issuing ethical guidelines by the end of Juncker's term), the expectations towards the future Commission in this matter grew. Yet, the complicated negotiation process of legislative acts, such as the copyright directive, seemed to cool the appetite of the Member States for robust EU legislation in the digital sector.

New Commission's Digital Ambitions

Before being elected president of the European Commission, Ursula von der Leyen announced an ambitious agenda on artificial intelligence, promising to present new legislative measures within 100 days of taking office. After robust consultations with experts and businesses, she announced a white paper on AI that contained general recommendations instead of drafts of legal acts. Further, it became clear that the paper will be accompanied by two other documents—European Strategy for Data and Shaping Europe's Digital Future Communication—dubbed together as a new strategy on the EU's digital economy. This successor of the 2015 Agenda included several "unfinished business" cases inherited from the Juncker Commission, such as the Digital Services Act, e-privacy regulation and Cybersecurity Competence centre and network, or regulations and policies regarding 5G networks. It added the previously overlooked artificial intelligence component. Also, the platform economy gained special attention in response to intensifying public debate on the role of digital companies such as Facebook,

[9] https://ec.europa.eu/digital-single-market/en/news/commission-sets-out-path-digitise-european-industry.

[10] See: É. Bassot, W. Hiller, "The Juncker Commission's ten priorities. An end-of-term assessment," European Parliamentary Research Service, May 2019.

Amazon, Alibaba Group, or Google, and their dominant, yet still-growing position in the data economy. The scope of the proposed strategy resulted from a rather candid assessment of the EU's strengths and weaknesses in the digital economy. Its advantages are in academic excellence (a third of high-quality research publications come from the EU), innovation hubs and networks, as well as ethical standards and protection of individuals. The biggest weaknesses include the inability of smaller firms to scale-up their businesses, the significant variances in the level of digitalisation between the regions and sectors, or the reliance on overseas companies when it comes to data-storage infrastructure.

The scope of the proposed strategy resulted from a rather candid assessment of the EU's strengths and weaknesses in the digital economy.

The Commission defined its ambitions to create and implement a framework for the EU to become technologically sovereign. By this action, it means setting European standards and rules for the digital sector development in the first place. The strategy shows that EU institutions are aware of the drawbacks of the current state of the digital economy in Europe. With an acknowledgement of the EU's limits in shaping the digital landscape, there is no visible ambition to support the development of large-scale European platforms that could compete with U.S.-based Amazon or China's Ali Express and other internet giants. The proposed tools are primarily aimed at helping European SMEs scale up through digitalisation and fourth-generation solutions (IoT, artificial intelligence products and systems, effective use of data). They are also envisaging the EU as a global leader in projects and investments around citizens' wellbeing, namely in public policies such as healthcare, agriculture, or the financial sector.

The European process of standardisation has already begun, with a number of documents on the 5G sector and AI, for example, Ethics Guidelines for trustworthy AI (2018). It is worth noting that, on the 5G front, the Commission acts with respect to the supremacy of the fair and open competition rule on the internal market, resisting the temptation of favouring European companies. The EC is also planning to present rules for managing cybersecurity issues in the EU, but not regulations.

The strong component of this "digital pack" is the strategy for European data. The potential economic value of non-personal industrial data in the EU is estimated to be as much as €1.5 trillion by 2027.[11] The Commission plans to act on different aspects of data governance and usage. One of them is cooperation with industrial stakeholders, with the purpose of encouraging firms to boost data-sharing among themselves but also from business to the government sector (B2G). The Commission's plans include drafting a legislative framework for data governance (including regulations possibly giving individuals more control over who can access and use machine-generated data) and usage of industrial data. The first proposals are expected by the end of 2020.

[11] APPENDIX to the Communication "A European strategy for data," p. 26.

