Beatrice Bertarini

European Union Digital Single Market

Legal Framework and Challenges

FrancoAngeli

Collana di Diritto

SAGGI E RICERCHE

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 ISBN 9788835152460

This publication has been co-funded by the Erasmus + Programme of the European Union. 'Jean Monnet Centre of excellence Consumers and SMEs in the Digital Single Market - project 610728-EPP-1-2019-1-IT-EPPJMO-CoE'.

Beatrice Bertarini, *European Union Digital Single Market. Legal Framework and Challenges*, Milano: FrancoAngeli, 2023
Isbn: 9788835152460 (eBook)

La versione digitale del volume è pubblicata in Open Access sul sito www.francoangeli.it.

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Introduction

The phenomenon of digitalization is proliferating in present-day society, simultaneously influencing and transforming economic and social life[1].

Throught digitalization «the world has undergone a transition from a traditional economy (e.g. agriculture or industrial based) to a digital economy that is based on digital technologies»[2]; thus, «reaping the benefits and addressing the challenges of the digital age requires narrowing the gap between technological developments and public policy»[3]. In fact, many policies are «pre-digital era, and difficulties in understanding the changes underway and their implications may delay the review and adaptation of these policies»[4].

Digital transformation currently operates fundamentally in the development of nations across the globe[5]. It is therefore centrally positioned

1. Organization for Economic Co-operation and Development (OECD), *How's Life in the Digital Age?: opportunities and risks of the Digital Transformation for people's Well-being*, OECD Publishing, 2019, p. 15 «the origins of the digital transformation go back to the first half of the twentieth century, when the first mainframe computing machines were developed. These machines boosted the computing capacity that supported scientific advances in a wide range of fields, allowing for breakthroughs in areas such as medicine that had a large impact on people's lives. Similarly, starting in the 1980s, in the early phases of personal computers, most functionalities greatly improved working environments (e.g. through text processors, information storage, calculations); and individual entertainment possibilities (e.g. games or cultural consumption on discs)». See also J. Bower, C. Christensen, *Disruptive technologies: Catching the Wave*, in *Harvard Business Review*, January-February 1995 and S. Cassese, *La nuova costituzione economica*, Laterza, 2023, p. 389 ss.

2. F. Zhao, J. Wallis, M. Singh, *E-government development and the digital economy: A reciprocal relationship*, in *Internet Research*, 2015, n. 5, p. 734.

3. OECD, *Going Digital: shaping policy, improving lives*, 2019, OECD Publishing, 2019, p. 18.

4. OECD, *Going Digital: shaping policy, improving lives*, 2019, OECD Publishing, 2019, p. 18.

5. For an in-depth analysis OECD, *Measuring the Digital Transformation: a roadmap for the Future*, 2019.

in reflections related to the definition of efficient and effective regulations allowing countries to seize opportunities and minimize the risks posed by the digital growth of societies[6] and enterprises[7].

Digital transformation «refers to the economic and societal effects of digitisation and digitalisation. Digitisation is the conversion of analogue data and processes into a machine-readable format. Digitalisation is the use of digital technologies and data as well as their interconnection that result in new activities or in changes to existing ones. Together, digitisation and digitalisation make up the digital transformation»[8].

Digital transformation is connected to the digital economy, which is defined as an economy that aims to produce and exchange goods and services connected to novel applications, ideas, and business models derived from information and communication technologies (ICTs)[9].

Notably, however, «the presence of an ICT infrastructure and the mere accessibility to ICT facilities, are only a necessary pre-condition for moving towards a digitalized society and that the "level" and the "quality" in the use of these technologies, as well as the conditions-facilitating or hampering "digital empowerment", are likely to play a much more important role»[10].

Defining new public policies that can tackle challenges associated with the affirmation of digitalization is essential for the economic and social

6. OECD, *How's Life in the Digital Age?: opportunities and risks of the Digital Transformation for people's Well-being*, OECD Publishing, 2019, p. 15.

7. OECD *Productivity Growth in the Digital Age*, OECD Publishing, 2019.

8. OECD, *How's Life in the Digital Age?: opportunities and risks of the Digital Transformation for people's Well-being*, OECD Publishing, 2019, p. 16.

9. Communication from the Commission, COM (1999) 687, December 10, 1999, "An information society for all".

10. R. Evangelista, P. Guerrieri, V. Meliciani, *The economic impact of digital technologies in Europe*, in *Economics of Innovation and New Technology*, 2014, n. 8, p. 803; for the Authors the analysis of digital technologies requires «a more complex and multidimensional view on the relevant dimensions and mechanisms governing the relationship between ICT and the economy. In order to assess the economic impact of ICT in this broad perspective, we have used three composite indicators measuring, respectively, three different dimensions/stages of digitalization and namely one synthesizing access conditions to the ICT infrastructure, one reflecting the actual usage of ICT facilities and Internet and one measuring the ICT empowerment of individuals and firms in day-to-day life in key social and economic domains». The results underlines «digitalization may represent a major driver of labor productivity, economic and employment growth, and that inclusive policies may effectively contribute to bridging the gap between the most favoured and the disadvantaged parts of the population, thus helping in achieving the 2020 European targets. This is particularly important for those countries, such as the Mediterranean and some of the new EU entrant countries, where these gaps are still very large».

contexts. Digitalization impacts processes, products, and business models but also changes the traditional frames of reference.

The historic definition of a single European market finds new opportunities in this new context, leading to the development of a Digital Single Market as a «future-oriented Single Market»[11].

Regarding digitalization and new emerging technologies «the key challenge is deciding what, whether, when and how to regulate, and with the circular economy, where the goal is to create a regulatory framework which ensures increased sustainability of economic activities with job creation, increased innovation and growth. In both cases, there is a need to ensure a European approach to addressing the issues in order to avoid the fragmentation of the Single Market that would arise from a proliferation of national approaches»[12].

The role of "technology governance"[13] is central to the choice of what, whether, when, and how to regulate, as has been expressed in the "Collingridge dilemma"[14]: indeed, the moment of regulatory intervention exerts significant effects.

The "Collingridge dilemma" holds that «early in the innovation process – when interventions and course corrections might still prove easy and cheap –

11. Communication from the Commission, COM (2018) 772, November 22, 2018, "The Single Market in a changing world. A unique asset in need of renewed political commitment", p. 1, underlines that «with the Single Market Strategy, the Capital Markets Union, and the Digital Single Market Strategy, the Commission has put forward an ambitious and balanced set of measures over the last four years to deepen the Single Market further and make it fairer».

12. COM (2018) 772, p. 11.

13. OECD, *Science, Technology, and Innovation Outlook 2023*, states that «technology governance can be defined as the process of exercising political, economic and administrative authority in the development, diffusion and operation of technology in societies. It can consist of norms (e.g. regulations, standards and customs), but can also be operationalized through physical and virtual architectures that manage risks and benefits. Technology governance pertains to formal government activities, but also to the activities of firms, civil society organisations, and communities of practice. In its broadest sense, it represents the sum of the many ways in which individuals and organisations shape technology and how, conversely, technology shapes social order». See G. Lemme, *La transizione giuridica. La crisi del diritto di fronte alla sfida tecnologica*, Giappichelli, 2023.

14. G. Lo Sapio, *Il regolatore alle prese con le tecnologie emergenti. La regulatory sandbox tra principi dell'attività amministrativa e rischio di illusione normativa*, in *Federalismi.it*, 2022, n. 3, p. 93; the study cites D. Collingridge, *The social control of technology*, Palgrave Macmillan, 1980. See also A. Genus, A. Stirling, *Collingridge and the dilemma of control: Toward responsible and accountable innovation*, in *Research Policy*, 2018, n. 1, and W. Liebert, J. Schmidt, *Collingridge's dilemma and technoscience: An attempt to provide clarification from the perspective of the philosophy of science*, in *Poiesis & Praxis*, 2010, n. 1-2.

the full consequences of the technology and hence the need for change might not be fully apparent. Conversely, when the need for intervention becomes apparent, changing course may become expensive, difficult and time-consuming. Uncertainty and lock-ins are at the heart of many governance debates and continue to pose questions about "opening up" and "closing down" development trajectories»[15].

In particular, the regulator does not always possess all the knowledge necessary to regulate interventions, especially regarding phenomena associated with emergent digital technologies. Therefore, we are now witnessing a "learning legislation", as demonstrated by the regulatory sandboxes characterized by their being a space for "normative experimentation"[16], one of the most innovative forms of the principle of evidence-based law-making[17].

These considerations are the basis for this analysis of the most significant actions of the European Union regarding the evolution of digital technologies and their impact on the lives of citizens and enterprises in the context of the new Digital Single Market.

15. OECD, *Science, Technology, and Innovation Outlook 2023*.

16. The January 2019 European Banking Authority Report titled "FinTech: Regulatory sandboxes and innovation hubs" specifies that a «regulatory sandbox is a scheme set up by a competent authority that provides regulated and unregulated entities with the opportunity to test innovative products or services, business models, or delivery mechanisms, related to the carrying out of financial services. The aim is to provide a monitored space in which competent authorities and firms can better understand the opportunities and risks presented by innovations and their regulatory treatment through a testing phase, and to assess the viability of innovative propositions, in particular in terms of their application of and their compliance with regulatory and supervisory requirements» (p. 16).

17. G. Lo Sapio, *Il regolatore alle prese con le tecnologie emergenti. La regulatory sandbox tra principi dell'attività amministrativa e rischio di illusione normativa*, in *Federalismi.it*, 2022, n. 3, p. 96.

1. Information society and the market: First European legal reference points to the digital context

Summary: 1. The information society and the 1990s Communications from the European Commission – 2. The 1999 European Commission Communications "*Towards a new framework for Electronic Communications infrastructure and associated services*" and "*eEurope – An Information Society for All*": the future of digital in Europe – 3. The 2000s: Different plans for information society – 4. The European Commission Communications of 2010: "A strategy for smart, sustainable and inclusive growth" and "A Digital Agenda for Europe".

1. The information society and the 1990s Communications from the European Commission

The development of information and communication technologies (ICTs) in the 1990s represents a socioeconomic revolution. Regarding this development, «there has been a noticeable increase in policy emphasis on the importance of ICTs for the future prosperity and well-being of the Union which has largely grown out of a heightened awareness of the economic, social and political possibilities engendered by advances in networking technologies and a greater dissemination of ICTs throughout society at large. The development and implementation of ICTs in the European Union is now seen as a crucial goal of policy in a diverse area of activities. ICTs are generally viewed as a panacea by European Commission policy-makers and are thought to offer answers to seemingly intractable problems»[1].

The affirmation of the information society is connected to the development of ICT: in the 1990s, some Communications from the European Commission

1. J. Downey, *XS 4 All? "Information Society" Policy and Practice in the European Union*, in J. Downey, J. McGuigan (eds.), *Technocities: The Culture and Political Economy of the Digital Revolution*, SAGE Publications, 1999, p. 121.

focused on the information society and its possible impact on citizens and enterprises, and its role in the future.

The Communications revealed what the European Community and Member States need to accomplish, under different and multiple profiles, to ensure that the economy and citizens can benefit from the opportunities provided by information society.

The affirmation of the information society needs the support of the Community; without this support, adequate regulatory policies, dedicated legal frameworks, and specific attention to the digitalization of information, it will not be possible for Europe to completely utilize the present and future opportunities of ICT.

In 1993, a white paper entitled "Growth, competitiveness, employment – The challenges and ways forward the 21st century"[2], known as the Delors report, set out «to foster debate and to assist decision-making – at decentralized, national or Community level – so as to lay the foundations for sustainable development of the European economies, thereby enabling them to withstand international competition while creating the millions of jobs that are needed»[3]. The report reveals «the immense responsibility, while remaining faithful to the ideals which have come to characterize and represent Europe, of finding a new synthesis of the aims pursued by society (work as a factor of social integration, equality of opportunity) and the requirements of the economy (competitiveness and job creation)»[4].

Furthermore, it «was inspired by the looming threat of growing unemployment and takes structural changes, including technological ones, into account»[5]. Hence, the need to create opportunities for employment becomes one of the central themes of the paper, underlining the importance of defining «an economy that is healthy, open, decentralized, competitive and based on solidarity»[6].

2. Communication from the Commission, COM (1993) 700, December 5, 1993.

3. COM (1993) 700, p. 3.

4. COM (1993) 700, p. 3.

5. A. Kofler, *Digital Europe 1998: Policies, technological development and implementation of the emerging information society*, in *Innovation*, 1998, n. 1, p. 54.

6. COM (1993) 700, p. 11. With reference to solidarity: K. Bayertz, *Four uses of "Solidarity"*, in K. Bayretz (eds.), *Solidarity*, Springer, 1999; R. Ter Muelen, R. Muffels (eds.), *Solidarity in health and social care in Europe*, Dordrecht, 2001; R. Wolfrum, C. Kojima (eds.), *Solidarity: a structural principle of international law*, Berlin, 2010; D. Dobrazanski, *The concept of solidarity and its properties*, in T. Buksinski, D. Dobrazanksi (eds.), *Eastern Europe and the Challenges of Globalization*, Washington, 2005; M. Dougan, E. Spaventa, *Wish you weren't here! New models of social solidarity in the European Union*, in M. Dougan, E. Spaventa (eds.), *Social welfare and EU law*, Oxford, 2005; P. Frericks, *Capitalist welfare*

Within this framework, «the dawning of a multimedia world (sound-text-image) represents a radical change comparable with the first industrial revolution»[7], as exemplified by the information society.

Chapter 5 of the report is specifically dedicated to «the changing society, the new technologies» and immediately highlights how information and communication technologies «are transforming dramatically many aspects of economic and social life, such as working methods and relations, the organization of companies, the focus of training and education, and the way people communicate with each other. They are resulting in major gains in productivity in industry, and in the quality and performance of services»[8]. A new «"information society" is emerging, in which management, quality and speed of information are key factors for competitiveness: as an input to the industries as a whole and as a service provided to ultimate consumers, information and communication technologies influence the economy at all stages»[9].

The development of ICT industries «and the dissemination of ICT use is seen as central to the creation of new forms of employment. Not only will new industries and services be developed but the use of the ICTs will improve productivity and increase GDP in other sectors of the economy. Thus, while a certain measure of Schumpeterian creative destruction is to be expected with traditional occupations in both manufacturing and service sectors disappearing (previously largely immune from "technological unemployment"), the overall impact on employment will be positive. On balance, it is suggested, more new jobs with new skills will be found than old jobs with old skills lost»[10].

The European economy's competitiveness greatly depends on the use and development of ICTs; however, «various obstacles to optimal exploitation of these technologies have been met in Europe, and they should be removed. Dissemination of good practices targeted business should be promoted and community development privileged applications. To this end, an appropriate regulatory and political environment should be created and the implementation of trans-European telecommunication services stimulated»[11].

societies trade-off between economic efficiency and social solidarity, in *European Societies*, 2010, n. 5; K. Kritikos, F. Bolle, J. Tan, *The economics of solidarity: a conceptual framework*, in *The Journal of socio-economics*, 2007, n. 1.

7. COM (1993) 700, p. 13.

8. COM (1993) 700, p. 107.

9. COM (1993) 700, p. 107.

10. J. Downey, *XS 4 All? "Information Society" Policy and Practice in the European Union*, in J. Downey, J. McGuigan (eds.), *Technocities: The Culture and Political Economy of the Digital Revolution*, SAGE Publications, 1999, p. 125.

11. COM (1993) 700, p. 107.

In fact, «the pressure of the market-place is spreading and growing, obliging businesses to exploit every opportunity available to increase productivity and efficiency. Structural adaptability is becoming a major prerequisite for economic success»[12]; equally, «the growing interconnection of the economy is leading to major productivity improvements in the production of goods but also in relation to services, and the borderline between goods and services is becoming increasingly blurred»[13].

The new technological processes require «constant and organized interdependence between the upstream phases linked to technology, and the downstream phases linked to the market»[14].

Technologies not only modify industrial processes but also the relationship between a company and the market, alongside defining greater interoperability between the various players, in other words, the presence of various factors such as ICTs, globalization, and international competition encourage companies to rethink their production models and relationship with the market.

Despite «the undeniable progress that has been made, the penetration of ICTs is not an unmitigated success story. The changeover towards an information society has placed severe demands on the adaptability of those concerned. The risk of exclusion, for example, as a result of inadequate skills or qualifications and, more generally, the emergence of a two-tier society should not be underestimated. Europe must prepare itself for this changeover in order to capitalize upon the economic and social advantages while analysing and mitigating any adverse consequences»[15].

Societal and economic interrelationships are characterized by the "information society", which was historically developed in the USA, Japan, and Europe; however, in the future it will be a global phenomenon. In this context, Europe should aim at three main objectives: «(i) from the outset, placing its approach in a world perspective, and therefore encouraging the international alliance strategies of its companies and operators; promoting where possible the development of open systems and international standards; working resolutely towards the opening-up of third country markets, in order to seek genuine reciprocity, and opposing any form of discrimination; (ii) ensuring, at the same time, that the systems developed take due account of European characteristics: multilingualism, cultural diversity, economic

12. COM (1993) 700, p. 107.
13. COM (1993) 700, p. 108.
14. COM (1993) 700, p. 108.
15. COM (1993) 700, p. 108.

divergence, and more generally the preservation of its social model; (iii) creating the conditions whereby, in an open and competitive international system, Europe still has an adequate take-up of basic technologies and an efficient and competitive industry»[16].

The coexistence of some essential factors determines the creation of a "common information area", which is central to economic and social development and socioeconomic cohesion[17]; six factors are identified: «(i) the information itself, converted and collated in electronic, i.e. digital, form (databases, document bases, image bases, CDI, etc.); (ii) the hardware, components and software available to the user to process this information; (iii) the physical infrastructure (terrestrial cable infrastructure, radio communications networks and satellites); (iv) the basic telecommunications services, particularly electronic mail, file transfer, interactive access to databases and interactive digital image transmission; (v) the applications, for which the above mentioned levels perform the storage, processing and transmission functions, providing users with the specific services they need. Generally, users "see" only the application to which they are connected; the transport side needs to be "transparent" for them. Consequently, applications are the area where the greatest efforts must be made to improve the structuring of the information and user-friendliness. With the aid of the applications, their performance and the conditions in which they can be used, the common information area will have an economic and social impact and can help to improve the employment situation; (vi) users, who are not only trained in operation of the applications, but are also aware of the potential of ICTs and of the conditions required for optimum use thereof»[18]. The Community policy «aimed at establishing a common information area will help to increase competition and improve European competitiveness. It will help to create jobs. It should be backed up by specific measures aimed at facilitating economic and social changes»[19].

In a competitive context, «access to and mobilization of information are

16. COM (1993) 700, p. 110.

17. Economic and social cohesion is explicitly mentioned in the Single European Act of 1986 in "Sub-section IV – Economic and social cohesion", article 23 declares "A Title V shall be added to Part Three of the EEC Treaty reading as follows: 'TITLE V ECONOMIC AND SOCIAL COHESION Sub-section III – Social policy'". In particular, article 130a stated «in order to promote its overall harmonious development, the Community shall develop and pursue its actions leading to the strengthening of its economic and social cohesion. In particular the Community shall aim at reducing disparities between the various regions and the backwardness of the least-favoured regions».

18. COM (1993) 700, p. 109.

19. COM (1993) 700, p. 115.

becoming the central aspects of productivity and competitiveness, especially for SMEs»[20]; this assumes that the role of the Member State is to facilitate and regulate information: «the private sector is seen as the generator of change. A radical re-engineering of the fundamentally different relationship between public and private sectors is foreseen where the state instead of providing services simply regulates private provision»[21].

In December 1993, the Recommendations to the European Council, entitled as "Europe and the global information society", known as the Bangemann Report, expressly stated that «there should be no more public money, subsidies or protectionism. The market, in other words, provides the solution while the state's job is simply to encourage the market through deregulation. If we follow these suggestions the Bangemann Report claims "we will all win in the long run"»[22]. While the Bangemann Report recognizes that «the chief risk of the information age lies in the widening of the gap between the information haves and have-nots it supplies no convincing recommendations for how this is to be avoided. As a concern it certainly plays second fiddle to the drive for productivity gains through networking»[23].

In 1994, the Communication "Europe's way to the information society: an Action Plan"[24] pointed out that «the information society is on its way. A "digital revolution" is triggering structural changes comparable to last century's industrial revolution with the corresponding high economic stakes. The process cannot be stopped and will lead eventually to a knowledge-based economy»[25].

In this Communication, the Commission stressed that «it is not sufficient merely to act; there is a need for a consistent response by Europe to the challenge, avoiding initiatives which neutralise each other or are mutually incompatible. A global, coherent and balanced approach of mutually supportive measures is called for. The Community will assume its responsibilities for

20. COM (1993) 700, p. 109.

21. J. Downey, *XS 4 All? "Information Society" Policy and Practice in the European Union*, in J. Downey, J. McGuigan (eds.), *Technocities: The Culture and Political Economy of the Digital Revolution*, SAGE Publications, 1999, p. 126.

22. J. Downey, *XS 4 All? "Information Society" Policy and Practice in the European Union*, in in J. Downey, J. McGuigan (eds.), *Technocities: The Culture and Political Economy of the Digital Revolution*, SAGE Publications, 1999, p. 126.

23. J. Downey, *XS 4 All? "Information Society" Policy and Practice in the European Union*, in in J. Downey, J. McGuigan (eds.), *Technocities: The Culture and Political Economy of the Digital Revolution*, SAGE Publications, 1999, p. 127.

24. Communication from the Commission, COM (1994) 437, July 19, 1994.

25. COM (1994) 437, p. 1.

setting the appropriate regulatory environment. In parallel, the private sector is invited to play its entrepreneurial role and launch without delay concrete initiatives for the prompt deployment of the information society»[26].

For these reasons, the Commission presents a work program on the information society based on four areas: «the regulatory and legal framework, for which new proposals will be made, in particular regarding telecommunications infrastructure and services, on the protection of intellectual property rights and of privacy, on media concentration, as well as the updating of the "rules of the game" for the free movement of TV broadcast in the Community; networks, basic services, applications, and content, where there is a need to bring the parties concerned together in order to stimulate the development of applications in the areas proposed by the High Level Group and endorsed by the European Council; social, societal and cultural aspects, including the linguistic and cultural dimensions of the information society stressed by the European Council; and promotion of the information society in order to increase public awareness and support»[27].

This regulatory and legal framework is analyzed because it underlines the «importance of backing up the efforts of the private sector with the rapid establishment of a clear and stable regulatory framework, notably with regards to market access, compatibility between networks, intellectual property rights, data protection and copyright»[28], these sectors remain central to the Digital Single Market today. The key points on which the regulatory and legal framework is based are as follows: toward a competitive environment; standardization, interconnection, and interoperability; rates; worldwide dimensions; intellectual property rights; privacy; electronic protection, legal protection, and security; and media ownership and competition.

It is notable that «the Commission proposes a broad regulatory framework package, while preserving missions of public interest according to the principles of universality, equality and continuity» and «of central importance to the development of the European information society is the need to safeguard the free circulation of services across our internal frontiers. Given the range of measures mat might be necessary, the Commission will, as a matter of importance, set such issues in the context of an Internal Market framework, with the view to guaranteeing a level playing field»[29]:

26. COM (1994) 437, p. 2.
27. COM (1994) 437, p. 2.
28. COM (1994) 437, p. 2.
29. COM (1994) 437, p. 3.

the Commission proposes laws while preserving a free, competitive market dominated by public interest.

At the end of 1996, the Commission adopted the Communication "Europe at the forefront of the global information society: rolling action plan"[30] indicating many social challenges and highlighting that «the information society is not a challenge for the future but one for the present. Decision makers are now fully aware that Europe's future in the global economy will be shaped by the speed and success with which it exploits the opportunities arising from the new information and communication technologies. Momentum toward the information society is already building up in Europe at a breath-taking pace. But major tasks are still ahead of us. The key challenges are to ensure that Europe remains at the forefront of the new global and networked society and that European citizens equally enjoy its benefits. The EU must therefore focus on an effective implementation of all aspects of the information society»[31].

In fact, «the development of the information society requires changes which still have to overcome a certain degree of organisational inertia and psychological resistance as well as financial constraints. This is extremely hard to achieve in a period characterised by high unemployment, pressure on social benefits and budgetary restrictions. Whilst the implementation of the information society is mostly taking place at national, regional or local level, the value-added of Community level actions is to set up a common framework, to co-ordinate various activities and to act as a catalyst. Therefore, the Rolling Action Plan aims to harness and give more impetus to the implementation of the various measures taken at Member State level»[32].

The rolling action plan emphasizes that improving «the business environment through efficiency and coherent implementation of the liberalized telecommunications environment and the comprehensive application of the principles of the internal market (i.e. the free movement of goods, the free provision of services, free movement of capital and freedom of establishment) in the context of the information society»[33] is essential with regard to dedicated actions «to promote the introduction of new technologies into daily business activities, in particular with respect to SMEs and for the promotion of satellite personal communication services (S-PCS) in Europe. Ensuring that the necessary conditions are met for the introduction of

30. Communication from the Commission, COM (1996) 607, January 27, 1996.
31. COM (1996) 607, p. 2.
32. COM (1996) 607, p. 4.
33. COM (1996) 607, p. 4.

electronic commerce (e.g. copyright, data protection, digital signatures, etc.) is also a major priority»[34].

In 1997, the final report "Building the European information society for us all: Final policy report of the high-level expert group" presented by the group formed in 1995 to analyze the social aspects of the information society[35], contains 12 recommendations and sub recommendations: «1. Actively stimulating the acquisition of knowledge and skills; a. Establishing an education network, b. New financial incentives for training, c. Improving and disseminating knowledge on learning methods, d. Producing high-quality, low-cost learning materials; 2. Coordinating regulation at EU level; 3. Public services as an engine of growth in the emerging IS, a. Shifting public services from infrastructure to content, b. Making public services more effective: improved productivity, for a better service, c. Public services as models of service provision, d. Improving health services; 4. Exploiting the virtual value chain, a. Measuring intangible performance, b. Creating confidence in electronic commerce, c. Mastering the impact of virtuality; 5. Developing flexible working arrangements, a. Collecting successful case studies of organizational innovation, b. Handling outsourcing, c. Towards security in flexible working arrangements, d. Dealing with new occupational health risks, e. From promoting telework to integrating it within society, f. Social dialogue in the IS; 6. Managing time, a. Structuring flexible working time, b. In search of time, c. Healthy living in the IS; 7. Reprioritizing "full" employment, a. Enhancing employment growth in the IS, b. Towards a social global level playing field; 8. Maintaining national government revenue in an increasingly global environment; 9. Including everyone, a. Increasing social participation, b. Avoiding exclusion/targeting specific needs, c. Providing technological tools for the social partners, d. Towards a European Social Fund focused on employability; 10. The death of distance, a. Towards universal community service, b. Rethinking regional cohesion policy; 11. European diversity – taking advantage of the many emerging information societies, a. Developing a high-quality multimedia

34. COM (1996) 607, p. 4.

35. In May 1995, the high-level expert group was formed, but prior, in February 1995, the European Commission formed the Information Society Forum, «the aim of the Information Society Forum is to contribute to an open debate and a reflection on the challenges including social, societal, cultural and linguistic aspects of the information society. It will also recommend priority projects to be implemented by the Commission. 124 members have been drawn from a wide range of groups: users, network operators, academia, trade unions, family associations, parliamentarians, industry, the public sector and consumer groups, amongst others» (IP/95/757).

industry, b. Nurturing a multicultural Europe, c. Celebrating the local; 12. Transparency and democracy, a. Maintaining pluralism, b. A democracy project»[36].

These recommendations derive from a broader reflection that the high-level expert group conducted on the subject of the information society, deliberating about what the information society is and what it will be in the future.

The report defines the information society as «the society currently being put into place, where low-cost information and data storage and transmission technologies are in general use. This generalization of information and data use is being accompanied by organizational, commercial, social and legal innovations that will profoundly change life both in the world of work and in society generally»[37].

The high-level expert group stressed that «in the future there could be different models of information society, just as today we have different models of industrialized society. They are likely to differ in the degree to which they avoid social exclusion and create new opportunities for the disadvantaged», considering the importance of the social dimension that characterizes the European model; however, «it will also need to be imbued with a strong ethos of solidarity – not an easy goal to achieve, since the traditional structures of the welfare State will have to undergo substantial changes. Furthermore, that concept of solidarity will need to be active, not passive, to adapt to these changes»[38].

The report additionally defined the difference between "data, information and knowledge" and what it meant by the "social integration requirement". Regarding data, information, and knowledge, the group underlined «the generation of unstructured data does not automatically lead to the creation of information, nor can all information be equated with knowledge. All information can be classified, analysed and reflected upon and otherwise processed to generate knowledge. Both data and information, in this sense, are comparable to the raw materials industry processes into commodities»

36. Building the European information society for us all: Final policy report of the high-level expert group, p. 12. With reference to new prospectives of health right in Europe A. Santuari, C. Ugolini, *Verso una nuova sanità europea: reti integrate e livelli assistenziali condivisi?*, in C. Golino, A. Martelli (eds.), *Un modello sociale europeo? Itinerari dei diritti di welfare tra dimensione europea e nazionale*, FrancoAngeli, 2023.

37. Building the European information society for us all: Final policy report of the high-level expert group, p. 15.

38. Building the European information society for us all: Final policy report of the high-level expert group, p. 15.

such technologies «have had no such effect on the generation or acquisition of knowledge and still less on wisdom»[39].

Instead, a direct connection between technologies and wisdom is hoped for, toward a "wise society", «where scientifically supported data, information and knowledge would increasingly be used to make informed decisions to improve the quality of all aspects of life. Such wisdom would help to form a society that is environmentally sustainable, that takes the well-being of all its members into consideration and that values the social and cultural aspects of life as much as the material and economic»[40].

The high-level expert group noted that «our hope is that the emerging information society will develop in such a way as to advance this vision of wisdom»[41].

The information society must be a "learning society" and «the learning process is no longer limited to the traditional period of schooling, but is a lifelong process, starting before formal school-going age and taking place at work and in the home»[42].

Concurrently, the "social integrationist vision" places emphasis «on technology as a social process which by meeting real or imagined needs changes those needs just as it is changed by them. Society, in this view, is shaped by technical change, and technical change is shaped by society. Technical innovation – sometimes impelled by scientific discovery, at other times induced by demand – stems from within the economic and social system and is not merely an adjustment to transformations brought about by causes outside that system»[43].

The future implications of the information society are not well understood and analyzed; «there are numerous social policy challenges associated with a future European information society, stress that these transcend the simplistic notions of rapid adjustment to a future determined by the "external" force of technological change in which people have no influence and no chance

39. Building the European information society for us all: Final policy report of the high-level expert group, p. 16.

40. Building the European information society for us all: Final policy report of the high-level expert group, p. 16.

41. Building the European information society for us all: Final policy report of the high-level expert group, p. 16.

42. Building the European information society for us all: Final policy report of the high-level expert group, p. 17.

43. Building the European information society for us all: Final policy report of the high-level expert group, p. 17, the high-level expert group mentioned the OECD reports on the socioeconomic aspects of new technologies, known as the Sundqvist report: OECD, "New technologies: a socioeconomic strategy for the 90s", Paris, 1989, p. 117.

to participate, and highlight the countless opportunities for engineering a European information society for us all»[44].

From this analysis emerges how «the information society may not be a new concept, but it is constantly evolving. He's still in his youth, and as such, his dynamics change every day. We know a lot about the potential, even if we're still learning as the information age unfolds. What seems clear is that the continued development of ICT in all its forms and applications is driving radical change in our lives, with the constant creation of new products and services, new ways of doing business, new markets and investment opportunities, new social and cultural opportunities, expressions and new channels of interaction between citizens and government»[45].

2. The 1999 European Commission Communications "*Towards a new framework for Electronic Communications infrastructure and associated services*" and "*eEurope – An Information Society for All*": the future of digital in Europe

The Communication of November 10, 1999, n. 539 entitled "Towards a new framework for Electronic Communications infrastructure and associated services" underlined that «an advanced communications industry is a pre-condition of Europe's transition to the information Society with all the social and economic benefits which that entails. Information Society industries already contribute around 15% to growth of the EU's Gross Domestic Product and create 1 out of every 4 new jobs in European economy»[46].

Toward the end of the 20th century, the information society assumed a central role in the affirmation of the competitiveness of the European economy by affecting the reduction of disparities between regions and increasing social cohesion. However, these results are only achievable if «information society services are available for everybody in all regions of the EU»[47]; to do so, the «existing obstacles for access to information society, whether economic, educational, social, cultural or geographical, must be addressed. Co-ordinated public policy measures are needed to

44. Building the European information society for us all: Final policy report of the high-level expert group, p. 19.

45. P. Lindroos, M. Pinkhasov, *Information society: The ICT challenge*, in *Organisation for Economic Cooperation and Development*, December 2003, p. 27.

46. COM (1999) 539, p. ii.

47. COM (1999) 539, p. ii.

overcome these obstacles to ensure the beneficial effects of information technologies»[48].

In the coming years, the problem of access to digital technologies will be a central issue for the institutions of the European Union to concretely and fully implement the digital single market, in fact, «efficient access to communication infrastructure is vital for business to participate in the digital economy»[49].

Currently, the role that the Internet has in defining a different market and new opportunities appears overwhelming, breaking traditional market structures and «providing a common platform for the delivery of a wide range of services. It is blurring the distinction between voice, image and data transmission services, changing radically traditional pricing models for communications services, and challenging existing regulatory structures»[50].

In 1999, in December, the European Commission issued a Communication entitled "eEurope – An Information Society For All"[51], which argued that the changes associated with the information society are the most significant since the industrial revolution and are changes of a global dimension; «they are not just about technology. They will affect everyone, everywhere. Bringing communities, both rural and urban, closer together, creating wealth, sharing knowledge, they have huge potential to enrich everyone's lives»[52], and in a broad sense analyzed how «the world economy is moving from a predominantly industrial society to a new set of rules – the information society»[53].

Such changes are defining the emergence of the "new economy" and «the underpinning dynamics of the new economy are strong. Digital technologies make accessing, processing, storing and transmitting information increasingly cheaper and easier. The sheer scale of information available creates huge opportunities for its exploitation through the development of new products and services. Transforming digital information into economic and social value is the basis of the new economy, creating new industries, changing others and profoundly affecting citizens' lives. Enterprises in all sectors are starting to transform their business into e-business – requiring restructuring of the entire company»[54].

48. COM (1999) 539, p. iii.
49. COM (1999) 539, p. iii.
50. COM (1999) 539, p. iv.
51. COM (1999) 687, December 8, 1999.
52. COM (1999) 687, p. 2.
53. COM (1999) 687, p. 4.
54. COM (1999) 687, p. 4.

This new economy can only be successful if consumers have the ability to exploit its benefits: «for this, they need to acquire the skills that will enable them to access the information they seek and interact successfully on the Internet. Consumer confidence must be built if markets are to develop»[55]. Simultaneously, public policies must evolve to ensure that the legal context is able to support business development and define a framework conducive to consumer confidence.

However, the Commission notes general obstacles to the information society that require solutions, namely, «generally expensive, insecure and slow access to the Internet and e-commerce; an insufficient digitally literate on-line population; lack of a sufficiently dynamic, entrepreneurial, service-oriented culture; a public sector which is not playing a sufficiently active role in enabling the development of new applications and services»[56].

Therefore, the EU and Member States have defined 10 actions to be pursued, which are as follows: 1. European youth into the digital age; 2. Cheaper Internet access; 3. Accelerating E-Commerce; 4. Fast Internet for researchers and students; 5. Smart cards for secure electronic access; 6. Risk capital for high-tech SMEs; 7. eParticipation for the disabled; 8. Healthcare online; 9. Intelligent transport; 10. Government online. For each of these

55. COM (1999) 687, p. 4.

56. COM (1999) 687, p. 5. The European Parliament resolution on the "Next Generation Internet: the need for an EU research initiative" (2000/2102(INI)) considers that «the following key areas of the Internet's evolution should be factored, inter alia, into any research strategy: – the availability of abundant, low-cost, expanded high bandwidth infrastructure to which access is on equitable terms; – a requirement for a significant improvement in the quality of Internet delivery (its speed, reliability, and security), and its "value added" potential (e.g. collecting payment, handling customised requirements); – an increase in the number of remote device connections, operating automatically, without user intervention (e.g. connecting baby monitors, domestic appliances, automobiles); – a large escalation in the amount of wireless communications; – the emergence of many dedicated service channels (i.e. the conventional "Internet" will become just one service among many)» (point n. 9) and «urges the EU to promote research and coordinated development efforts, inter alia, within the following areas of exploitation of electronic communications infrastructure with high capacity, always-on connections and high mobility: – interoperability and open architectures; – the effective use of the capacity offered by expanded bandwith opportunities; – the optimum types of software and hardware to be used, leading to potential new standards; – the further development of photonics technology for the communications infrastructure, particularly to relieve the potential bottleneck in switching and routing; – the new architectural framework of a very high capacity Internet; – how a high capacity backbone network will interface with the mobile infrastructure; – how content delivery, availability and security will be managed; – how information search and retrieval can be facilitated; – a distributed Domain Name Server route-service under the control of separate commercial entities» (point n. 10).

actions, the context of reference and the related problems and opportunities are analyzed, as well as targets for the early 2000s.

More in details, "European youth into the digital age" highlights the need for digital culture to become a basic knowledge for all young people, including through the use of technologies in schools; "Cheaper Internet access" underlines that greater competition will reduce prices for Internet access and increase the number of operators on the market. "Accelerating E-Commerce"[57] underlines that compared to the USA, the European Union does not fully harness the potential of e-commerce, and it is necessary to accelerate «the growth of e-commerce, especially for SMEs, so that they can consider the whole European market as their market. This requires a reliable Internal Market legal framework, which provides legal security, removes barriers to cross-border services, encourages on-line innovation and consumer trust. To this end, a number of legal initiatives are under way at Community level. Their rapid adoption and implementation should be a priority. Europe also needs public administrations to lead by example by facilitating and using electronic procurement, including the use of open and compatible systems and to ensure efficient physical distribution channels (e.g. postal and delivery services) to support online trade»[58]. "Fast Internet for researchers and students" stresses that «universities and research laboratories have been in the forefront of exploiting the Internet, which has brought enormous benefits to the academic and research community. Communicating via e-mail and accessing information over the Internet are now key elements of academic and professional life. However, online collaboration is not an established practice in Europe»[59]; while "Smart cards for secure electronic access" defines smart cards that guarantee access to electronic payments, health services, and public

57. Regarding e-commerce see also Communication from the Commission, COM (1997) 157, April 14, 1997, "A European Initiative in Electronic Commerce".

58. COM (1999) 687, p. 9. To this end, the targets they sell defined by the end of 2000 are: «– The Council and the European Parliament should make every effort to ensure that the remaining e-commerce-related directives are in place. – The Commission will propose changes to the EU's public procurement legal framework to allow the use of electronic means in all public procurement procedures and transactions. Member States should actively encourage the use of electronic means for public procurement. – Member States and the Commission should encourage online dispute settlement and alternative consumer redress procedures. – Member States and the Commission should launch a campaign to help SMEs "go digital" by facilitating the transfer of technical know-how through traineeships and a network of centres of expertise. – The Commission will support the creation of a EU top-level domain to encourage cross-border electronic commerce within the EU and assist those companies wishing to establish an EU-wide Internet presence».

59. COM (1999) 687, p. 10.

transport that can be used anywhere; however, this requires the construction of a united European structure.

"Risk capital for high-tech SMEs" is specifically focused on the need for risk capital for high-tech SMEs because the European Union does not yet have a thriving capital market, unlike the USA, for innovative ideas. Instead, «availability of early stage finance is vital in a world which is transforming rapidly into a new economy and where creativity, access to finance, and speed to market are among the major determinants of competitive advantage. Unless the European Union and the Member States can provide the right environment for ideas to be commercially developed and financed in the Union, they will go elsewhere – or be left undeveloped, and the benefit lost»[60].

With "eParticipation for the disabled" the European Commission wants to ensure that all actions undertaken for the development of the information society are inclusive: «developments in digital technologies offer extensive opportunities to overcome barriers (socio-economic, geographical, cultural, time, etc.) for people with disabilities. Accessible technologies which address their specific needs enable their participation in social and working life on an equal basis. A challenge for the coming years is thus to reduce the remaining gaps between technologies and this user group» considering Design-for-All principles (or "Universal Design") as «an approach that implies taking account of specific needs of disabled in the design process»[61].

"Healthcare online" focuses on a «double challenge: to improve the quality and accessibility of health care for all the citizens of the Union, whilst constraining overall costs», which is «impossible to meet without the deployment and widespread use of fully integrated, interoperable and modernised health systems. Digital technologies can improve the productivity and scope of health care»[62].