A sectoral perspective is another characteristic of the EC's approach. Initiated in 2016 (during the Juncker Commission), the European High-Performance Computing Joint Undertaking (EuroHPC JU) paved the way for a successful pan-European research project in a particular domain (supercomputing), which, thanks to both public and private funding, now has the potential to make the EU globally competitive in this field. In the new strategy, there is an idea to create nine common European data spaces in areas such as health, transport, agriculture, finances, and energy. Additionally, an Open Science Cloud with free-access research data is planned to be introduced by 2025. Whereas the progress in the aggregation of public data among the Member States under the pan-European data spaces could be achieved in the foreseeable future, providing the introduction of security measures, the situation seems to be more difficult with industrial data. The large amount of non-personal data possessed by private and state-owned companies is considered its most valuable asset. So far, the Commission has failed to propose compelling argumentation for releasing such data without harming one's competitive advantage. However, projects such as Gaia-X, a political initiative by the German government to build a cloud hosting service,[12] may get traction and pan-European outreach in the longer term. Also, bringing together European data in a common cloud could have the additional effect of limiting dependency on extra-EU storage space, improving security.

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In general, the presented documents have repeated some initiated projects (such as the legislative process of the Digital Services Act or the review of network security and information systems, the NIS directive). Some of the proposals are new, and one worth mentioning is the "Destination Earth" initiative developing a very high precision digital model of Earth and providing tools for visualising, monitoring, and forecasting natural and human activities.[13] In the long run, this project could contribute to numerous EU policies (such as agriculture or transport), lessening their costs, improving resilience to unprecedented events, and enhancing efforts to protect the environment on the global level. This innovative project is being compared to the successful Galileo satellite programme, a competitor to U.S. GPS.

The other policy priority is education and upskilling the European workforce. According to EC estimations, already 90% of jobs within the EU require basic computer skills. More advanced qualifications are needed for at least 45% of posts. The main tool for tackling the digital skills gap is the EU budget. In the planned

[12] For more, see: "Project Gaia X. A Federated Data Infrastructure as the Cradle of the Vibrant European Ecosystem," Federal Ministry for Economic Affairs and Energy, Federal Ministry of Education and Research, Germany, https://www.bmwi.de/Redaktion/EN/Publikationen/Digitale-Welt/das-projekt-gaia-x-executive-summary.pdf?__blob=publicationFile&v=6.

[13] *Ibidem*, p. 27.

Digital Europe Programme, €700 million will be devoted to teaching advanced technologies to around 256,000 people across Europe, providing them with either university degrees in digital technologies or offering them short-term specialised courses and job deployments. Also, in other traditional programmes such as Horizon Europe, Erasmus, and the European Social Fund, there will be special projects devoted to digital skills.

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The strategy's focus on small and medium-sized enterprises (SMEs), dubbed the backbone of the European economy, is significant. Both new common European data spaces, as well as the existing Digital Innovation Hubs and AI-on-demand platforms, are promised to be focused on clustering SMEs and providing them with professional knowledge and counselling. With no legal barriers on the Digital Single Market, the EC aims to provide information about how to operate beyond national borders and finding proper partners for cooperation.

Legislative Plans

The EU has a reputation as a regulation superpower. It is well-deserved, having in mind the large number of legislative proposals for the digital single market carried out by the Juncker Commission. The new EC seems to shift away from the robust regulation approach towards building standards and frameworks. However, it has several important regulations on the agenda, such as the Digital Services Act (DSA) which would be a long-awaited revision of the e-commerce directive. The goal of the revision is to give more responsibility to internet platforms and, at the same time, enable them to conduct actions aimed at targeting possible illegal or undesired online content. In the legislative proposal to be outlined by the end of 2020, the DSA will also classify the internet platforms, scrutinising these gatekeepers for the possibility of having a negative impact on competition. This regulation, together with a planned revision of EU competition policy for the digital market, may introduce tools to tackle monopolistic positions of particular platforms. Despite being cautious in regulating AI, the Commission plans by the end of the year to propose legislative measures concerning safety, liability, fundamental rights, and data, which will take into consideration the summaries of the public consultations on the just-published AI white paper.

The strategy also mentions the so-far unsuccessful notion of taxing digital companies (e.g., the digital tax) if the current process led by the OECD in this matter fails to reach a compromise by the end of 2020.