"Intelligent transport" underlines the importance of making transport safer and improving its quality[63] because «effective use of traffic management and information services has already reduced pollutant emissions, fuel consumption and journey time»[64].

Finally, "Government online" highlights that it is necessary to «make public information more easily accessible by extending and simplifying Internet access» because «all European citizens and businesses have an

60. COM (1999) 687, p. 12.

61. COM (1999) 687, p. 13.

62. COM (1999) 687, p. 14.

63. See S. Zunarelli, *Il Diritto dei trasporti come "pioniere" dell'elaborazione giuridica*, in Aa.Vv., *Anuario de estudios maritimos*, Thomson Reuters Aranzadi, 2022.

64. COM (1999) 687, p. 15.

interest in better and easier access to public sector information. One way to achieve this is by making better use of the Internet. Better public information online would make the Internet more relevant to daily lives and so boost the number of Internet users and thereby have spill-over benefits of wider participation in the Information Society»[65].

3. The 2000s: Different plans for information society

At the beginning of 2000, the European Commission issued other Communications that analyzed the progress made for the affirmation of the information society, while defining further steps to be taken.

In 2001, the Communication entitled "eEurope 2002: Impact and Priorities"[66] reported that «nearly one third of EU homes are now connected to the Internet and nearly two thirds of Europeans now have a mobile phone. Almost half of workers use computers in their jobs. Electronic commerce between companies is growing and forcing companies to restructure their businesses», but «to realise the potential of the new economy, there is a need for structural reform»[67], precisely because the Internet represents a large reality that has an influence on all the different sectors of the economy.

The Communication reports a series of interesting data on the diffusion of the Internet, emphasizing that «internet penetration at home is showing encouraging levels of growth. In the half year between March and October 2000 penetration rates at home increased from an average of 18% to 28%. Although there are continuing differences between the Member States, those with the lowest Internet penetration have experienced the fastest growth. Many people in Europe access the Internet in non-domestic environments, particularly in work, at school or in college. When these are included, the overall total of Internet users in the EU comprises about 40% of the population»[68].

Internet access costs improved as well, «the OECD has estimated that between March and September costs for 20 hours a month at off-peak times (representative of private household use) reduced by an average of 8.6% in the EU. For 40 hours at peak rates (the more relevant costs for business), prices have fallen by 23.0% in six months. Nevertheless crucial differences

65. COM (1999) 687, p. 16.
66. COM (2001) 140, March 13, 2001.
67. COM (2001) 140, p. 3.
68. COM (2001) 140, p. 6.

in costs remain between Member States, which are broadly correlated with penetration rates»[69]. Internet access has increased in schools; in February 2001, it was calculated that «on average, for educational purposes, 94% of European schools were equipped with computers and 79% connected to the Internet»[70]. Meanwhile, «5.6% of workers use telework, although significant differences exist between Member States. Denmark is well ahead of all others with 17.6% of workers teleworking regularly or occasionally»[71].

With reference to electronic commerce in Europe, less than 5% of users buy products or services on the web, although businesses are active in electronic commerce, especially with reference to business-to-business e-commerce.

The analyses focus on measuring the impact of technologies on markets and employment, while the impact on society appears difficult to measure. In general, «new technologies require a learning process before they are well used. However, it is not just a question of learning how to use new technologies, it is also a question of adapting old habits and practices. Investment in digital technologies will only show its full potential for efficiency gains if the institutions, concepts and operating practices of the old economy are adapted to make full use of these possibilities»[72].

The Communication identifies eight priorities requiring intervention: first, the "New framework for electronic communication services" because «the ongoing liberalisation of the telecommunications market is the EU's main tool to create the essential infrastructures for a dynamic new economy, providing new services and lower prices for the end-users»[73]; second, the "High speed infrastructure" that requires a favorable regulatory framework for private operators to create a competitive environment. Third, "eLearning and eWorking skills" to focus on insufficient IT and telematic literacy in schools and employment so as to consider urgent interventions for «the training of teachers; the adaptation of school curricula to fully exploit the potential of the Internet for education and innovative pedagogical methods; the assurance of access to high quality multimedia resources through broadband connections»[74].

Fourth, "e-commerce" and analyzing how the legislative framework for electronic commerce is a central for the sector's development increase in consumer confidence, which highlights «the cross-border dimension of the Internet brings into play a series of important issues in the field of jurisdiction

69. COM (2001) 140, p. 6.
70. COM (2001) 140, p. 8.
71. COM (2001) 140, p. 9.
72. COM (2001) 140, p. 11.
73. COM (2001) 140, p. 12.
74. COM (2001) 140, p. 15.

and applicable law at global level. However more action is needed in non-regulatory areas. The rapid development of online dispute settlement systems and codes of conduct for e-commerce in the EU and at global level is a matter of urgency to increase consumer confidence and business predictability»[75].

Fifth is "e-Inclusion" i.e., the importance that «disadvantaged people are not left behind. The emerging risks of digital divide underline the urgency of preventive actions for specific target groups mobilising both public and private actors»[76].

Sixth is "e-Government", emphasizing that the «EU institutions and national public administrations should make every effort to use information technology to develop efficient services for European citizens and business»[77]. Seventh is "Secure networks" i.e., initiatives to prevent the danger of network sabotage. Finally, "Mobile Communications", which has seen «large growth rates in the European population. Overall penetration rates are now over 60% in the Union. These high rates should help to give Europe a strong lead in mobile Internet when the 3rd generation (3G) networks are rolled out. However, preparation for 3G has been hampered by the high cost of licences in some Member States which has coincided with uncertainty in the high tech stock market»[78].

The European Commission underlines that «there is a further need to stimulate the use of the Internet and to foster structural reform in order to reap the full benefits of the new economy»[79].

As analyzed, «in the last decade, a more complex and holistic way of looking at ICT, and at their potential contribution to economic and social life, has progressively emerged» through «a more complex and multidimensional view on the relevant dimensions and mechanisms governing the relationship between ICT and the economy. In this enlarged perspective, the relationship between ICT and the economy becomes less strictly technological in nature, less linear and deterministic, and mediated by a variety of contextual (economic, social and cultural) factors affecting the ways, and the extent to which, the new opportunities offered by ICT can be actually appropriated and exploited by individuals, organizations, economies and societies at large»[80].

75. COM (2001) 140, p. 16. With reference to financial disputes in the Italian legal system N. Soldati, *L'arbitro per le controversie finanziarie (ACF) tra ruolo di regolazione del mercato finanziario e di conformazione degli intermediari*, in *Contratto e impresa*, 2022, n. 2.

76. COM (2001) 140, p. 16.

77. COM (2001) 140, p. 17.

78. COM (2001) 140, p. 19.

79. COM (2001) 140, p. 20.

80. R. Evangelista, P. Guerrieri, V. Meliciani, *The economic impact of digital technologies in Europe*, in *Economics of Innovation and New Technology*, 2014, n. 8, p. 803.

Subsequently, on May 28, 2002, the European Commission issued Communication n. 263 entitled "eEurope 2005: an information society for all" aiming to «provide a favourable environment for private investment and for the creation of new jobs, to boost productivity, to modernise public services, and to give everyone the opportunity to participate in the global information society. eEurope 2005 therefore aims to stimulate secure services, applications and content based on a widely available broadband infrastructure»[81].

Following the previous plan, it is highlighted that «the information society has much untapped potential to improve productivity and the quality of life. This potential is growing due to the technological developments of broadband and multi-platform access, i.e. the possibility to connect to the Internet via other means than the PC, such as digital TV and 3G. These developments are opening up significant economic and social opportunities»[82]; to create a knowledge economy, «eEurope 2002 focused on extending Internet connectivity in Europe. In order to generate growth, connectivity needs to be translated into economic activities»[83].

To develop these new opportunities, a virtuous public-private mechanism is needed, presupposing a favorable legal framework for investments and measures that favor an increase in demand from private individuals to support the necessary investments. Indeed, «eEurope 2005 applies a number of measures to address both sides of the equation simultaneously. On the demand side, actions on e-government, e-health, e-learning and e-business are designed to foster the development of new services. In addition to providing both better and cheaper services to citizens, public authorities can use their purchasing power to aggregate demand and provide a crucial pull for new networks. On the supply side, actions on broadband and security should advance the roll-out of infrastructure»[84].

Specifically, «the eEurope action plan is based on two groups of actions which reinforce each other. On the one hand, it aims to stimulate services, applications and content, covering both online public services and e-business; on the other hand, it addresses the underlying broadband infrastructure and security matters»[85].

This action plan «comprises four separate but interlinked tools. Firstly,

81. COM (2002) 263, p. 2.

82. COM (2002) 263, p. 2.

83. COM (2002) 263, p. 6.

84. COM (2002) 263, p. 3. For more details on e-government see p. 9, on e-learning see p. 11, on e-health see p. 12 and on dynamic e-business environment see p. 13.

85. COM (2002) 263, p. 3.

policy measures to review and adapt legislation at national and European level; to ensure legislation does not unnecessarily hamper new services; to strengthen competition and interoperability; to improve access to a variety of networks; and, to demonstrate political leadership». Secondly, the plan «will facilitate the exchange of experience, of good practices and demonstration projects, but also of sharing the lessons from failures; thirdly, policy measures will be monitored and better focussed by benchmarking of the progress made in achieving the objectives and of the policies in support of the objectives»[86]. Finally, the plan aims to generate synergies between the various proposed actions.

The 2005 Communication "i2010 - A European Information Society for growth and employment" stresses that the «European Council called knowledge and innovation the engines of sustainable growth and stated that it is essential to build a fully inclusive information society, based on the widespread use of information and communication technologies (ICT) in public services, SMEs and households»[87].

Data provided by the European Commission in 2005 report that «a quarter of EU GDP growth and 40% of productivity growth are due to ICT»[88], in fact «the digital convergence of information society and media services, networks and devices is finally becoming an everyday reality: ICT will become smarter, smaller, safer, faster, always connected and easier to use, with content moving to three-dimensional multimedia formats»[89].

Proactive policies are needed «to respond to the fundamental changes in technology. Digital convergence requires policy convergence and a willingness to adapt regulatory frameworks where needed so they are consistent with the emerging digital economy»[90].

In consideration of this, i2010 outlines «broad policy orientations. It promotes an open and competitive digital economy and emphasises ICT as a driver of inclusion and quality of life»[91]: the i2010 proposes three priorities: «i) the completion of a Single European Information Space which promotes an open and competitive internal market for information society and media; ii) strengthening Innovation and Investment in ICT research to promote growth and more and better jobs; iii) achieving an Inclusive European Information Society that promotes growth and jobs in a manner that is

86. COM (2002) 263, p. 4.
87. Communication from the Commission, COM (2005) 229, June 1, 2005, p. 3.
88. COM (2005) 229, p. 3.
89. COM (2005) 229, p. 3.
90. COM (2005) 229, p. 3.
91. COM (2005) 229, p. 3.

consistent with sustainable development and that prioritises better public services and quality of life»[92].

The definition of the "Single European Information Space" sets four challenges: «speed: faster broadband in Europe services to deliver rich content such as high definition video; rich content: increased legal and economic certainty to encourage new services and on-line content; interoperability: enhancing devices and platforms that "talk to one another" and services that are portable from platform to platform; security: making internet safer from fraudsters, harmful content and technology failures to increase trust amongst investors and consumers»[93]. The goal is to offer «affordable and secure high bandwidth communications, rich and diverse content and digital services»[94].

Regarding "Innovation and Investment in ICT", the «ICT sector is a major contributor to the economy, while the adoption and skillful application of ICT is one of the largest contributors to productivity and growth throughout the economy, leading to business innovation in key sectors»[95]. For ICTs to continue to be a source of employment and growth, substantial investments are necessary in research and innovation considering that Europe currently invests less in these aspects than the United States and Japan.

Additionally, investments in research and innovation must be accompanied by greater diffusion of ICT, «the benefits of ICT come from embedding them into products and services and the adoption of new business models, organisational change and skills. Businesses are getting productivity gains from ICT but still face a lack of interoperability, reliability and security; difficulties to reorganise and integrate ICT into the workplace and high cost of support. SMEs in particular have difficulties to adopt ICT»[96].

The growing use of ICT will give life to a "new era of 'e-business solutions'" based «on integrated ICT solutions, secure web-services and "collaboration tools" to raise worker productivity. New developments indicate that the business use of ICT will increase in the next years. It is also essential to adapt the working environment through efficient use of ICT in the workplace and for a flexible organisation of safe and high-quality work»[97].

Finally, "Inclusive European Information Society" analyzes how the development of ICT grows with its usage. The i2010 strategy aims at «making sure that ICT benefit all citizens; making public services better,

92. COM (2005) 229, p. 4.
93. COM (2005) 229, p. 5.
94. COM (2005) 229, p. 5.
95. COM (2005) 229, p. 6.
96. COM (2005) 229, p. 7.
97. COM (2005) 229, p. 7.

more cost effective and more accessible; and improving quality of life»[98]. The Communication finds that although the diffusion of ICTs has significantly increased, over half of the population either does not have access to them or does not take full advantage of the access; thus, «making ICT products and services more accessible, including in regions lagging behind, is an economic, social, ethical and political imperative. In i2010, strong emphasis is given to full participation and to providing people with basic digital competence»[99]. This aids the improvement of the quality of life for citizens, for example, improving citizens' health services, further, «ICT can help to make transport safer, cleaner and more energy efficient»[100].

The aim is an «Information Society that is inclusive, provides high quality public services and promotes quality of life»[101].

The strategy thus outlined requires actions by the European institutions, in particular by the European Commission, through legislative proposals aimed at updating regulatory frameworks, and the Member States who must create internal national programs that consider the information society a priority.

4. The European Commission Communications of 2010: "*A strategy for smart, sustainable and inclusive growth*" and "*A Digital Agenda for Europe*"

The role that digitization would play in Europe's future is further analyzed in the Communication of the European Commission of March 3, 2010, entitled "A strategy for smart, sustainable and inclusive growth"[102], which focuses on the evolution prospects of the Union toward 2020 by defining the following targets: «75% of the population aged 20-64 should be employed. 3% of the EU's GDP should be invested in R&D. The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right). The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree. 20 million less people should be at risk of poverty»[103]. The Communication additionally defines three priorities for the growth of Europe for 2030, "mutually reinforcing priorities", they are: «Smart growth:

98. COM (2005) 229, p. 9.
99. COM (2005) 229, p. 9.
100. COM (2005) 229, p. 10.
101. COM (2005) 229, p. 10.
102. COM (2010) 2020.
103. COM (2010) 2020, p. 5.

developing an economy based on knowledge and innovation. Sustainable growth: promoting a more resource efficient, greener and more competitive economy. Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion»[104].

To achieve these objectives, the Commission defines "seven flagship initiatives to catalyse progress" under each priority theme: "Innovation Union" aims «to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs»[105]; "Youth on the move" aims «to enhance the performance of education systems and to facilitate the entry of young people to the labour market»[106]; "A digital agenda for Europe" aims «to speed up the roll-out of high-speed internet and reap the benefits of a digital single market for households and firms»[107]; "Resource efficient Europe" aims «to help decouple economic growth from the use of resources, support the shift towards a low carbon economy, increase the use of renewable energy»[108]; "An industrial policy for the globalisation era" aims «to improve the business environment, notably for SMEs, and to support the development of a strong and sustainable industrial base able to compete globally»[109]; "An agenda for new skills and jobs" aims «to modernise labour markets and empower people by developing their of skills throughout the lifecycle with a view to increase labour participation and better match labour supply and demand, including through labour mobility»[110]; and "European platform against poverty" aims «to ensure social and territorial cohesion such that the benefits of growth and jobs are widely shared and people experiencing poverty and social exclusion are enabled to live in dignity and take an active part in society»[111].

These objectives are ambitious, but result from the impact of the economic-financial crisis on the economic growth of the Union[112], in fact,

104. COM (2010) 2020, p. 5.
105. COM (2010) 2020, p. 5.
106. COM (2010) 2020, p. 5.
107. COM (2010) 2020, p. 6.
108. COM (2010) 2020, p. 6.
109. COM (2010) 2020, p. 6.
110. COM (2010) 2020, p. 6.
111. COM (2010) 2020, p. 6.
112. COM (2010) 2020, p. 7, stresses «the steady gains in economic growth and job creation witnessed over the last decade have been wiped out – our GDP fell by 4% in 2009, our industrial production dropped back to the levels of the 1990s and 23 million people – or 10% of our active population – are now unemployed. The crisis has been a huge shock for millions of citizens and it has exposed some fundamental weaknesses of our economy. The

the Commission clarifies that «as an immediate priority, the Commission charts what needs to be done to define a credible exit strategy, to pursue the reform of the financial system, to ensure budgetary consolidation for long-term growth, and to strengthen coordination within the Economic and Monetary Union. Stronger economic governance will be required to deliver results. Europe 2020 will rely on two pillars: the thematic approach outlined above, combining priorities and headline targets; and country reporting, helping Member States to develop their strategies to return to sustainable growth and public finances»[113].

The Commission wants to mark the path for entry "into a new economy"[114], that is able to «for our own and future generations to continue to enjoy a high-quality of healthy life, underpinned by Europe's unique social models»[115].

The seven flagship initiatives define a framework for the growth of the Union. For our study the most interesting is "A Digital Agenda for Europe", which aims to «deliver sustainable economic and social benefits from a Digital Single Market based on fast and ultra fast internet and interoperable applications, with broadband access for all by 2013, access for all to much higher internet speeds (30 Mbps or above) by 2020, and 50% or more of European households subscribing to internet connections above 100 Mbps»[116].

Considering this general goal at the European level, the Commission will work «to provide a stable legal framework that stimulate investments in an open and competitive high-speed internet infrastructure and in related services; to develop an efficient spectrum policy; to facilitate the use of the EU's structural funds in pursuit of this agenda; to create a true single market for online content and services (i.e. borderless and safe EU web services and digital content markets, with high levels of trust and confidence, a balanced regulatory framework with clear rights regimes, the fostering of multi-territorial licences, adequate protection and remuneration for rights holders and active support for the digitisation of Europe's rich cultural heritage, and to shape the

crisis has also made the task of securing future economic growth much more difficult. The still fragile situation of our financial system is holding back recovery as firms and households have difficulties to borrow, spend and invest. Our public finances have been severely affected, with deficits at 7% of GDP on average and debt levels at over 80% of GDP – two years of crisis erasing twenty years of fiscal consolidation. Our growth potential has been halved during the crisis. Many investment plans, talents and ideas risk going to waste because of uncertainties, sluggish demand and lack of funding».

113. COM (2010) 2020, p. 6.

114. COM (2010) 2020, p. 10.

115. COM (2010) 2020, p. 10.

116. COM (2010) 2020, p. 14.

global governance of the internet; to reform the research and innovation funds and increase support in the field of ICTs so as to reinforce Europe's technology strength in key strategic fields and create the conditions for high growth SMEs to lead emerging markets and to stimulate ICT innovation across all business sectors; to promote internet access and take-up by all European citizens, especially through actions in support of digital literacy and accessibility»[117]. Simultaneously, all Member States need «to draw up operational high-speed internet strategies, and target public funding, including structural funds, on areas not fully served by private investments; to establish a legal framework for co-ordinating public works to reduce costs of network rollout; to promote deployment and usage of modern accessible online services (e.g. e-government, online health, smart home, digital skills, security)»[118].

The general objectives described in the initiative are explained in more detail in another Communication entitled "A Digital Agenda for Europe"[119] of May 19, 2010, which discusses how ICTs and the Internet are acquiring an increasingly central role[120] in socioeconomic activities.

However, being able to derive "sustainable economic and social benefits"[121] from the diffusion of the Internet and Digital Single Market requires the intervention of the Union in favor of citizens and businesses «through a well-functioning virtuous cycle of activity. Attractive content and services need to be made available in an interoperable and borderless internet environment. This stimulates demand for higher speeds and capacity, which in turn creates the business case for investments in faster networks. The deployment and take-up of faster networks in turn opens the way for innovative services exploiting higher speeds»[122]. This flow of activity «can be largely self-reinforcing. It requires a business environment that fosters investments and entrepreneurship»[123].

117. COM (2010) 2020, p. 14.

118. COM (2010) 2020, p. 14.

119. COM (2010) 245.

120. COM (2010) 245, p. 4 underlines «the ICT sector is directly responsible for 5% of European GDP, with a market value of € 660 billion annually, but it contributes far more to overall productivity growth (20% directly from the ICT sector and 30% from ICT investments). This is because of the high levels of dynamism and innovation inherent in the sector, and the enabling role the sector plays in changing how other sectors do business. At the same time, the social impact of ICT has become significant – for example, the fact that there are more than 250 million daily internet users in Europe and virtually all Europeans own mobile phones has changed life style».

121. COM (2010) 245, p. 3.

122. COM (2010) 245, p. 4.

123. COM (2010) 245, p. 4.

The Digital Agenda for Europe emphasizes that in Europe there are «a patchwork of national online markets, and Europeans are prevented by solvable problems from enjoying the benefits of a digital single market»[124]; considering this fragmentation, the legislative intervention is oriented toward defining a new regulatory framework.

The Digital Agenda defines seven problem areas: fragmented digital markets; lack of interoperability; rising cybercrime and risk of low trust in networks; lack of investment in networks; insufficient research and innovation efforts; lack of digital literacy and skills; and missed opportunities in addressing societal challenges. Thus, the agenda «frames its key actions around the need to systematically tackle these seven problem areas, which as a horizontal initiative spans, the three growth dimensions set out in Europe 2020»[125].

Each problem area is analyzed in detail and actions are proposed, which commit the European Commission in the future, for example, in the area called "a vibrant digital single market"; the Commission identifies that first «the creation of attractive online content and services and its free circulation inside the EU and across its borders are fundamental to stimulate the virtuous cycle of demand. However, persistent fragmentation is stifling Europe's competitiveness in the digital economy. It is therefore not surprising that the EU is falling behind in markets such as media services, both in terms of what consumers can access, and in terms of business models that can create jobs in Europe»[126]; second, «despite the body of key single market legislation on eCommerce, e-Invoicing and eSignatures, transactions in the digital environment are still too complex, with inconsistent implementation of the rules across Member States»[127]; and third, consumers and businesses are faced with «considerable uncertainty about their rights and legal protection when doing business on line. Fourth, Europe is far from having a single market for telecom services»[128].

This determines the need to rethink the traditionally understood single market, which is declining in the internet era.

To support and implement this single market, a series of actions are needed in different areas, namely: "opening up access to content" i.e., facilitating access for content users while maintaining a high trust level among rights

124. COM (2010) 245, p. 5.
125. COM (2010) 245, p. 6.
126. COM (2010) 245, p. 7.
127. COM (2010) 245, p. 7.
128. COM (2010) 245, p. 7.

holders so as to create a virtuous demand-supply circle for companies[129]; "making online and cross border transactions straightforward" i.e. European consumers «are still not getting the gains of price and choice that the single market should offer because online transactions are too complicated. Fragmentation also limits demand for cross-border eCommerce transactions»[130], this highlights «the urgency of tackling the regulatory barriers holding back European businesses from trading cross-border»[131]: only in an integrated payment market, «will it be possible for enterprises and consumers to rely on safe and efficient payment methods»[132]; "building digital confidence" means ensuring that users are aware of their digital rights and that «users must be able to find simple, codified explanations of their rights and obligations, set out in a transparent and understandable way»[133]; in fact, lack of trust in the online environment hinders its development. "Reinforcing the single market for telecommunications services" means the commission's priority «will be the swift and consistent implementation of the amended regulatory framework, together with greater co-ordination of spectrum use and, where necessary, harmonisation of spectrum bands, to create economies of scale in equipment and service markets. Since the single market demands that similar regulatory issues be given correspondingly similar treatment the Commission will prioritise the provision of guidance on key regulatory concepts under the electronic communications rules»[134].

The overall scheme of the legislative interventions foreseen in the seven areas is presented in Annex 1 of the Communication and involves a complex and articulated context of legislative proposals.

What emerges from the overall analysis of the agenda is the need for market-, business-, and consumer-oriented actions because only a broad intervention can produce effective and efficient results.

129. COM (2010) 245, pp. 7-9.
130. COM (2010) 245, p. 10.
131. COM (2010) 245, p. 10.
132. COM (2010) 245, p. 10.
133. COM (2010) 245, p. 11.
134. COM (2010) 245, p. 12.

2. Affirmation of the Digital Single Market and related regulatory frameworks

Summary: 1. Digital Single Market Strategy for Europe – 2. Digital divide and e-Inclusion: challenges for digital participation – 3. Public regulation of connectivity and 5G as a key asset for Europe's growth – 4. The role of Digital Platforms and the affirmation of the Data Economy.

1. Digital Single Market Strategy for Europe

The regulatory evolution that characterizes the current information society has more recently come to drive a more detailed definition of the Digital Single Market. An analysis of the new prospects for regulating the Digital Single Market at the European level must fully account for of the communication from the Commission, May 6, 2015, "A Digital Single Market Strategy for Europe"[1], which focuses on «a key part of the EU's

1. COM (2015) 192. Studies on the subject: E. Carbonara, M.R. Tagliaventi (eds.), *SMEs in the Digital Era*, Edward Elgar, 2023; F. Ferri, *Il bilanciamento dei diritti fondamentali nel mercato unico digitale*, Giappichelli, 2022; M. Suska, *The European Union digital single market: Europe digital transformation*, Routledge, 2022; P. João, *The New Copyright in the Digital Single Market Directive: A Critical Look*, in *European Intellectual Property Review*, 2020, n. 1; J. Basedow, *The EU Digital Single Market Strategy and Insurance Law*, in *The Journal of Business Law*, 2018, n. 6; N. Bodiroga-Vukobrat, A. Pošćić, *"Old economy" restrictions in the digital market for services*, in *Journal for International and European Law, Economics and Market Integrations*, 2018, n. 2; S. Schroff, J. Street, *The politics of the Digital Single Market: culture vs. competition vs. copyright*, in *Information, Communication & Society*, 2018, n. 10; J. Hoffman, *Crossing borders in the digital market: a proposal to and copyright territoriality and geo-blocking in the European Union*, in *The George Washington International Law Review*, 2017, n. 1; K. Havu, *The Eu digital Single Market from a consumer standpoint: how do promises meet means?*, in *Contemporary Readings in Law and Social Justice*, 2017, n. 2; A. De Franceschi (eds.), *European contract law and the digital single market: the implications of the digital revolution*, Intersentia, 2016; W. Paardekooper, M. van

strategy to prepare itself for the future and to continue to deliver high living standards for its population»[2].

Prior to the strategy definition, in 2012, the European Economic and Social Committee issued an opinion on "The digital market as a driver for growth", stressing that «the market for the market's sake is not an end in itself. ICTs must be a means to serve the economy and must not threaten our economic, social, human, and cultural gains»[3]. In 2014, a European Commission communication, "An Investment Plan for Europe"[4] highlighted the urgency of funding following the economic and financial crisis and identified the need to implement actions related to the needs of the Digital Single Market.

The European Union stressed that «what we need is confidence in the overall economic environment; predictability and clarity in policy-making and the regulatory framework; effective use of scarce public resources; trust in the economic potential of investment projects under development; and sufficient risk-bearing capacity to encourage project promoters, unlock investment and entice private investors»[5]; hence, these problems require actions by public authorities at all levels of government as only highly coordinated deliberate actions can provide a thriving Digital Single Market.

In this sense, both traditional and digital markets are fundamental and should be exploited to the fullest extent so that they can become «a launch pad for companies»[6], and Europe needs «to develop a truly connected Digital Single Market, including through swift and ambitious legislative steps in the areas of data protection, telecoms regulation and by modernising and simplifying copyright and consumer rules for online and digital purchases»[7].

The Digital Single Market should deliver «trust and security in online transactions, interoperability of different technological solutions and access to digital resources and infrastructures»[8].

de Ven, A. van Esdonk, A, Y. Cattel, *Tax Considerations for the European Union's Digital Single Market Strategy*, in *Intertax*, 2016, n. 6-7; A. Tarrant, L. Di Mauro, *Increasing the Benefits from the Digital Single Market*, in *European Networks Law and Regulation Quarterly*, 2016, n. 2.

2. COM (2015) 192, p. 17.

3. Point 1.3, Opinion of the European Economic and Social Committee on "The digital market as a driver for growth".

4. COM (2014) 903, November 26, 2014.

5. COM (2014) 903, p. 4. See P. Manzini, *Diritto antitrust dell'Unione europea*, Giappichelli, 2022.

6. COM (2014) 903, p. 15.

7. COM (2014) 903, p. 15. See F. Ferretti, *Consumers in the Digital Single Market*, in *European Business Law Review*, 2022, n. 33.

8. COM (2014) 903, p. 15.

Simultaneously, consumers should be given «unhindered access to online content and services across Europe without discrimination based on their nationality or their place of residence»[9]. In 2014, the Commission defined the Digital Economy and Social Index (DESI), comprising factors of connectivity, human capital/digital skills, use of internet by citizens, integration of digital technology by businesses, and digital public services[10].

In 2022 the DESI showed that «while most of the Member States are making progress in their digital transformation, the adoption of key digital technologies by businesses, such as artificial intelligence and Big Data remains low, also among the EU frontrunners», but low levels of digital skills may hamper future growth prospects and «deepen the digital divide and increase risks of digital exclusion as more services, including essential ones, are shifted online»[11]. For these reasons, «efforts need to be stepped up to ensure the full deployment of ubiquitous connectivity infrastructure (notably 5G) that is required for highly innovative services and applications. Finland, Denmark, the Netherlands and Sweden continue to be the EU frontrunners. However, the European Semester 2022 cycle identified that digital challenges remain also for most of the frontrunners»[12].

The other Member States «are advancing and there is an overall upward convergence trend in the EU. This means that the EU as a whole continues to improve its level of digitalization, and in particular those Member States that started from lower levels are gradually catching up, by growing at a faster rate»[13].

9. COM (2014) 903, p. 15.

10. Another indicator is the Digital transformation scoreboard, it monitor the transformation of existing industry and enterprises. In particular, the scoreboard adopts national indicators to monitor digital. In 2018 transformation in Europe with a geographic focus and from a macro perspective.

11. Digital Economy and Society Index 2022, p. 7.

12. Digital Economy and Society Index 2022, p. 8.

13. Digital Economy and Society Index 2022, p. 8. The report underlines that «the DESI 2020 discussed the increased use of digital solutions during the Covid-19 pandemic. This trend towards more digitalisation is confirmed by the slightly higher growth rate in the adoption of digital technologies by both citizens and businesses at EU level. Overall, the pandemic is estimated to have accelerated existing trends in remote work worldwide, e-commerce and automation as well as exacerbated labour mobility. These trends, however, have not affected citizens and enterprises in the same manner. Results suggest that the large expansion of telework since the Covid-19 outbreak has been strongly skewed towards high-paid white-collar employment. This reflects the differences in the employment structure where only 33 to 44% of jobs structurally permit teleworking. Individuals for their part, increased online customer interactions during the pandemic from 32% in December 2019 to 55% in July 2020, and more than 1 million ICT specialists entered the market in Europe. Businesses provided

The Communication specifically dedicated to the Digital Single Market starts from the consideration that «the global economy is rapidly becoming digital. Information and Communications Technology (ICT) is no longer a specific sector but the foundation of all modern innovative economic systems»[14]. The ICTs «are transforming the lives we lead, the way we work – as individuals, in business, and in our communities as they become more integrated across all sectors of our economy and society»[15].

It is evident that «Europe has the capabilities to lead in the global digital economy but we are currently not making the most of them. Fragmentation and barriers that do not exist in the physical Single Market are holding the EU back. Bringing down these barriers within Europe could contribute an additional EUR 415 billion to European GDP»[16].

The digital economy can «expand markets and foster better services at better prices, offer more choice and create new sources of employment»[17]: in the Digital Single Market, there may be new business models that stand beside traditional ones.

The global scope available to the Digital Single Market presupposes that the reference regulatory framework is defined at the European level. Therefore, the central element of strategy reflects the definition of the Digital Single Market, «a Digital Single Market is one in which the free movement of goods, persons, services and capital is ensured and where individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence»[18].

This definition absorbs the meaning of "internal market" from Article 26.2 of the Treaty on the Functioning of the European Union, which establishes that «the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured in accordance with the provisions of the Treaties».

Accordingly, in the Digital Single Market, there will be new and different

more fully digitised products and services: 34% before the Covid-19 crisis and 50% during the pandemic; and bought more cloud computing services: 24% before the pandemic in 2019 and 41% in 2021. Significant differences continue to persist between large enterprises and SMEs, given that 72% of large enterprises subscribed to cloud computing services compared to 40% of SMEs» (p. 7).

14. COM (2015) 192, p. 3.
15. COM (2015) 192, p. 3.
16. COM (2015) 192, p. 3.
17. COM (2015) 192, p. 3.
18. COM (2015) 192, p. 3.

realities that will require specific public regulations, and a market will be created in which it will also be necessary to regulate the relations between the various players.

The Digital Single Market Strategy identifies three pillars. First, there is «Better access for consumers and businesses to online goods and services across Europe – this requires the rapid removal of key differences between the online and offline worlds to break down barriers to cross-border online activity». Second, there is «Creating the right conditions for digital networks and services to flourish – this requires high-speed, secure and trustworthy infrastructures and content services, supported by the right regulatory conditions for innovation, investment, fair competition and a level playing field». Third, there is "Maximizing the growth potential of our European Digital Economy – this requires investment in ICT infrastructures and technologies such as cloud computing and Big Data, and research and innovation to boost industrial competitiveness as well as better public services, inclusiveness and skills»[19].

More specifically, referencing the first pillar, "Better access for consumers and businesses to online goods and services across Europe", action is needed «to break down barriers to cross-border online activity including differences in contract and copyright law between Member States and reducing VAT related burden. Part of building consumer trust in cross-border online sales requires affordable and high quality cross-border parcel delivery services, which do not exist today. The Strategy is also about defining an appropriate ecommerce framework and preventing unfair discrimination against consumers and businesses when they try to access content or buy goods and services online within the EU. Discrimination can come in the form of nationality, residence or geographical location restrictions which run counter to the basic principles of the EU»[20].

Starting from this general consideration, the following are necessary: "Cross-border e-commerce rules that consumers and business can trust"[21] because the presence of different, unclear, and complex rules among the various Member States can discourage consumers and businesses. "Affordable high-quality cross-border parcel delivery"[22] can build consumer trust in cross-border online sales while "preventing unjustified geo-blocking"[23] because,

19. COM (2015) 192, p. 4.
20. COM (2015) 192, p. 4.
21. COM (2015) 192, p. 4.
22. COM (2015) 192, p. 5.
23. COM (2015) 192, p. 6; the European Commission state that «Geo-blocking refers to practices used for commercial reasons by online sellers that result in the denial of access to

through them, enterprises «segment markets along national borders (territorial restrictions). By limiting consumer opportunities and choice, geo-blocking is a significant cause of consumer dissatisfaction and of fragmentation of the Internal Market»[24]. Thus, it is "Better access to digital content - A modern, more European copyright framework"[25]. Therefore, «Europe needs a more harmonised copyright regime which provides incentives to create and invest while allowing transmission and consumption of content across borders, building on our rich cultural diversity»[26].

Moreover, «reducing VAT related burdens and obstacles when selling across borders»[27] is necessary so that it will be easier for enterprises to fulfill this obligation.

The second pillar states "Creating the right conditions and a level playing field for advances digital networks and innovative services". Thus, it emerges that a strong, competitive, and dynamic telecommunications sector is needed so that we receive «reliable, trustworthy, high-speed, affordable networks and services that safeguard consumers' fundamental rights to privacy and personal data protection while also encouraging innovation»[28].

This requires "Making the telecoms rules fit for purpose" to ensure effective accessibility through a telecommunications regulatory framework. "A media framework for the 21st century", which refers to the audio-visual landscape, «is affected by rapid technological changes and by the development of new business models for content distribution. Viewers access audio-visual content via the Internet in an increasing variety of ways, and portable devices (such as smart phones) are changing viewing patterns»[29]. "A fit for purpose regulatory environment for platforms and intermediaries" is also needed because platforms play a central role in allowing consumers to find information and businesses to exploit the advantages of the Digital Single Market. Furthermore, «reinforcing trust and security in digital

websites based in other Member States. Sometimes consumers are able to access the website, but still cannot purchase products or services from it. The consumer may also be re-routed to a local website of the same company with different prices or a different product or service. In other cases, where the sale is not denied, geo-localising practices are used as a result of which different prices are automatically applied on the basis of geographic location, for example when online car rental customers in one Member State pay more for the identical car rental in a given destination than online customers in another Member State».

24. COM (2015) 192, p. 6.
25. COM (2015) 192, p. 6.
26. COM (2015) 192, p. 7.
27. COM (2015) 192, p. 8.
28. COM (2015) 192, p. 9.
29. COM (2015) 192, p. 10.

services and in the handling of personal data»[30] is assumed, especially in reference to cyber threats and crimes, because «they often result in disruption of services, fundamental rights violations and undermine citizens' trust in online activities»[31].

The third pillar is focuses on "maximizing the growth potential of the digital economy". In the future, the economy will depend on «integrating digital infrastructure, hardware and software, applications and data», and the digitization of all sectors «will be needed if the EU is to maintain its competitiveness, keep a strong industrial base and manage the transition to a smart industrial and services economy»[32].

For this, the European Union «needs a range of measures to ensure European industries are at the forefront of developing and exploiting ICT, automation, sustainable manufacturing and processing technologies to serve the markets of the future. A digital economy can also make society more inclusive. Citizens and businesses are not currently getting the full benefits from digital services (from e-government, e-health, e-energy to e-transport) that should be available seamlessly across the EU»[33].

Areas of particular interest include "Building a Data Economy", although currently, «fragmented market does not provide sufficient scale for cloud computing, Big Data, data-driven science and the Internet of Things to reach their full potential in Europe»[34]. Thus, "Boosting competitiveness through interoperability and standardization" via interoperability is essential to ensuring effective communications between the various digital components. Notably, an increase in interoperability depends on standardization, and, for this reason, «the Commission will launch an integrated standardization plan to identify and define key priorities for standardization with a focus on the technologies and domains that are deemed to be critical to the Digital Single Market, including essential sectoral interoperability and standards»[35].

"An inclusive e-society" requires an inclusive Digital Single Market in which «citizens and businesses have the necessary skills and can benefit

30. COM (2015) 192, p. 10.

31. COM (2015) 192, p. 12. A phenomenon that deserves particular attention is that of cyberbullying, in relation to the Italian context see M.O. Mantovani, *Profili penali del Cyberbullismo: la L. 71 del 2017*, in *L'indice penale*, 2018, n. 2.

32. COM (2015) 192, p. 13.

33. COM (2015) 192, p. 14. With reference to e-transport M. Musi, *The phenomenon of "MASS": is it time to rethink the current meritime liability regime?*, in *Rivista del diritto della navigazione*, 2021, n. 2.

34. COM (2015) 192, p. 14.

35. COM (2015) 192, p. 16.

from interlinked and multi-lingual eservices, from e-government, e-justice, e-health, e-energy or e-transport»[36].

In summary, the Digital Single Market Strategy affirms the objective of «transforming European society and ensuring that it can face the future with confidence»[37]. The goal of the European Union is to direct the action of the Member States toward a context in which society and businesses can reap the benefits of digitization while minimizing risks.

The "Mid-Term Review on the Implementation of the Digital Single Market Strategy. A Connected Digital Single Market for All"[38] emphasized that many proposals were put forward by the Commission in 2015. However, now, «it is critical for all parties to ensure that the measures are adopted, fully implemented and effectively enforced in a timeframe that is coherent with the fast development of a digital economy»[39]. To this end, «the Commission will bring to bear the full range of policy instruments and funding opportunities to help make this happen, but the full support of Member States, the European Parliament, the Council and stakeholders is essential; otherwise the Digital Single Market will simply not become a reality»[40].

Therefore, issuing legislative acts specifically connected to the development of the Digital Single Market is central as any delays will have impact citizens and businesses in terms of their protections and obligations. It must also be considered that digital technologies are rapidly evolving, which gives rise to new legislative challenges that require continuous changes or adjustments to the regulatory framework[41].

The meaning of joint governmental action at all levels represents a central theme of the mid-term review, which, for example, refers to internet connectivity for all and underlines how Member States must continue to coordinate policies while implementing the EU's economic commitments through a series of funding efforts (i.e., the European Structural and Investment Fund, European Fund for Strategic Investments, the Connecting Europe Facility, and Connecting Europe Broadband Fund)[42].