Financing Measures

Of the best-tailored policies, little effect can be achieved without financial resources. According to the research conducted by the European Investment Bank,[14] the EU has a significant investment gap (with respect to the U.S.) of €65 billion per year due to the underfunded research and development (R&D) sector. The proposed strategy has limited ambitions compared to the Juncker Commission. The main source of European financing would come from the Multiannual Financial Framework (MFF) under the Horizon Europe Programme (about €12 billion), new Digital Europe Programme (between €7 billion and €9 billion[15]) and Connecting Europe Facility (between €1.8 billion and €3 billion[16]). These are not big amounts, given that the total EU, long-term budget for 2021–2027 is €1.135 trillion. The Commission also announced the continuation of the European Fund for Strategic Investment (so-called Juncker Plan) which aims at mobilising around €41.3 billion in investment in the digital sector from private and public investors. It is moderate growth compared to the €38 billion target in the period 2016–2020.

The first-ever programme within the MFF solely dedicated to digital policy, although modest in size, has a strong sectoral focus in areas that correspond to the priorities outlined in the digital strategy. The direct investment of €7–9 billion will be channelled to five key areas: supercomputing, AI, cybersecurity, advanced digital skills, and ensuring the wide use of these digital technologies in line with Europe's sustainability goals and values.

Stipulated resources for the EU digital agenda are highly criticised by the private sector as too modest. According to the critics, the EU lacks risk capital for small, early-stage growing businesses, which weakens the development of high-growth technology sectors. This is due to the fragmented internal market, with different rules, standards and taxation in the Member States.

Where the Member States Disagree

Although the general direction of the EC is appreciated by all the states, there are several issues that remain red lines for particular reasons. First of all, the Member States are mostly divided on taxing digital companies. The biggest countries (Germany, France, Spain, Italy, and Poland) generally are pro-taxation of local turnover (or at least part of it), but states such as the Netherlands or Ireland are reluctant to introduce any sort of EU taxation (mostly due to the preferential tax systems they provide for multinational companies). This cleavage has led to individual decisions to introduce such duties by Austria, France, and Spain.

[14] "Restoring EU Competitiveness," EIB 2016; "The EIB Investment Report 2019/2020: Accelerating Europe's Transformation," EIB, https://www.eib.org/en/publications/investment-report-2019.
[15] Depending on the final outcome of the negotiations.
[16] See footnote 17.

The other sore point is the different approach to commercial data-sharing. Poland, for instance, is among the group of countries that support the free flow of data (non-personal and industrial), including making data independent from their creators to some extent (though respecting copyrights). On the other side are countries such as France and Germany that would like to see continued respect of ownership of data, although with appropriate restrictions and privileges. Their position aims to protect the comparative advantage of the most innovative domestic companies.

And, finally, the discord over the total size of the MFF puts digital policy funds at risk of being diminished. This could, however, change dramatically because of the challenges posed by the recent COVID-19 pandemic.

Consequences of the Pandemic on Digital Policy

With the outbreak of the coronavirus, the importance of health data is now more obvious than ever. In the long term, the EU should make the best use of common data spaces for improving the diagnosis and treatment of patients. This will involve massive financing both through investment schemes and the MFF. It is possible that as a result of the pandemic, the budget negotiating process will reverse previous arrangements for the sake of improved financing of all projects related either to circumventing the effects of the pandemic or improving the EU's resilience to such occurrences in the future.

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The digital market reacted immediately to the widespread closure of schools, stores, and restaurants and many other restrictions by offering, for example, remote working. Forced social distancing may have long-term consequences for digital solutions in various economic sectors (most notably, the increased volume in e-commerce) and education and culture. However, cross-border commerce may face obstacles due to the reintroduction of border controls leading to road and train freight congestion.

What is visible so far in the digital sphere is also the immediate growth in the number of initiatives from tech companies (including large numbers of startups) aimed at producing innovative technology solutions for combating the spread of the virus. This could eventually lead to a leap forward in permanent solutions in health, public governance, and several other sectors.