The need to define a new regulatory environment for the Digital Single Market was also underlined in 2016 by the European Parliament in its

36. COM (2015) 192, p. 16.
37. COM (2015) 192, p. 19.
38. COM (2017) 228, May 10, 2017.
39. COM (2017) 228, p. 2.
40. COM (2017) 228, p. 2.
41. For the analyse the Commission referents also to Europe's Digital Progress Report 2017, commission Staff working document, May 10, 2017, SWD (2017) 160.
42. COM (2017) 228, p. 5.

resolution entitled "Towards a Digital Single Market Act". This resolution called upon the Commission to integrate the Digital Single Market Strategy, arguing that «better regulation requires taking an approach to legislation that is digital by default, principle-based, and technologically neutral; in order to provide room for innovation, it requires an assessment of whether existing legislation, complementary non-regulatory actions and enforcement frameworks, following necessary consultations and impact assessments, are fit for purpose in the digital age, in light of new technologies and new business models, with the aim of overcoming legal fragmentation of the single market, reducing administrative burden, and boosting growth and innovation»[43]. Furthermore, we must consider that «the trust of citizens and businesses in the digital environment is vital to fully unlocking innovation and growth in the digital economy»[44].

Scholars have noted that European institutions and Member-State governments have to redouble their efforts in the next years to create better and larger space for the digital economy to grow. Even if there is a great deal of variation between the performances of different EU economies»[45].

These delays have a significant impact on the economy and may reduce the benefits offered by digitalization to society and enterprises. Additionally, regulating the Digital Single Market requires European Union institutions to reflect deeply on the impacts, pros, and cons of this public regulation.

2. Digital divide and e-Inclusion: challenges for digital participation

The full development of the Digital Single Market requires preparation by the EU via suitable regulatory frameworks capable of influencing the diffusion of digital technologies, which are essential for enterprises and citizens as they seek to fully seize the opportunities and exploit the advantages inherent to the Digital Single Market.

Since the 2000s, the role of Information and Communication Technologies

43. European Parliament Resolution, January 19, 2016, "Towards a Digital Single Market Act" (2015/2147(INI)), point n. 3.

44. European Parliament Resolution, January 19, 2016, "Towards a Digital Single Market Act" (2015/2147(INI)), point n. 4.

45. F. Erixon, P. Lamprechet, *The Next Steps for the Digital Single Market: From Where do We Start?*, European Centre for international political economy, Policy Brief, 2018, n. 2, p. 1; authors underlines «the digital economy is increasingly depressed by heavy-handed regulations that have raised the total level of digital restrictiveness and the cost of digital commerce» (p. 5).

(ICTs) has been a central element in the Digital Single Market affirmation process. However, today, «the presence of an ICT infrastructure and the mere accessibility to ICT facilities, are only a necessary pre-condition for moving towards a digitalized society and that the "level" and the "quality" in the use of these technologies, as well as the conditions facilitating or hampering "digital empowerment", are likely to play a much more important role»[46].

The impact of ICTs is transversal and supranational, although the global context «is to a high degree driven by technological progress. But whereas the economies of developed countries are experiencing a fundamental transformation towards the information society based on the international exchanges in knowledge, research and information, developing countries are facing an increasing digital divide. Unless the opportunities flowing from these new technologies are seized, this implies the risk of a new form of marginalisation as access to global networks and advanced services become necessary elements of integration into the world economy»[47].

The problem of internet access and the consequent digital divide was analyzed in a Commission staff working document, "A Digital Single Market Strategy for Europe - Analysis and Evidence"[48], which indicated that «a particular problem is identified in the rural areas of the large majority of Member States (the so-called "digital divide"), where broadband high-speed access is available only in less than 20% of those areas, compared to 62% on a nationwide basis. This is explained by the fact that the market often does not deliver high-speed broadband in rural areas, as demand may be too small to ensure profitability and deployment costs are in some respects higher than in urban centres»[49].

46. R. Evangelista, P. Guerrieri, V. Meliciani, *The economic impact of digital technologies in Europe*, in *Economics of Innovation and New Technology*, 2014, n. 8, p. 803.

47. Communication from the Commission, COM (2000) 212, April 26, 2000, "The European Community's Development Policy", p. 7.

48. Commission staff working document, A Digital Single Market Strategy for Europe – Analysis and Evidence. Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A Digital Single Market Strategy for Europe, SWD (2015) 100, May 6, 2015. See the analysis by S. Pantea, B. Martens, *Has the digital divide been reversed? Evidence from five EU Member States*, Joint Research Centre of the European Commission – Institute for Prospective Technological Studies Digital Economy Working Paper, 2013, n. 6.

49. SWD (2015) 100, p. 39. On the subject with international references M. Ragnedd, G.W. Muschert, *The Digital Divide: The Internet and Social Inequality in International Perspective*, Taylor & Francis, 2013, p. 3, who mention that «defined as stratification in the access and use of the Internet, the so-called digital divide is inevitably tied with the concept of social inequalities (van Dijk, 2005), a classic sociological concept» even if «social

However, a fully functioning Digital Single Market «needs to rely on efficient ICT, including broadband infrastructure, to support digital growth and uptake in SMEs, e-society and the development and roll-out of ICT-based innovation. Given the large investments needed to roll out and upgrade the current connections to the next generation of digital networks – often based on fibre technology – there is a serious risk that market failure will rapidly increase the so-called digital divide across Europe»[50].

The problem of the existence of the digital divide among people with internet access and those without is central, as it will significantly impact citizens and businesses regarding the full affirmation of rights under the digital context and on the full development of businesses. This situation should be framed in terms of the multiple services currently being offered by the public administration of governments using digital technologies.

At the international level, the first World Summit on the Information Society was held in Geneva on December 10-12, 2003. The group agreed that «we use the term "digital divide" to refer to the gap between those who can effectively use new information and communication tools, such as the internet, and those who cannot»[51].

Historically, digital-divide research focused on the issue of access; however, now «digital divide research applies multifaceted conceptualizations, spanning motivation, material access, skills, use, and outcomes. In general, digital skills are considered the primary requirement for conducting capital-enhancing activities online, for obtaining positive outcomes from Internet use, and for the entire process of access and information inequality; consequently, they are deeply entwined with the notion of the digital divide»[52]. It is evident that digital equality is necessary to avoid new forms of social discrimination.

There are many factors connected to the digital divide, including the lack of an adequate infrastructure to reduce the gap between those who have access and those who do not and the efficacy of using ITCs to gain access. For this reason, a particular focus has been placed on the digital literacy of

stratification is a crucial part of all human organization ever observed, it was in the writings of the "fathers of sociology" such as Marx, Weber, and Durkheim, that the study of this topic became more systematic, articulated using concepts that remain with us to this day».

50. SWD (2015) 100, p. 85. With reference to SMEs see M.A. Stefanelli, *Small business enterprises and "the digital revolution" in EU regulation*, in F. Marrella, N. Soldati (eds.), *Arbitration, contracts and international trade law*, Giuffrè, 2021.

51. S. Hubregtse, *The digital divide within the European Union*, in *New Library World*, 2005, n. 3-4, p. 165.

52. A. Van Deursen, K. Mossberger, *Any thing for anyone? A new digital divide in internet-of-things skills*, in *Policy and Internet*, 2018, n. 2, p. 123.

citizens and enterprises. Regarding this issue, «the researchers appreciate that there are several stages of it. The first is the access to the Internet, the second by the ability to use it and the third, is to achieve tangible results using this technology. For those interested, it is important to understand the steps involved because it should be noted that the digital divide continues to deepen even after the first step. Even when access to the Internet is guaranteed, there are material differences between people (in terms of devices, software programs, etc.), the dominance of English at the international level further exacerbating the digital divide, as most content on the web is written in this language»[53].

The most recent phase of ICT development concerns the internet-of-things, which includes «everyday devices implemented with microprocessors and sensors beyond the rectangular confines of personal computers, laptops, tablets, and smartphones. The technology has been finding wide applicability and is expected to deliver great benefits to its users»[54].

Although the widespread presence of these technologies in society is recognized, «inequality continues to rise on account of skills and usage opportunities. In the contemporary literature on the digital divide, inequality of Internet skills is acknowledged as a key dimension, affecting types of engagement and social outcomes of Internet use, or digital citizenship. While there is evidence regarding the benefits of Internet use for economic opportunity, civic engagement, and political participation, these gains are not equal across all Internet users»[55].

The central point now reflects that the «digital divide threatens the process of e-inclusion. It refers to the implementation of policies so that all inhabitants of a country can participate in the information society through easy access to technology and the use of ICT tools and services, as well as the ability and skills of all people to use these tools»[56].

"E-inclusion" was proposed by the eEurope Advisory Group in their 2005 report, "E-Inclusion: New Challenges and Policy Recommendations". E-Inclusion «refers to the effective participation of individuals and communities in all dimensions of the knowledge-based society and economy

53. G. Brătucu, E. Nichifor, S. Sumedrea, I. Chițu, R. Lixăndroiu, *Avoiding Digital Divide in European Union through European Green Deal*, in *Amfiteatru Economic*, 2022, n. 4, p. 79.

54. A. Van Deursen, K. Mossberger, *Any thing for anyone? A new digital divide in internet-of-things skills*, in *Policy and Internet*, 2018, n. 2, p. 124.

55. A. Van Deursen, K. Mossberger, *Any thing for anyone? A new digital divide in internet-of-things skills*, in *Policy and Internet*, 2018, n. 2, p. 134.

56. G. Brătucu, E. Nichifor, S. Sumedrea, I. Chițu, R. Lixăndroiu, *Avoiding Digital Divide in European Union through European Green Deal*, in *Amfiteatru Economic*, 2022, n. 4, p. 80.

through their access to ICT, made possible by the removal of access and accessibility barriers, and effectively enabled by the willingness and ability to reap social benefits from such access»[57]. Furthermore, «e-Inclusion refers to the degree to which ICT contribute to equalising and promoting participation in society at all levels (i.e. social relationships, work, culture, political participation, etc.)»[58].

It follows that «the digital divide measures the gap between those who are empowered to substantially participate in an information and knowledge-based society and economy, and those who are not»[59]. Thus, it is evident that e-inclusion and the digital divide are opposite but parallel concepts in reference to digital participation.

The question then becomes «what will happen to the population that cannot integrate into a society in which access to information technology ensures an increase in the standard of living? The persistence of growing differences in the quality of data infrastructure between urban and rural areas links the issue of connectivity to the issue of digital inclusion. General policies in this area emphasize the paradox of rural communities, which are in great need of improved digital connectivity but are the weakest connected and virtually excluded from the information society. The adoption of personalized policies for these communities by governments would focus on a combined approach to the issues of connectivity and digital inclusion»[60].

With reference to rural communities, the concept of "lonely places" has recently been introduced as a «multidisciplinary and multi-scalar concept, can refer to a plurality of places that present a certain vulnerability in terms of local endowment, accessibility, or connectivity. Lonely places can be found in remote and rural areas as well as cities. The concurrence and interactions among vulnerabilities can make one place more lonely than others»[61].

57. eEurope Advisory Group, report "E-Inclusion: New Challenges and Policy Recommendations, p. 7.

58. eEurope Advisory Group, report "E-Inclusion: New Challenges and Policy Recommendations, p. 7.

59. eEurope Advisory Group, report "E-Inclusion: New Challenges and Policy Recommendations, p. 7.

60. G. Brătucu, E. Nichifor, S. Sumedrea, I. Chițu, R. Lixăndroiu, *Avoiding Digital Divide in European Union through European Green Deal*, in *Amfiteatru Economic*, 2022, n. 4, p. 80.

61. P. Proietti, P. Sulis, C. Perpiña Castillo, C. Lavalle, J.P. Aurambout, F. Batista, C. Bosco, C. Fioretti, F. Guzzo, C. Jacobs, M. Kompil, A. Kucas, M. Pertoldi, A. Rainoldi, M. Scipioni, A. Siragusa, G. Tintori, J. Woolford, *New perspectives on territorial disparities*, Publications Office of the European Union, 2022, p. 4, the report underlines «this concept identifies a plurality of places that present a certain vulnerability in terms of lack of or insufficient local endowment, as well as accessibility or connectivity (spatial and/or digital),

It is evident that researchers have analyze the digital divide from multiple angles and «in differing choices of research objects (facets or social forces vs individual actions or propensities), primary determinants (social structure vs individual agency) and interpretations of stimuli (observable or objective measurements vs internal or subjective entities)»[62]. In this way, different results can be reached.

The accessibility and diffusion of broadband infrastructures are a characteristic of "lonely places", but «there are several possibilities for improving the current disadvantaged conditions of rural and remote areas, exploiting the potential that connectivity and digitalization represent for education and training, cooperation and networking, access to services and markets, to make them more attractive to people and businesses. Access to broadband and data, and building digital skills are elements that might help to foster new business and economic activities in rural and remote areas. However, digitalization can be an opportunity only if its rollout is quick enough to enable rural businesses to remain competitive, especially in remote areas»[63].

To improve the broadband infrastructure in rural areas, the Rural Development Policy «entrusts Broadband Competence Offices to support "Member States and to advise local and regional authorities on ways to develop broadband to deploy next-generation broadband networks (NGA)»[64].

with other territories. In this sense, remote places experiencing depopulation and economic decline are considered lonely for the sake of this report. Lonely places are also territories with a disadvantage in access to basic services and infrastructure, either for all their residents or for some specific groups. In this respect, some depopulating areas might experience disadvantaged access to local schools, which hampers the future social mobility of children living in those areas and favours the emigration of young families. Furthermore, some towns or suburbs might be less digitally connected than others, while some neighbourhoods in cities might experience high levels of socio-economic deprivation. Even city neighbourhoods lacking access to everyday services are lonely places, as they do not guarantee their residents – especially those in vulnerable conditions such as older people – access to the urban services they need. Finally, places that experience a particularly low electoral turnout are also considered lonely places, as this phenomenon might be interpreted as a form of withdrawal and disconnection from the democratic process» (p. 12).

62. B. Yu, A. Ndumu, L. Mon, Z. Fan, *E-inclusion or digital divide: an integrated model of digital inequality*, in *Journal of Documentation*, 2018, n. 3, p. 553.

63. P. Proietti, P. Sulis, C. Perpiña Castillo, C. Lavalle, J.P. Aurambout, F. Batista, C. Bosco, C. Fioretti, F. Guzzo, C. Jacobs, M. Kompil, A. Kucas, M. Pertoldi, A. Rainoldi, M. Scipioni, A. Siragusa, G. Tintori, J. Woolford, *New perspectives on territorial disparities*, Publications Office of the European Union, 2022, p. 54.

64. P. Proietti, P. Sulis, C. Perpiña Castillo, C. Lavalle, J.P. Aurambout, F. Batista, C. Bosco, C. Fioretti, F. Guzzo, C. Jacobs, M. Kompil, A. Kucas, M. Pertoldi, A. Rainoldi, M.

At the same time, the Commission «also implemented an "Action Plan for Rural Broadband", with concrete actions undertaken at Commission level, aiming to help Member States advance broadband rollout in rural and remote areas»[65].

As mentioned in the Opinion of the European Economic and Social Committee, "A socially sustainable concept for raising living standards, boosting growth and employment, as well as citizens' security in the digital era"[66], new inequalities and social risks «in the digital era may in part be attributed to the phenomenon of digital exclusion, whereby some segments of the population may or may not possess the necessary IT skills and basic digital literacy to have access to information and services, some of them crucial»[67]. Moreover, «in the digital era it is essential to guarantee access to the internet, provide digital literacy training for anyone at risk of unemployment, and to provide the opportunity for them to exercise their rights and access the social services – particularly the fundamental ones»[68].

At the global level, in 2016, the World Bank estimated that «the lives of the majority of the world's people remain largely untouched by the digital revolution. Only around 15 percent can afford access to broadband internet. Mobile phones, reaching almost four-fifths of the world's people, provide the main form of internet access in developing countries. But even then, nearly 2 billion people do not own a mobile phone, and nearly 60 percent of the world's population has no access to the internet»[69]. Recently, the International Telecommunication Union, the United Nations specialized agency for ICTs, estimated that «in 2019, 4.1 billion people (or 54 per cent of the world's population) were using the Internet. Since then the number of users has surged by 800 million to reach 4.9 billion people in 2021, or 63 per cent of the population. Nonetheless, this means that some 2.9 billion people

Scipioni, A. Siragusa, G. Tintori, J. Woolford, *New perspectives on territorial disparities*, Publications Office of the European Union, 2022, p. 54.

65. P. Proietti, P. Sulis, C. Perpiña Castillo, C. Lavalle, J.P. Aurambout, F. Batista, C. Bosco, C. Fioretti, F. Guzzo, C. Jacobs, M. Kompil, A. Kucas, M. Pertoldi, A. Rainoldi, M. Scipioni, A. Siragusa, G. Tintori, J. Woolford, *New perspectives on territorial disparities*, Publications Office of the European Union, 2022, p. 54.

66. March 15, 2018.

67. European Economic and Social Committee on "A socially sustainable concept for raising living standards, boosting growth and employment, as well as citizens' security in the digital era", point 3.14.

68. European Economic and Social Committee on "A socially sustainable concept for raising living standards, boosting growth and employment, as well as citizens' security in the digital era", point 3.14.

69. World Bank, "World Development Report 2016 – Digital Dividends", 2016, p. 6.

remain offline, 96 per cent of whom live in developing countries. Those who remain unconnected face multiple barriers, including a lack of access: some 390 million people are not even covered by a mobile broadband signal[70].

At the European level, recent statistical data show that «ICT has become widely available to the general public, both in terms of accessibility and cost. One border was crossed in 2007, when the majority (53%) of households in the EU had access to the internet. This share has continued to increase, exceeding three-quarters in 2012, four-fifths in 2014 and 90% in 2020. By 2022, the share of EU households with internet access had risen to 93»[71].

The conclusions of the European Council of June, 2016, underlined the importance «to create the right conditions for stimulating new business opportunities by: − ensuring very high-capacity fixed and wireless broadband connectivity across Europe, which is a precondition for future competitiveness. The review of the telecoms regulatory framework should aim to incentivize major network investments while promoting effective competition and consumer rights; − better coordinating spectrum assignment modalities together with the timely release of the 700 MHz band so as to help ensure Europe's leadership in the roll-out of 5G networks; − coordinating EU efforts on high-performance computing. In this context the European Council looks forward to the launch of an important project of common European interest in this field»[72].

Uniform access to the digital market by citizens and enterprises is an issue widely addressed also by the European Commission, which, in 2016, stated that «consumers and businesses still face fragmentation of the electronic communications markets along the national borders and the current regulatory framework has not systematically favoured deployment by all market actors of very high-capacity networks»[73], while it is essential «ensure widespread deployment and take-up of very high capacity networks, in rural as well as urban areas and across all of society»[74].

The "Commission work programme 2023. A Union standing firm and united"[75] underline the need «to make digital solutions accessible and

70. ITU, "Measuring digital development Facts and figures 2021", p. 1.

71. Eurostat, "Digital economy and society statistics – households and individuals", December 2022.

72. European Council conclusions, 28 June 2016 (EUCO 26/16), p. 5.

73. Communication from the Commission, COM (2016) 587, 14 September 2016, "Connectivity for a Competitive Digital Single Market – Towards a European Gigabit Society", p. 2.

74. COM (2016) 587, p. 2.

75. COM (2022) 54, October 18, 2022.

available to all Europeans and ensure Europe becomes the leading force for an ethical, transparent and safe digital transformation»[76].

Achieving the widest access and maximum diffusion requires large investments from both private and public institution «in Internet connectivity networks for digital progress» and «a stable regulatory framework in enabling all players to invest in all areas, including rural and remote ones»[77].

The European Gigabit Society is intended to become «where availability and take-up of very high capacity networks enable the widespread use of products, services and applications in the Digital Single Market»[78].

For this purpose, three strategic objectives were defined for 2025. The first is related to Europe's growth and jobs via "Gigabit connectivity for places driving socio-economic developments". The second addresses the competitiveness and seeks «5G coverage for all urban areas and all major terrestrial transport paths»; the third looking at Europe's cohesion propose an «access for all European households to Internet connectivity offering at least 100 Mbps»[79].

5G refers «to the next generation of network technologies offering prospects for new digital economic and business models»[80]. Therefore, prospectively, the fundamental role of connectivity must be clarified with supportive actions.

This prompted the European Commission to call for the reform of the regulatory framework through their Communication, "5G for Europe: An Action Plan", September 14, 2016, which focuses on the role of 5G on the future of Europe[81].

3. Public regulation of connectivity and 5G as a key asset for Europe's growth

Over the years, connectivity has taken on new importance by considering only internet access but also high capacity network connectivity that supports the enormous amount of data and information present in the digital context.

76. COM (2022) 54, p. 6.
77. COM (2016) 587, p. 2.
78. COM (2016) 587, p. 2.
79. COM (2016) 587, p. 2.
80. COM (2016) 587, p. 2.
81. For an in-depth look at how the concept of ultra-high performance 5G networks comes from a combination of several factors see the Commission Staff Working document SWD (2016) 306, September 14, 2016, "5G Global Developments – Accompanying the document: 5G for Europe: An Action Plan".

By 2017, the European Parliament, in their resolution, "On internet connectivity for growth, competitiveness and cohesion: European gigabit society and 5G"[82], they observed that «the future of European society and the European economy will strongly rely on 5G infrastructure, the impact of which will go far beyond existing wireless access networks, with the aim of providing high-quality and faster communication services which are affordable for all and available everywhere and at all times»[83]. For this reason, the Parliament welcomed «the Commission's proposal to draw up a 5G Action Plan aimed at making the EU a world leader in the deployment of standardized 5G networks from 2020 to 2025 as part of a wider developed strategy for a European gigabit society which is technologically more competitive and inclusive; takes the view that in order to achieve this, adequate coordination among the Member States is crucial, so as to prevent the same kinds of delays in the rollout of 5G that were experienced with 4G, which have resulted in the fact that today 4G coverage stands at 86% and only 36% in rural areas»[84].

The Parliament stressed that the future of 5G «is more than an evolution of mobile broadband and that it will be a key enabler of the future digital world as the next generation of ubiquitous ultra-high broadband infrastructure that will support the transformation of processes in all economic sectors (public sector, education, converged media content delivery, healthcare, research, energy, utilities, manufacturing, transportation, the automotive industry, audiovisual, virtual reality, online gaming and so forth) and provide affordable, agile, flexible, interactive, reliable and highly personalized services»[85]. Thus, they should improve the existence of enterprises and citizens.

Today, 5G technology represents the evolution «of radio technologies since the launch of analogue cellular systems in 1980s, termed as 1st Generation or simply 1G. Thereafter, digital wireless communication systems are consistently being evolved, one generation being advanced every decade. The Second Generation (2G) happened in 1990s, primarily using the GSM standard and using digital transmission instead of analogue transmission, which had the benefit of lower battery power consumption. SMS text messaging was introduced. The Third Generation (3G) came in 2000s, bring in high-speed IP data networking. Packet switching was used

82. European Parliament resolution, June 1, 2017.
83. European Parliament resolution, June 1, 2017, letter F.
84. European Parliament resolution, June 1, 2017, point 1.
85. European Parliament resolution, June 1, 2017, point 20.

for data transmission as against circuit switching done earlier. This enabled media streaming of digital content to 3G handsets. Fourth Generation (4G) in 2010s saw the growth of mobile broadband, with improvements in speed up to tenfold over 3G and was an extension of 3G with higher bandwidth and services. Data transfer speed up to 100 Mbits/s downloads is possible in 4G Long Term Evolution»[86].

In the 5G era, the European Commission, in their Communication, "5G for Europe: An Action Plan"[87], stated that a «new generation of network technologies, known as 5G, opening prospects for new digital economic and business models»[88].

The Action Plan reminds readers that «the Commission "strategy for the Digital Single Market (DSM strategy)" and the communication "Connectivity for a Competitive Digital Single Market: Towards a European Gigabit Society" underline the importance of very high capacity networks like 5G as a key asset for Europe to compete in the global market»[89].

The affirmation of 5G appears to pose the opportunity to «support of new types of applications connecting devices and objects (the Internet of Things), and versatility by way of software virtualisation allowing innovative business models across multiple sectors (e.g. transport, health, manufacturing, logistics, energy, media and entertainment)»[90].

The European Commission wants to coordinate the different national legal frameworks to counter fragmentation by defining a roadmap in support of «investment in 5G networks and to create new innovative ecosystems, thus enhancing European competitiveness and delivering concrete benefits to society»[91].

The key elements identified include «align roadmaps and priorities for a coordinated 5G deployment across all EU Member States, targeting early network introduction by 2018, and moving towards commercial large scale introduction by the end of 2020 at the latest; Make provisional spectrum bands available for 5G ahead of the 2019 World Radio communication Conference (WRC-19), to be complemented by additional bands as quickly as possible, and work towards a recommended approach for the authorisation of the specific 5G spectrum bands above 6 GHz; Promote early deployment

86. S.K. Rao., R. Presad, *Impact of 5G Technologies on Industry 4.0*, in *Wireless Personal Communications*, 2018, n. 1, p. 150.

87. COM (2016) 588, September 14, 2016.

88. COM (2016) 588, p. 2.

89. COM (2016) 588, p. 2.

90. COM (2016) 588, p. 2.

91. COM (2016) 588, p. 3.

in major urban areas and along major transport paths; Promote pan-European multi-stakeholder trials as catalysts to turn technological innovation into full business solutions; Facilitate the implementation of an industry-led venture fund in support of 5G-based innovation; Unite leading actors in working towards the promotion of global standards»[92].

Simultaneously, the European Commission issued a communication regarding «the promotion of Internet connectivity in local communities»[93] because «one of the Commission's strategic aims for the Union to be achieved by 2025 is for sites at which public services are provided, such as public administrations, libraries and hospitals to be equipped with Gigabit internet connections. Connecting these and other centres of community life, including outdoor spaces accessible to the general public, at speeds significantly above functional internet access, will enable citizens from all walks of life to experience the advantages of next generation connectivity while on the move, in places where being connected matters»[94].

For this purpose, public incentives are envisioned through a financing mechanism that European institutions intend to distribute «in a geographically balanced manner that contributes to the economic, social and territorial cohesion in the Union by taking particular account of the needs of local communities»[95].

The goal is to encourage the free offering of local wireless connectivity at the hubs of local public life and to ensure greater access to existing services «by stimulating the integration with existing public services, the intervention will promote citizens' interest in high capacity internet services and thereby make a significant contribution to both the take-up of broadband services and to public infrastructure development»[96].

This issue is at the heart of the recent regulation establishing the Connecting Europe Facility (Regulation (EU) 2021/1153, July 7, 2021), which specifies that «the Union needs up-to-date, multimodal, high-

92. COM (2016) 588, p. 3.

93. COM (2016) 589, September 14, 2016, "Proposal for a Regulation amending Regulations (EU) No 1316/2013 and (EU) No 283/2014", the proposal was approved with Regulation (EU) 2017/1953 of the European Parliament and of the Council of 25 October 2017 amending Regulations (EU) No 1316/2013 and (EU) No 283/2014 as regards the promotion of internet connectivity in local communities, now Implicitly repealed by Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021 establishing the Connecting Europe Facility and repealing Regulations (EU) No 1316/2013 and (EU) No 283/2014.

94. COM (2016) 589, p. 2.

95. COM (2016) 589, p. 3.

96. COM (2016) 589, p. 3.

performance infrastructure in its transport, energy and digital sectors to help connect and integrate the Union and all its islands and regions, including its remote, outermost, peripheral, mountainous and sparsely populated ones. Those connections should help to improve the free movement of persons, goods, capital and services. The trans-European networks should facilitate cross-border connections, foster greater economic, social and territorial cohesion, and contribute to a more competitive and sustainable social market economy and to combating climate change»[97].

The Connecting Europe Facility aims to «build, develop, modernise and complete the trans-European networks in the transport, energy and digital sectors and to facilitate cross-border cooperation in the field of renewable energy, taking into account the long-term decarbonisation commitments and the goals of increasing European competitiveness; smart, sustainable and inclusive growth; territorial, social and economic cohesion; and the access to and integration of the internal market, with an emphasis on facilitating the synergies among the transport, energy and digital sectors»[98].

In particular, the specific objectives of the Connecting Europe Facility in the digital sector aims «to contribute to the development of projects of common interest relating to the deployment of and access to safe and secure very high capacity networks, including 5G systems, and to the increased resilience and capacity of digital backbone networks on Union territories by linking them to neighboring territories, as well as to the digitalization of transport and energy networks»[99].

Article 8 defines "Projects of common interest in the area of digital connectivity infrastructure" those projects «that make an important contribution to the Union's strategic connectivity objectives and/or provide

97. Whereas n. 1, Regulation (EU) 2021/1153.

98. Art. 3.1, Regulation (EU) 2021/1153.

99. Art. 3.2.c, Regulation (EU) 2021/1153; with reference to the transport sector, the specific objectives of the Connecting Europe Facility are: «to contribute to the development of projects of common interest relating to efficient, interconnected and multimodal networks and infrastructure for smart, interoperable, sustainable, inclusive, accessible, safe and secure mobility in accordance with the objectives of Regulation (EU) No 1315/2013; and (ii) to adapt parts of the TEN-T for the dual use of the transport infrastructure with a view to improving both civilian and military mobility» (art. 3.2.a); and the specific objectives of the Connecting Europe Facility in the energy sector are: «(i) to contribute to the development of projects of common interest relating to further integration of an efficient and competitive internal energy market, interoperability of networks across borders and sectors, facilitating decarbonisation of the economy, promoting energy efficiency and ensuring security of supply; and (ii) to facilitate cross-border cooperation in the area of energy, including renewable energy» (art. 3.2.b).

the network infrastructure supporting the digital transformation of the economy and society, as well as the Union's Digital Single Market»[100].

The Regulation underline that, in the digital sector, some specific actions are to «be eligible to receive Union financial support under this Regulation»[101]. These include «(a) actions supporting the deployment of and access to very high capacity networks, including 5G systems, capable of providing Gigabit connectivity in areas where socioeconomic drivers are located; (b) actions supporting the provision of very high-quality local wireless connectivity in local communities that is free of charge and without discriminatory conditions; (c) actions implementing the uninterrupted coverage with 5G systems of all major transport paths, including the TEN-T, such as the actions listed in Part V, point 3, of the Annex; (d) actions supporting the deployment of new or the significant upgrading of existing backbone networks, including submarine cables, within and between Member States and between the Union and third countries, such as the actions listed in Part V, point 3, of the Annex, as well as other actions supporting the deployment of backbone networks referred to in that point; (e) actions implementing digital connectivity infrastructure requirements related to cross-border projects in the areas of transport or energy or supporting operational digital platforms directly associated to transport or energy infrastructures, or both»[102]. The construction of such networks may have a significant impact on the lives of citizens and the role of enterprises in the future.

Additionally important is the directive establishing the European Electronic Communications Code (Directive (EU) 2018/1972, December 11, 2018). Their 5G Action Plan is closely related to the new European Electronic Communications Code and other acts that aim to boost the competitiveness of European industry by supporting the deployment and adoption of 5G networks.

The Code regulates the multiple aspects of communications and defines the commitment to increase connectivity across all European and national authorities and levels of government, as well as the desire to establish a regulatory body that encourages private investment in digital connectivity networks.

Investments in high capacity network development in the EU are essential, and the directive states that it is necessary to «promote efficient

100. Art. 8.1, Regulation (EU) 2021/1153.

101. Art. 9.4, Regulation (EU) 2021/1153. Art. 4.1 establishes that "the financial envelope for the implementation of the CEF for the period from 1 January 2021 to 31 December 2027 shall be EUR 33 710 000 000 in current prices".

102. Art. 9.4, Regulation (EU) 2021/1153.

investment and innovation in new and enhanced infrastructures, including by ensuring that any access obligation takes appropriate account of the risk incurred by the investing undertakings and by permitting various cooperative arrangements between investors and parties seeking access to diversify the risk of investment, while ensuring that competition in the market and the principle of non-discrimination are preserved»[103].

Scholars have pointed out that «competition intensity in electronic communications markets may vary significantly across regions. In competitive ('black') areas, there is no need for sector-specific ex ante access regulations on the basis of the essential facility doctrine or the concept of market dominance. In "white" areas, where network deployment would not be profitable even for a monopolist, it is not possible to incentivize network deployment through sector-specific access regulation; public policies based on subsidies would be a considerably more effective instrument in these circumstances. In "grey" areas, where only one infrastructure provider is active, it is much more difficult to determine the best policy as a range of trade-offs must be taken into account. In grey (or otherwise white) areas, co-operation (or: co-investment) models appear as an effective measure, in principle, for sharing risks related to future demand and market exposure as well as capital formation in case of capital market imperfections and thus for generating additional investment incentives. Investment sharing might also come hand in hand with cost reductions, e.g., in case of traditional and non-traditional telecommunications operators due to the sharing of skills, capabilities and different infrastructure elements in the network hierarchy. Co-investment could also ensure that inefficient investment – such as the unnecessary duplication of infrastructures – can be avoided. However, it is important to note that the reasons why co-investment agreements might be successful do not imply that market risk disappears altogether with such agreements. Risk and uncertainty clearly remain; the existence of a co-investment agreement simply shares the exposure to these risks to all investors that commit to invest ex ante (i.e., before the investment is made), but it clearly affects the decision to invest»[104].

The various acts discussed above have the objective of ensuring the dissemination and use of very high-capacity networks useful for disseminating products, services, and the various applications of the Digital Single Market.

103. Art. 3.4.d, Directive (EU) 2018/1972.

104. W. Briglauer, C. Cambini, T. Fetzer, K. Hüschelrath, *The European Electronic Communications Code: A critical appraisal with a focus on incentivizing investment in next-generation broadband networks*, in *Telecommunications Policy*, 2017, n. 41, p. 949.

The path outlined for 5G implementation adopts the creation of a new regulatory framework that will be provided within the next few years through many legislative acts, among which we reference the public regulatory architecture identified the regulation establishing the Body of European Regulators for Electronic Communications (BEREC) and the Agency for Support for BEREC (Regulation (EU) 2018/1971, December 11, 2018), which gives BEREC new and greater powers than before.

The BEREC replaced «the ERG and was intended to contribute, on one hand, to the development and, on the other, to the better functioning, of the internal market for electronic communications networks and services by aiming to ensure the consistent implementation of the regulatory framework for electronic communications»[105].

More specifically, the communication on the Digital Single Market envisaged «a more effective regulatory institutional framework in order to make the rules on electronic communications fit for purpose as part of the creation of the right conditions for the Digital Single Market. Those include the deployment of very high capacity networks, more coordinated management of radio spectrum for wireless networks and creating a level playing field for advanced digital networks and innovative services. That communication pointed out that the changing market and technological environment make it necessary to strengthen the institutional framework by enhancing the role of BEREC»[106].

To this end, the Regulation establishes that BEREC must «ensure the consistent implementation of the regulatory framework for electronic communications»[107] and defines regulatory tasks (i.e., assisting and advising European institutions and national regulatory authorities (NRAs), to issue «guidelines on the implementation of the Union regulatory framework for electronic communications»[108], «to issue recommendations and common positions, and disseminate regulatory best practices addressed to the NRAs in order to encourage the consistent and better implementation of the regulatory framework for electronic communications»[109], and «to evaluate the needs for regulatory innovation and coordinate actions between NRAs to enable the development of new innovative electronic communications»[110].

105. Whereas n. 5, Regulation (EU) 2018/1971.
106. Whereas n. 9, Regulation (EU) 2018/1971.
107. Art. 3.2, Regulation (EU) 2018/1971.
108. Art. 4.1.d, Regulation (EU) 2018/1971.
109. Art. 4.1.k, Regulation (EU) 2018/1971.
110. Art. 4.1.m, Regulation (EU) 2018/1971.

At the BEREC office, the following objectives are understood: «to provide professional and administrative support services to BEREC»[111], «to collect information from NRAs and to exchange and transmit information in relation to the regulatory tasks assigned to BEREC pursuant to Article 4»[112], «to produce, on the basis of the information referred to in point (b), regular draft reports on specific aspects of developments in the European electronic communications market, such as roaming and benchmarking reports, to be submitted to BEREC»[113], «to disseminate regulatory best practices among NRAs»[114], «to assist BEREC in establishing and maintaining registries and databases»[115], «to assist BEREC in establishing and managing an information and communications system»[116], «to assist BEREC in conducting public consultations»[117], «to assist in the preparation of the work and provide other administrative and content-related support to ensure the smooth functioning of the Board of Regulators»[118], «to assist in setting up working groups, upon the request of the Board of Regulators, contribute to the regulatory work and provide administrative support to ensure the smooth functioning of those groups»[119] and «to carry out other tasks assigned to it by this Regulation or by other legal acts of the Union»[120].

The most recent research and development prospects of the European Union are connected to 6G[121], with the aim of increasing the adoption of this technology through "Joint Undertakings under Horizon Europe"[122] because «Europe needs to develop critical digital infrastructures based on 5G networks and build its technological capacities towards 6G with a time horizon of 2030»[123]. The "Smart Networks and Services Joint Undertaking" was established and will last until December 31, 2031. It is financed under the Multiannual Financial Framework 2021-2027, and one of its objectives must be to «advance European technological and scientific excellence to support

111. Art. 5.a, Regulation (EU) 2018/1971.
112. Art. 5.b, Regulation (EU) 2018/1971.
113. Art. 5.c, Regulation (EU) 2018/1971.
114. Art. 5.d, Regulation (EU) 2018/1971.
115. Art. 5.e, Regulation (EU) 2018/1971.
116. Art. 5.f, Regulation (EU) 2018/1971.
117. Art. 5.g, Regulation (EU) 2018/1971.
118. Art. 5.h, Regulation (EU) 2018/1971.
119. Art. 5.i, Regulation (EU) 2018/1971.
120. Art. 5.j, Regulation (EU) 2018/1971.
121. E. Bertin, N. Crespi, T. Magedanz, *Shaping future 6G networks: needs, impacts and* technologies, John Wiley & Sons, 2022.
122. Regulation (EU) 2021/2085, November 19, 2021.
123. Whereas n. 95, Regulation (EU) 2021/2085.

European leadership to shape and master 6G systems by 2030»[124]. Furthermore, it must «prepare the European smart networks and services supply industry for the longer term opportunities emerging from the development of vertical markets for 5G and later 6G infrastructures and services in Europe»[125].

These perspectives play an important role in the future of Europe in terms of 5G technologies, which remain at the center of many public policies. 6G, the next generation of mobile technologies, represents a revolutionary path that will also be developed thanks to a partnership between the 6G Smart Networks and Services Industry Association (6G-IA) and the European Commission, which deals with European research on the subject of networks and next-generation services. These new technologies inevitably pose ethical and public regulatory challenges, as should be further analyzed.

4. The role of Digital Platforms and the affirmation of the Data Economy

In the context of the Digital Single Market, platforms assume central and essential roles that make them fundamental economic players[126]. Thus, the changing roles of digital platforms during the Covid-19 Pandemic[127] is

124. Art. 159.1.c, Regulation (EU) 2021/2085.

125. Art. 159.1.e, Regulation (EU) 2021/2085. Art. 159.2 specifies «the Smart Networks and Services Joint Undertaking shall also have the following specific objectives: (a) facilitate the development of technologies able to meet advanced communication requirements while supporting European excellence in smart networks and services technologies and architectures and their evolution towards 6G, including strong European positions on standards, essential patents, and key requirements such as requirements for spectrum bands needed for future advanced smart network technologies; (b) accelerate the development of energy-efficient network technologies with the aim of significantly reducing the energy and resource consumption of the whole digital infrastructure by 2030 and decreasing the energy consumption of key verticals industries supported by smart networks and services technologies; (c) accelerate the development and widespread deployment of 5G by 2025 and later 6G infrastructure in Europe by, in particular, promoting the coordination and strategic support of 5G deployment for Connected and Automated Mobility along cross-border».

126. L. Ammannati, *Verso un diritto delle piattaforme digitali?*, in L. Ammannati, A. Canepa, G. Greco, U. Minnici (eds.), *Algoritmi, Big Data, piattaforme digitali. La regolazione dei mercati in trasformazione*, Giappichelli, 2021.

127. See in particolar: R. Floetgen, J. Strauss, J. Weking A. Hein, F. Urmetzer, M. Böhm, H. Krcmar, *Introducing platform ecosystem resilience: leveraging mobility platforms and their ecosystems for the new normal during Covid-19*, in *European Journal of Information Systems*, 2021, n. 3; D. Aryani, R. Nair, D. Hoo, D.K. Hung, D.H. Chew, A. Desai, *A study on consumer behaviour: Transition from traditional shopping to online shopping during the Covid-19 pandemic*, in *International Journal of Applied Business and International*

notable. That is, «the preventive measures implemented by governments have fundamentally impacted not only the global economy but also the way consumers behave, shop, work or play. Due to the lockdown measures, most businesses and consumers had to move online to be able to pursue their activities. Although digitalization of businesses and consumers was already well underway, the pandemic accelerated this trend, by increasing the number of online users and the breadth of users, including segments of the population that were not using such services before or not as much»[128].