In addition, the effects of the pandemic on the level of digitalisation of the EU will be seen in the annual reports of the Digital Economy and Society Index (DESI).[17] The lesson drawn from the ongoing situation is that the level of digitalisation of EU households is below what was planned and, moreover, it varies significantly

[17] See: https://ec.europa.eu/digital-single-market/en/desi.

across the regions. The other issue is the rather poor availability of digital public services and poor degree (at least for some countries) of digitalisation of business, and as an effect, availability of e-commerce.

Conclusions and Recommendations

The digital strategy presented in February 2020 is the first complex document reaching far beyond digital single-market regulations. It builds on specific ideas (such as "Destination Earth," European supercomputer) and niches where the EU could have leverage despite being, in general, a less digitalised and innovative economy than the U.S. or China.

However, while the EU does not plan to specifically support the growth of giant platforms able to compete with the major U.S. and Chinese companies, its recent strategy and legislative proposals lack courage in addressing comprehensively the sensitive domains of digital policy. On **competition**, the EC proposals focus mainly on the platform economy with plans to limit the market power of the biggest players in the field, imposing additional responsibilities on them and possibly introducing new rules that would make it easier to enter this highly monopolised sector of the digital economy. The efforts should focus on the latter with additional instruments providing protection for innovative SMEs from hostile takeovers.

The EU chose its own way of targeting specific sectors with dedicated policies and funds. The abovementioned European High-Performance Computing Joint Undertaking (EuroHPC JU) is a good example of such a strategy. **Building clusters** of enterprises and establishing multiple excellence centres and innovation hubs is a step in the right direction, however **the financial prospects** for the EU's homegrown groundbreaking technology solutions are rather limited for the moment. The EU should, therefore, mobilise far more funds than what is planned in the new, long-term budget and its investment mechanisms. Both the Member States and the private sector should be granted incentives (e.g., political, regulatory) that provide for growth of spending on the digital agenda.

The EU should also ensure an **innovation-friendly environment** and proper security measures for the most prospering European digital companies. The Gaia-X cloud service, which now clusters almost 200 enterprises from several countries (mostly Germany and France), could serve as a starting point for coining more projects around sharing industrial data on a voluntary basis between different enterprises. While such projects require a high level of trust and mutual understanding of legitimate ways of using data, **the EU's protection mechanisms** could provide for such an environment.

The EU **needs transparent regulations** in the digital age that serve both consumers and enterprises. Given the low level of trust in the EU as regards new technologies, as well as the culturally motivated high attention to privacy and personal freedoms, such legislation needs to be properly balanced between the

protection of individual freedoms and creation of the optimal conditions for growth. At the same time, the legislation must consider the effect of highly competitive companies from the U.S. and China. It is important to acknowledge that regulations and directives such as GDPR (as announced, it will be revised), pose numerous challenges, particularly for SMEs, which are more prone to unintended violations of the law (due to limited resources for legal assistance) than multinational companies (with impressive legal teams). The rules should be clearer and more adjusted to the most vulnerable market players.

A strong component of the EU's current approach, although poorly financed, is **investment in human capital**. The EU already has successful scientists and innovators, but having in mind the changes that digitalisation poses to the labour market, it is important to educate a vast number of people to thrive in the rapidly changing labour environment. What is lacking, however, is a proper strategy of keeping the best experts in the digital sector in Europe (not to mention in Central and Eastern Europe). The EU should also find ways to attract more highly skilled workers from third countries, for example, by improving its Blue Card scheme.

The EU has made a significant step towards a coherent digital strategy. The COVID-19 pandemic has put into question the timeline envisaged for implementing the agenda and proposing legislative measures. The future financial resources for this domain are also uncertain, especially with the probable global recession following the pandemic. Yet, what it shows to now is that immense investments in digitalisation and innovation can help mitigate the social, cultural, and economic effects of such events through the use of online education, communication, digitalisation of enterprises, remote working, etc., not to mention the importance of technology in saving lives and preventing disease from spreading.