Platforms are generally known «as "two-sided" or "multi-sided" markets where users are brought together by a platform operator in order to facilitate an interaction (exchange of information, a commercial transaction, etc.). In the context of digital markets, depending on a platform's business model, users can be buyers of products or services, sellers, advertisers, software developers, etc.»[129].

Scholars have noted that two-sided markets «are roughly defined as markets in which one or several platforms enable interactions between end-users, and try to get the two (or multiple) sides "on board" by appropriately charging each side. That is, platforms court each side while attempting to make, or at least not lose, money overall»[130]. Thus, by connecting «two or more sides, the platform ecosystem generates powerful network effects whereby the value increases as more members participate»[131].

Management, 2021, n. 2; B. Galhotra, A. Dewan, *Impact of Covid-19 on digital platforms and change in E-commerce shopping trends*, in *Fourth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)*, 2020; G.P. Pathak, S. Warpade, *Impact of Lockdown due to Covid 19 on Consumer Behaviour while selecting Retailer for Essential Goods*, in SSRN, 2020.

128. L. Lechardoy, A. Sokolyanskaya, F. Lupiáñez-Villanueva, *Analytical paper on the structure of the online platform economy post Covid-19 outbreak: analytical paper 6*, European Commission, Directorate-General for Communications Networks, Content and Technology, Publications Office, 2021, p. 19. More in general «the impact of the pandemic on the economy and employment affects consumers' economic situation, including their consumption and savings but also their confidence in the future. Based on the OECD's Consumer Confidence Index (CCI), consumers' confidence towards their future economic situation has started decreasing significantly in February 2020 before improving in May and decreasing again in October, thus following the Covid-19 waves. This indicator provides an indication of future developments of households' consumption and saving, based on answers regarding their expected financial situation, their sentiment about the general economic situation, unemployment and capability of savings».

129. SWD (2016) 172, May 25, 2016, entitle "Online Platforms. Accompanying the document Communication on Online Platforms and the Digital Single Market", p. 1.

130. J.C. Rochet, J. Tirole, *Two-Sided Markets: A Progress Report*, November 2005, p. 2.

131. European Commission, Executive Agency for Small and Medium-sized Enterprises, "Monitoring B2B Industrial Digital Platforms in Europe", 2020, p. 6.

The platform will allow users to be reached very quickly; hence, they play a facilitating role as intermediaries between supply and demand in the digital market[132]. Additionally, «the new informational and interconnected infrastructure is accompanied by unwanted side effects, namely by new informational imbalances, negative externalities and, sometimes, positions of entrenched market power. Platforms, benefiting from positive network effects and having disrupted the business model of former gatekeepers, may become gatekeepers themselves. Reach and scale of platforms amplify negative externalities, such as the amount and effects of harmful content. The basic value proposition of platforms to maximize the overall value of the platform for all users may be distorted by conflicts of interest, for example in cases of vertical integration, embeddedness in a broader ecosystem with rent-seeking opportunities, or special arrangements with third parties»[133].

Scholars have emphasized that «a genuine revolution for digital transformation was not so much in the implementation of network systems

132. SWD (2016) 172, p. 2, «as opposed to the conventional "pipeline" business model where value is generated by thesupplier of a product or a service, a large part of the value derived by users of an online platform's is created by other users. The effects that one user of a good or service has on their value to other users are known as "network effects". The concept of network effects in online platforms is further discussed in the section "Network effects". A platform operator can facilitate transactions by reducing transaction costs. For instance, platform operators often provide a convenient way of matching the two sides of an interaction (e.g. search or recommendation function), a physical or virtual space to interact, a code of conduct, dispute resolution mechanisms, instruments that increase trust (e.g. reviews, identity checks), methods of payment or certain units of measurement to which both sides agree. Platforms' role as facilitators of interactions was brought to light in early literature on multisided markets which emphasised the role of an intermediary in the coordination of interests of the two sides of an interaction. SWD (2016) 172, p. 4 about network effect underlines «in economics and business, a network effect is the effect that one user of a good or service has on the value of that product to other people. When positive network effects are present, the value of a product or service increases with the increasing number of other users. Direct positive network effects apply to the same group of users (e.g. the more users join a telephone network, the more it makes it worthwhile for others to join). In the online world, this is the case with users of social networking platforms (e.g. Facebook). For users of those platforms, the value of using the platform grows as other participants with whom they can interact start joining. Indirect positive network effects exist where users of one group benefit from an increased presence of users from a different group (e.g. sellers on an online marketplace benefit from a higher number of buyers). Economic models of platform markets or multi-sided markets emphasize that relatively strong indirect network effects are an important feature distinguishing platforms from one-sided markets».

133. M. Eifert, A. Metzger, H. Schweitzer, G. Wagner, *Taming the giants: The DMA/DSA package*, in *Common Market Law Review*, 2021, n. 4, p. 988.

in enterprises or e-commerce but online platforms which have worked out operating models based on the advancing use of the internet, proliferation of mobile devices, and massively growing possibilities to collect and process data. The heart of these platforms lies in intermediation in interactions between different types of users: business partners, as well as consumers and buyers of products on offer»[134].

In the Digital Single Market Strategy, the role of platforms reflects that «some online platforms potentially raises concerns, particularly in relation to the most powerful platforms whose importance for other market participants is becoming increasingly critical»[135]. Moreover, «online platforms (e.g. search engines, social media, e-commerce platforms, app stores, price comparison websites) are playing an ever more central role in social and economic life: they enable consumers to find online information and businesses to exploit the advantages of e-commerce»[136].

Generally, «Digital platforms have become one of the principal ways of organizing a wide range of human activities, including economic, social, and political interactions»[137]. However, «there is no general understanding of what an online platform is, especially since it can cover a great variety of different and unrelated fields»[138].

The offer of multiple services made by the platforms has challenged traditional business models considering that currently «some online platforms have evolved to become players competing in many sectors of

134. A. Ambroziak, *EU's perspective on the functioning of giant online platforms in the digital economy*, in L. Dąbrowski, M. Suska (eds.), *The European Union Digital Single Market Europe's Digital Transformation*, Routledge, 2022, p. 7.

135. COM (2015) 192, p. 9. Among the subjects participating in the platforms, workers have an essential role, see E. Menegatti, *Platform workers: employees or not employees? The EU's turn to speak*, in *ERA-FORUM*, 2023, n. 24.

136. COM (2015) 192, p. 11. Considering the role of e-commerce look at Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ("Directive on electronic commerce") the "cornerstone" of internal market. On the topic see: R. Mansell, *Platforms of power*, in *Intermedia*, 2015, n. 1; O. Lynsket, *Regulating "Platform Power"*, in *LSE Working papers*, 2017, n. 1; O. Lobel, *The Law of the Platform*, in *University of San Diego, Research Paper*, 2016, n. 16; J.C. Rochet, J. Tirole, *Platform Competition in Two-Sided Markets*, in *Journal of the European Economic Association*, 2003, n. 4; D.S. Evans, R. Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, in *Competition Policy International*, 2007, n. 3.

137. European Commission, Executive Agency for Small and Medium-sized Enterprises, "Monitoring B2B Industrial Digital Platforms in Europe", 2020, p. 6.

138. M. Inglese, *Regulating the Collaborative Economy in the European Union Digital Single Market*, Springer, 2019, p. 12.

the economy and the way they use their market power raises a number of issues»[139].

Platforms «are digital infrastructures that enable two or more groups to interact. They therefore position themselves as intermediaries that bring together different users: customers, advertisers, service providers, producers, suppliers, and even physical objects. More often than not, these platforms also come with a series of tools that enable their users to build their own products, services, and marketplaces»[140].

However, «the platform concept is not new. For many years, large manufacturers and industry sectors as a whole have achieved efficiency gains by developing common working frameworks and shared environments. This is the case of the automotive industry, where platforms have long formed the basis for several different car models. Digital technologies are now making it possible to extend the industrial platform concept to uncharted territories. New business opportunities can in fact be targeted through the creation of virtual buyer-and-seller communities, thus facilitating interactions of users with diverse but complementary interests. Furthermore, enterprises that are willing to expand their customer base, or are looking for new markets, or are interested in selling specialized, niche products, may find new opportunities by using online platforms. At the same time, platforms offer new ways of maximizing efficiency and improving profitability and are therefore gaining in importance for their economic brokerage and intermediation services – at both the business-to-consumer (B2C) and business-to-business (B2B) levels»[141].

From a B2B point of view, «platforms can be defined as virtual environments facilitating the exchange and connection of data between different organisations through a shared reference architecture and common governance rules (IDC). By linking different actors that are interested in sharing information in the form of data, industrial digital platforms constitute a composite business ecosystem combining players from disparate backgrounds, thus fostering the creation of new data-driven services and innovative business processes»[142]. Furthermore, «understanding and provisioning the platforms that will sustain, advance, and scale business and operations, and exert strategic control is essential for every business. A

139. COM (2015) 192, p. 12.

140. N. Srnicek, *Platform capitalism*, Cambridge, 2016, p. 22.

141. European Commission, Executive Agency for Small and Medium-sized Enterprises, "Monitoring B2B Industrial Digital Platforms in Europe", 2020, p. 6.

142. European Commission, Executive Agency for Small and Medium-sized Enterprises, "Monitoring B2B Industrial Digital Platforms in Europe", 2020, p. 7.

digital platform is the assembly of technologies, capabilities and data, upon which digitally enabled businesses run. The data exchanges, intelligence and network effect within digital ecosystems generate new value beyond the platform itself. For users and competitors, the value of digital platforms introduces high switching costs and barriers to entry that cannot be easily replicated through the introduction of new products and services alone»[143].

Data in the digital context are a central element to the EU's competitiveness: «data is often considered as a catalyst for economic growth, innovation and digitization across all economic sectors»[144], but «a fragmented market does not provide sufficient scale for cloud computing, Big Data, data driven science and the Internet of Things to reach their full potential in Europe. To benefit fully from the potential of digital and data technologies, we will need to remove a series of technical and legislative barriers»[145].

In Europe, there is largely a lack of companies investing in data research and innovation compared with the United States, but the current economic and social context is characterized by «the accelerating digitization of public services, driven by the need to modernise, cut costs and provide innovative services, opens up further opportunities to optimise data storage, transfer, processing and analysis»[146]. Legal frameworks and policies are necessary «to more regulatory certainty for business and creating consumer trust in data technologies»[147]. Additionally, «data-driven innovation is a key driver of growth and jobs that can significantly boost European competitiveness in the global market. If the right framework conditions are put in place, the European Data Economy could double by 2020»[148].

Statistical surveys that consider data as a «marketplace where digital data is exchanged as "products" or "services" as a result of the elaboration of raw data»[149] have shown that «data Market value in 2025 under the High Growth Scenario continue to showcase a buoyant growth, with IT Spending on Data Market tools almost doubling over the period from 2019 to 2025 for both EU27 and EU27 plus the U.K. This will correspond to a considerable

143. S. Naujoks, L. Veronesi, G. Micheletti, *Advanced technologies for industry: B2B platforms: highlighting the relevance of B2B industrial digital platforms in Europe*, European Commission, Executive Agency for Small and Medium-sized Enterprises, 2021, p. 8.

144. COM (2015) 192, p. 14. See S. Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*, Profile books, 2019.

145. COM (2015) 192, p. 14.

146. COM (2014) 442, July 2, 2014, "Towards a thriving data-driven economy", p. 3.

147. COM (2014) 442, p. 3.

148. COM (2018) 232, April 25, 2018, "Towards a common European data space", p. 1.

149. European Commission, Directorate-General for Communications Networks, Content and Technology, Report "The European Data Market Monitoring Tool", 2020, p. 37.

CAGR for the period 2020-2025 of 11.5% and 12.0% in EU27 and in EU27 plus the U.K. respectively for the High Growth scenario. This is marginally down when compared with the previous publication – mostly as a result of a more buoyant 2020. Our new 2025 baseline scenario, shows the Data Market will amount to more than 82 billion Euro in EU27, against 58.2 billion Euro in 2019 (a 5.8% CAGR 2010-2025), while under the Challenge scenario the Data Market will still represent 72.3 billion Euro, growing at a compound annual growth rate of 3.0% from 2020. The Data Market growth will therefore continue unabated in 2025, confirming the trend set out in 2013-2014 while elaborating our initial results of the European Data Market Study (SMART 2013/0063). These forecasts for 2025 are only marginally changed from the previous forecast, with the Challenge and High Growth scenarios down 0.6% and 0.7% respectively, while the baseline scenario is a down 0.7% when compared with the previous forecast for the EU27 plus the U.K»[150].

Furthermore, the data relating to the "Data Economy" i.e., those that «measures the overall impacts of the Data Market on the economy as a whole. It involves generation, collection, storage, processing, distribution, analysis processing, delivery and exploitation of data enabled by digital technologies»[151], show that «the new estimations of the Data Economy see the value of 2019 for EU27 to be more than 325 Billion Euro and reaching nearly 355 Billion Euro in 2020, growing at 9.3%. The estimated CAGR for the period 2020/2025 in EU27 remains healthy along the period, at 9.1% in EU27. The share of the Data Economy on the GDP in the EU27 baseline scenario at 2025 is of 4.%. The CAGR 2020/2025 in EU27 for the High Growth scenario is 18.4%, that will make the Data Economy for EU27 surpass 827 Billion Euro, and accounting for 5.9%% of the GDP at 2025. In the Challenge scenario CAGR 2020/2025 for EU27 is 4%, more than halved with respect to the baseline, with the Data Economy being just above 430 Billion Euro, and accounting for 3.3% of the GDP at 2025»[152].

Although the Data Market can become significant within the European Union, it appears necessary to focus on safeguards relating to the methods of generation, collection, processing, and use of digital data so that once the data are recorded, they can be used without the loss of trust.

150. European Commission, Directorate-General for Communications Networks, Content and Technology, Report "The European Data Market Monitoring Tool", 2020, p. 38.

151. European Commission, Directorate-General for Communications Networks, Content and Technology, Report "The European Data Market Monitoring Tool", 2020, p. 38.

152. European Commission, Directorate-General for Communications Networks, Content and Technology, Report "The European Data Market Monitoring Tool", 2020, p. 39.

The General Data Protection Regulation (GDPR)[153] calls for «a strong and more coherent data protection framework in the Union, backed by strong enforcement, given the importance of creating the trust that will allow the digital economy to develop across the internal market. Natural persons should have control of their own personal data. Legal and practical certainty for natural persons, economic operators, and public authorities should be enhanced»[154].

The GDPR «lays down rules relating to the protection of natural persons with regard to the processing of personal data and rules relating to the free movement of personal data»[155] and «protects fundamental rights and freedoms of natural persons and in particular their right to the protection of personal data. The free movement of personal data within the Union shall be neither restricted nor prohibited for reasons connected with the protection of natural persons with regard to the processing of personal data»[156].

Therefore, «the governance of data is the governance of different interests. As a term, "governance" has become useful for denoting the whole landscape of actors involved in rulemaking and regulating, including but not limited to governments. As such, governing data involves multiple actors whose task is to arbitrate between competing needs, which in turn relate to much more than data or technology itself. Data represents different social and economic interests, so that for any governance arrangement or model to be credible and to gain traction at scale, it has to have a claim to represent plurality of needs and perspectives»[157].

An important component «of that representation can be framed as "data justice" – the view that data governance should not only seek to do no harm, but should positively contribute to people's autonomy and to their ability to participate in society and make claims about their needs, on a more general level»[158].

153. Regulation (UE) 2016/679, April 27, 2016, on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

154. Whereas n. 7, Regulation (UE) 2016/679. See F. Bravo, *Data Management Tools and Privacy by Design and by Default*, in R. Senigaglia, C. Irti, A. Bernes (eds.), *Privacy and Data Protection in Software Services*, Springer, 2022.

155. Art. 1.1, Regulation (UE) 2016/679.

156. Art. 1.2 and 1.3, Regulation (UE) 2016/679.

157. J. Lopez Solano, A. Martin, S. Souza, *Governing data and artificial intelligence for all: models for sustainable and just data governance*, European Parliament, 2022, p. 1.

158. J. Lopez Solano, A. Martin, S. Souza, *Governing data and artificial intelligence for all: models for sustainable and just data governance*, European Parliament, 2022, p. 1. On

The European Union must align its approach «to data governance with European values»[159] and the fundamental values of the European Union established in the Treaties must represent the basis for the public regulation of any market established in the European Union.

the subject of the reform of the Italian tax justice F. Tundo, *Giustizia Tributaria: una riforma perfettibile, ma con interventi non negoziabili*, in *Rivista di diritto tributario*, 2022.

159. J. Lopez Solano, A. Martin, S. Souza, *Governing data and artificial intelligence for all: models for sustainable and just data governance*, European Parliament, 2022, p. 2.

3. The latest innovations for the Digital Single Market in the cultural revolution of Industry 5.0

Summary: 1. Digital Market Act and Digital Services Act: Gatekeeper and intermediary services. The role of big companies in the digital market – 2. Artificial intelligence and its impact on consumer choices – 3. From Industry 4.0 to Industry 5.0, the role of social and environmental factors – 4. Monetary innovations: Virtual currencies and digital euro.

1. Digital Market Act and Digital Services Act: Gatekeeper and intermediary services. The role of big companies in the digital market

Public regulation of online platforms plays an important role in defining the Digital Single Market considering its economic significance and the rapid evolution that take place «at a pace not seen in any other sector of the economy»[1].

In the digital economy, online platforms play an important role; in 2016, the European Commission underlined in "Online Platforms and the Digital Single Market. Opportunities and Challenges for Europe" that, first, the regulatory fragmentation present in the European Union (EU) creates uncertainty for economic operators, hoping instead for harmonized standards. Second, they stated that «online platforms are subject to existing EU rules in areas such as competition, consumer protection, protection of personal data and single market freedom. Compliance with these rules by all including platforms is essential to ensure that all players can compete fairly. This will create trust for both businesses and the general public to confidently engage with online platforms»[2].

1. Communication from the Commission, COM (2016) 288, May 25, 2016, "Online Platforms and the Digital Single Market. Opportunities and Challenges for Europe", p. 2.

2. COM (2016) 288, p. 5.

The promotion of the innovations related to the platforms requires «any future regulatory measures proposed at EU level only address clearly identified problems relating to a specific type or activity of online platforms in line with better regulation principles. Such problem-driven approach should begin with an evaluation of whether the existing framework is still appropriate»[3].

To define a thriving environment where online platforms can develop, the European Commission «will take the following principles into account: a level playing field for comparable digital services; responsible behavior of online platforms to protect core values; transparency and fairness for maintaining user trust and safeguarding innovation; open and non-discriminatory markets in a data-driven economy»[4].

Thus, analyzing the rules contained in the two recent regulations: the Digital Markets Act (DMA)[5] and the Digital Services Act (DSA)[6] is possible. These Acts define the boundaries of responsibilities and obligations; thus, they aim to build a reference framework that guarantees trust and security in the Digital Single Market for businesses and consumers[7].

Specifically, the DMA points out that platforms play an increasingly important role in the European economy «by enabling businesses to reach users throughout the Union, by facilitating crossborder trade and by opening entirely new business opportunities to a large number of companies in the Union to the benefit of consumers in the Union»[8] but «platform services

3. COM (2016) 288, p. 5.

4. COM (2016) 288, p. 5.

5. European Union, Regulation 2022/1925, September 14, 2022, on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act).

6. European Union, Regulation 2022/2065, October 19, 2022, on a Single Market for Digital Services and amending Directive 2000/31/EC (Digital Services Act).

7. On the subject of DMA and DSA, see O. Andriychuk, *Shaping the New Modality of the Digital Markets: The Impact of the DSA/DMA Proposals on Inter-platform Competition*, in *World Competition: Law and Economics Review*, 2021, n. 3; C. Cauffman, C. Goanta, *A New Order: The Digital Services Act and Consumer Protection*, in *European Journal of Risk Regulation*, 2021, n. 4; C. Fernández, *A regulation to strengthen competition in digital markets – a note for an effective interaction of the DMA with competition law*, in *Competition Law International*, 2021, n. 2; M. Eifert, A. Metzger, H. Schweitzer, G. Wagner, *Taming the giants: The DMA/DSA package*, in *Common Market Law Review*, 2021, n. 4; J. Laux, S. Wachter, B. Mittelstadt, *Taming the few: Platform regulation, independent audits, and the risks of capture created by the DMA and DSA*, in *Computer Law & Security Review*, 2021, n. 2; and M. Woersdoerfer, *The Digital Markets Act and E.U. Competition Policy: A Critical Ordoliberal Evaluation*, in *Philosophy of Management*, 2023, n. 1.

8. Whereas n. 1, Regulation (EU) 2022/1925. According to A. Ambroziak, *The EU's*

feature a number of characteristics that can be exploited by the undertakings providing them»[9].

Moreover, «an example of such characteristics of core platform services is extreme scale economies, which often result from nearly zero marginal costs to add business users or end users. Other such characteristics of core platform services are very strong network effects, an ability to connect many business users with many end users through the multisided of these services, a significant degree of dependence of both business users and end users, lock-in effects, a lack of multi-homing for the same purpose by end users, vertical integration, and data driven-advantages. All these characteristics, combined with unfair practices by undertakings providing the core platform services, can have the effect of substantially undermining the contestability of the core platform services, as well as impacting the fairness of the commercial relationship between undertakings providing such services and their business users and end users»[10].

In practice, «this leads to rapid and potentially far-reaching decreases in business users' and end users' choice, and therefore can confer on the provider of those services the position of a so-called gatekeeper»[11].

Generally, the concept of «a network "gatekeeper", credited to Barzilai-Nahon, is not exclusive to the digital environment. At its most simple, a "gatekeeper" determines what can, and cannot, pass through a gate. Laidlaw further specifies that gatekeepers are non-state actors that have the capacity to alter the behaviour of others in circumstances where the state has limited capacity to do the same»[12].

However, some platforms hold sufficient economic powers that qualify them as gatekeepers. They «feature an ability to connect many business users with many end users through their services, which, in turn, enables them

perspective on the functioning of giant online platforms in the digital economy, in L. Dąbrowski, M. Suska (eds.), *The European Union Digital Single Market Europe's Digital Transformation*, Routledge, 2022, p. 6 «the aim of the Digital Market Act is to enable platforms to use their full potential by tackling the most serious cases of unfair practices. In consequence, both end users and businesses, which reach customers through the platforms, can reap the full benefits of the platform economy. At the same time, new rules should not hamper the rapid growth of new tech companies and the development of innovative services».

9. Whereas n. 2, Regulation (EU) 2022/1925.

10. Whereas n. 2, Regulation (EU) 2022/1925.

11. Whereas n. 2, Regulation (EU) 2022/1925.

12. O. Lynsket, *Regulating "Platform Power"*, in *LSE Working papers*, 2017, n. 1, p. 10, who mentions K. Barzilai-Nahon, *Toward a theory of network gatekeeping: A framework for exploring information control*, in *Journal of the American Society for Information Science and Technology*, 2008, n. 9.

to leverage their advantages, such as their access to large amounts of data, from one area of activity to another. Some of those undertakings exercise control over whole platform ecosystems in the digital economy and are structurally extremely difficult to challenge or contest by existing or new market operators, irrespective of how innovative and efficient those market operators may be. Contestability is reduced in particular due to the existence of very high barriers to entry or exit, including high investment costs, which cannot, or not easily, be recuperated in case of exit, and the absence of, or reduced access to, some key inputs in the digital economy, such as data»[13].

Consequently, «the likelihood increases that the underlying markets do not function well, or will soon fail to function well»[14]; therefore, severe imbalances, unfair practices, and unfair conditions for businesses and consumers could occur.

Considering this, the DMA aims to «contribute to the proper functioning of the internal market by laying down harmonised rules ensuring for all businesses, contestable and fair markets in the digital sector across the Union where gatekeepers are present, to the benefit of business users and end users»[15].

For the DMA, «"gatekeeper" means an undertaking providing core platform services, designated pursuant to Article 3»; here, we must consider two elements to understand this definition better.

The first element is related to the definition of core platform services. Article 2.1.2 states that «"core platform service" means any of the following:

13. Whereas n. 3, Regulation (EU) 2022/1925. O. Lynsket, *Regulating "Platform Power"*, in *LSE Working papers*, 2017, n. 1, p. 9 specifies «specific attention is devoted to those digital platforms that operate as "market makers – or orchestrator – in the digital ecology value chain". These market makers play a "pivotal role in the digital ecosystem" as a result of factors such as their size, business model, and connection capacity. Platforms may be in such a pivotal position if they are vital to the functioning of other platforms: they may have assets – such as an operating system or user-base – that are required by other entities to compete. Such control over access to software or to end-users may place some platforms in a position of market power, and, if so, the actions of the platform vis-à-vis other businesses might cause harm to competition»; however, «platforms that control access to infrastructure and users, and are therefore in a "pivotal position", may also have implications for individuals that are not captured by economic and competition law analysis. These implications are better reflected by the "gatekeeper" notion than by the concept of "platform power"».

14. Whereas n. 3, Regulation (EU) 2022/1925.

15. Art. 1.1, Regulation (EU) 2022/1925. Art. 1.2 establishes that «this Regulation shall apply to core platform services provided or offered by gatekeepers to business users established in the Union or end users established or located in the Union, irrespective of the place of establishment or residence of the gatekeepers and irrespective of the law otherwise applicable to the provision of service».

(a) online intermediation services; (b) online search engines; (c) online social networking services; (d) video-sharing platform services; (e) number-independent interpersonal communications services; (f) operating systems; (g) web browsers; (h) virtual assistants; (i) cloud computing services; (j) online advertising services, including any advertising networks, advertising exchanges and any other advertising intermediation services, provided by an undertaking that provides any of the core platform services listed in points (a) to (i)».

The second element is the designation of the gatekeeper as per the provisions of Article 3, which establishes that «an undertaking shall be designated as a gatekeeper if: (a) it has a significant impact on the internal market; (b) it provides a core platform service which is an important gateway for business users to reach end users; and (c) it enjoys an entrenched and durable position, in its operations, or it is foreseeable that it will enjoy such a position in the near future». Article 2.2 specifies, «an undertaking shall be presumed to satisfy the respective requirements in paragraph 1: (a) as regards paragraph 1, point (a), where it achieves an annual Union turnover equal to or above EUR 7,5 billion in each of the last three financial years, or where its average market capitalisation or its equivalent fair market value amounted to at least EUR 75 billion in the last financial year, and it provides the same core platform service in at least three Member States; (b) as regards paragraph 1, point (b), where it provides a core platform service that in the last financial year has at least 45 million monthly active end users established or located in the Union and at least 10 000 yearly active business users established in the Union, identified and calculated in accordance with the methodology and indicators set out in the Annex; (c) as regards paragraph 1, point (c), where the thresholds in point (b) of this paragraph were met in each of the last three financial years».

The European Commission can designate an undertaking as a gatekeeper, as specified in Article 3. The European Commission, at the same time, «may, upon request or on its own initiative, reconsider, amend or repeal at any moment, a designation decision adopted pursuant to Article 3 for one of the following reasons: (a) there has been a substantial change in any of the facts on which the designation decision was based; (b) the designation decision was based on incomplete, incorrect, or misleading information»[16].

The European Commission «shall regularly, and at least every 3 years, review whether the gatekeepers continue to satisfy the requirements»[17].

16. Art. 4.1, Regulation (EU) 2022/1925.
17. Art. 4.2, Regulation (EU) 2022/1925.

The European Commission shall also «examine at least every year whether new undertakings providing core platform services satisfy those requirements»[18]. Furthermore, the European Commission «shall publish and update a list of gatekeepers and the list of the core platform services for which they need to comply with the obligations»[19] that limit contestability or are unfair[20].

The DMA establishes that the European Commission «may conduct a market investigation for the purpose of examining whether an undertaking providing core platform services should be designated as a gatekeeper»[21], «a market investigation for the purpose of examining whether a gatekeeper has engaged in systematic non-compliance»[22], or «a market investigation for the purpose of examining whether one or more services within the digital sector should be added to the list of core platform services»[23]. The European Commission also has investigative, enforcement and monitoring powers[24].

The DMA requires the European Commission to establish a «high-level group for the Digital Markets Act», comprising the Body of the European Regulators for Electronic Communications, the European Data Protection Supervisor and European Data Protection Board, the European Competition Network, the Consumer Protection Cooperation Network, and the European Regulatory Group of Audiovisual Media Regulators[25]. This high-level group «may provide the Commission with advice and expertise in the areas falling within the competences of its members, including (a) advice and recommendations within their expertise relevant for any general matter of implementation or enforcement of this Regulation; or (b) advice and expertise promoting a consistent regulatory approach across different regulatory instruments»[26].

The hight-level group may «identify and assess the current and potential interactions between this Regulation and the sector-specific rules applied by the national authorities composing the European bodies and networks»[27]. Regarding market investigations into new services and practices, it «may

18. Art. 4.2, Regulation (EU) 2022/1925.
19. Art. 4.3, Regulation (EU) 2022/1925.
20. Regulation (EU) 2022/1925, Chapter III.
21. Art. 17, Regulation (EU) 2022/1925.
22. Art. 18, Regulation (EU) 2022/1925.
23. Art. 19, Regulation (EU) 2022/1925.
24. Regulation (EU) 2022/1925, Chapter V.
25. Art. 40.2, Regulation (EU) 2022/1925.
26. Art. 40.5, Regulation (EU) 2022/1925.
27. Art. 40.6, Regulation (EU) 2022/1925.

provide expertise to the Commission on the need to amend, add or remove rules in this Regulation, to ensure that digital markets across the Union are contestable and fair»[28].

Meanwhile, the Digital Services Act (DSA)[29] highlights the following: «information society services and especially intermediary services have become an important part of the Union's economy and the daily life of Union citizens. Twenty years after the adoption of the existing legal framework applicable to such services laid down in Directive 2000/31/EC of the European Parliament and of the Council, new and innovative business models and services, such as online social networks and online platforms allowing consumers to conclude distance contracts with traders, have allowed business users and consumers to impart and access information and engage in transactions in novel ways. A majority of Union citizens now uses those services on a daily basis. However, the digital transformation and increased use of those services has also resulted in new risks and challenges for individual recipients of the relevant service, companies and society as a whole»[30].

The DSA is closely connected with the Consumer Rights Directive (CRD), because «the CRD is an instrument that focuses on the direct relationship between traders and consumers inter alia in the context of e-commerce, where intermediation has generally been performed by online marketplaces»[31]. Furthermore, «the DSA focuses on the responsibility of platforms as intermediaries. As an illustration, according to the CRD, it is up to traders using the Amazon marketplace to make the consumer disclosures embedded in the CRD»[32].

The DSA aims «to contribute to the proper functioning of the internal market for intermediary services by setting out harmonised rules for a safe, predictable and trusted online environment that facilitates innovation and in which fundamental rights enshrined in the Charter, including the principle of consumer protection, are effectively protected»[33]. The DSA further «lays down harmonised rules on the provision of intermediary

28. Art. 40.7, Regulation (EU) 2022/1925.

29. Regulation (EU) 2022/2065, October 19, 2022, on a Single Market For Digital Services and amending Directive 2000/31/EC.

30. Whereas n. 1, Regulation (EU) 2022/2065.

31. C. Cauffman, C. Goanta, *A new order: The digital services act and consumer protection*, in *European Journal of Risk Regulation*, 2021, n. 4, p. 761.

32. C. Cauffman, C. Goanta, *A new order: The digital services act and consumer protection*, in *European Journal of Risk Regulation*, 2021, n. 4, p. 761.

33. Art. 1.1, Regulation (EU) 2022/2065.

services in the internal market. In particular, it establishes: (a) a framework for the conditional exemption from liability of providers of intermediary services; (b) rules on specific due diligence obligations tailored to certain specific categories of providers of intermediary services; (c) rules on the implementation and enforcement of this Regulation, including as regards the cooperation of and coordination between the competent authorities»[34].

The Regulation applies to «intermediary services offered to recipients of the service that have their place of establishment or are located in the Union, irrespective of where the providers of those intermediary services have their place of establishment»[35]. Intermediary service indicates «one of the following information society services: (i) "mere conduit" service, consisting of the transmission in a communication network of information provided by a recipient of the service, or the provision of access to a communication network; (ii) "caching" service, consisting of the transmission in a communication network of information provided by a recipient of the service, involving the automatic, intermediate, and temporary storage of that information, performed for the sole purpose of making more efficient the information's onward transmission to other recipients upon their request; (iii) a "hosting" service, consisting of the storage of information provided by, and at the request of, a recipient of the service»[36].

34. Art. 1.2, Regulation (EU) 2022/2065.

35. Art. 2.1 Regulation (EU) 2022/2065; the article continues «2. This Regulation shall not apply to any service that is not an intermediary service or to any requirements imposed in respect of such a service, irrespective of whether the service is provided through the use of an intermediary service. 3. This Regulation shall not affect the application of Directive 2000/31/EC. 4. This Regulation is without prejudice to the rules laid down by other Union legal acts regulating other aspects of the provision of intermediary services in the internal market or specifying and complementing this Regulation, in particular, the following: (a) Directive 2010/13/EU; (b) Union law on copyright and related rights; (c) Regulation (EU) 2021/784; (d) Regulation (EU) 2019/1148; (e) Regulation (EU) 2019/1150; (f) Union law on consumer protection and product safety, including Regulations (EU) 2017/2394 and (EU) 2019/1020 and Directives 2001/95/EC and 2013/11/EU; (g) Union law on the protection of personal data, in particular Regulation (EU) 2016/679 and Directive 2002/58/EC; (h) Union law in the field of judicial cooperation in civil matters, in particular Regulation (EU) n. 1215/2012 or any Union legal act laying down the rules on law applicable to contractual and non-contractual obligations; (i) Union law in the field of judicial cooperation in criminal matters, in particular a Regulation on European Production and Preservation Orders for electronic evidence in criminal matters; (j) a Directive laying down harmonised rules on the appointment of legal representatives for the purpose of gathering evidence in criminal proceedings».

36. Art. 3.1.g, Regulation (EU) 2022/2065.

The Regulation defines the liabilities of providers of intermediary services[37] and due diligence obligations for a transparent and safe online environment[38].

In Article 61, the DSA establishes «an independent advisory group of Digital Services Coordinators on the supervision of providers of intermediary services named "European Board for Digital Services"», which provides advice «(a) contributing to the consistent application of this Regulation and effective cooperation of the Digital Services Coordinators and the Commission with regard to matters covered by this Regulation; (b) coordinating and contributing to guidelines and analysis of the Commission and Digital Services Coordinators and other competent authorities on emerging issues across the internal market with regard to matters covered by this Regulation; (c) assisting the Digital Services Coordinators and the Commission in the supervision of very large online platforms»[39].

Fundamentally, «in the light of potential issues around the readiness of Member States to comply with DSA enforcement obligations from a technical perspective, the cooperation frameworks proposed by the DSA between Member States and with the Commission constitute much-needed support in making sure that digital asymmetry perils will not drastically affect the harmonising impact expected from the DSA»[40].

The practical application of this broad regulatory framework can only be assessed in the following years. The evolution that the framework will bring about in the digital market and the behavior of subjects operating within it can only be understood in the future.

2. Artificial intelligence and its impact on consumer choices

The effects of the market governed by digital technologies and the data produced therein, and the connection between the development of artificial intelligence (AI) and its role in the market, on consumer and business behavior require reflection.

The impact of AI can be understood by recalling the definition proposed by the European Commission in 2018[41], which states that «artificial intelligence

37. Regulation (EU) 2022/2065, Chapter II.

38. Regulation (EU) 2022/2065, Chapter III.

39. Art. 61.2, Regulation (EU) 2022/2065.

40. C. Cauffman, C. Goanta, *A new order: The digital services act and consumer protection*, in *European Journal of Risk Regulation*, 2021, n. 4, p. 774.

41. In 2017 the European Council meeting (October 19, 2017) conclusions underline

(AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications)»[42].

This definition highlights how the different systems through which AI works process large volumes of data using algorithms to achieve specific goals, particularly big data, such as «large amounts of different types of data produced with high velocity from a high number of various types of sources. Handling today's highly variable and real-time datasets requires new tools and methods, such as powerful processors, software and algorithms»[43].

The concept of AI is evidently complex «and includes a significant number of technological areas: 1. Machine learning; 2. Deep training; 3. Natural language processing; 4. Machine reasoning; 5. Computer vision; 6. Strong artificial intelligence»[44].

Among the various influencing factors of the digital market, AI plays an increasingly important role. In 2019, the applications of AI were divided into three key categories: «1. Large data: raw data, such as sensor data, patient information, market indicators, or a list of cyber threats, can be analyzed in order to capture patterns, anomalies, correlations, suggest actions and outcomes; 2. Vision: applications for the collection of images or video information that perform the recognition of objects, people, persons, emotions,

«a sense of urgency to address emerging trends: this includes issues such as artificial intelligence and blockchain technologies, while at the same time ensuring a high level of data protection, digital rights, and ethical standards. The European Council invites the Commission to put forward a European approach to artificial intelligence by early 2018 and calls on the Commission to put forward the necessary initiatives for strengthening the framework conditions with a view to enable the EU to explore new markets through risk-based radical innovations and to reaffirm the leading role of its industry» (p. 7). With reference to blockchain R. De Caria, *Blockchain and sovereignty*, in O. Policino, G. De Gregorio (eds.), *Blockchain and Public Law. Global Challenges in the Era of Decentralisation*, Edward Elgar, 2021.

42. Communication from the Commission, COM (2018) 237, April 25, 2018, "Artificial Intelligence for Europe", p. 1. On the need to rethink legal remedies as we apply them to robot torts see A. Guerra, F. Parisi, D. Pi, *Liability for robots I: legal challenges*, in *Journal of Institutional economics*, 2022, n. 18.

43. Communication from the Commission, COM (2014) 442, July 2, 2014, "Towards a thriving data-driven economy", p. 4.

44. E. Konnikov, O. Konnikova, V. Leventsov, *IT Services market as a driver for the development of the artificial intelligence market*, in *IOP Conference Series*, 2019, n. 1, p. 1.

and other objects in the real world; 3. Language: artificial intelligence is used for processing and recognition of speech, texts, as well as dynamics, syntax, and nuances of natural language»[45].

AI is needed «to make significant efforts» to ensure that «Europe is competitive in the AI landscape, with bold investments that match its economic weight», «no one is left behind in the digital transformation», and «new technologies are based on values»[46].

The European Union «should have a coordinated approach to make the most of the opportunities offered by AI and to address the new challenges that it brings. The EU can lead the way in developing and using AI for good and for all, building on its values and its strengths»[47].

The European initiative on AI «aims to: – Boost the EU's technological and industrial capacity and AI uptake across the economy, both by the private and public sectors. This includes investments in research and innovation and better access to data. – Prepare for socio-economic changes brought about by AI by encouraging the modernization of education and training systems, nurturing talent, anticipating changes in the labor market, supporting labor market transitions and adaptation of social protection systems. – Ensure an appropriate ethical and legal framework, based on the Union's values and in line with the Charter of Fundamental Rights of the EU. This includes forthcoming guidance on existing product liability rules, a detailed analysis of emerging challenges, and cooperation with stakeholders, through a European AI Alliance, for the development of AI ethics guidelines»[48].

There are several challenges for a common strategy at the European level, requiring substantial economic investments and the full involvement of the Member States, underlining the general need «to join forces at European level, to ensure that all Europeans are part of the digital transformation»[49]. One of «the main challenges for the EU to be competitive is to ensure the take-up of AI technology across its economy»[50].

AI is a phenomenon that «like electricity in the past, is transforming our world»[51] which can generate concerns. The European Commission

45. E. Konnikov, O. Konnikova, V. Leventsov, *IT Services market as a driver for the development of the artificial intelligence market*, in *IOP Conference Series*, 2019, n. 1, p. 2.

46. COM (2018) 237, p. 2.

47. COM (2018) 237, p. 2.

48. COM (2018) 237, p. 3.

49. COM (2018) 237, p. 19.

50. COM (2018) 237, p. 5.

51. Communication from the Commission, COM (2018) 795, December 7, 2018, "Coordinated Plan on Artificial Intelligence", p. 1.

proposed an approach «that places people at the centre of the development of AI (human-centric AI) and encourages the use of this powerful technology to help solve the world's biggest challenges: from curing diseases to fighting climate change and anticipating natural disasters, to making transport safer and fighting crime and improving cybersecurity»[52].

For these reasons, Member States are encouraged to develop national AI strategies. Europe aims «to develop trusted AI based on ethical and societal values building on its Charter of Fundamental Rights. People should not only trust AI, but also benefit from the use of AI for their personal and professional lives. Europe aims at creating an innovation friendly ecosystem for AI: an environment where economic players find the infrastructure, research facilities, testing environments, financial means, legal framework, and adequate skills levels to invest in and deploy AI»[53].

Overall, the goal is «for Europe to become the world-leading region for developing and deploying cutting-edge, ethical and secure AI, promoting a human-centric approach in the global context»[54].

However, a positive vision of AI seems to be required, «as contributing to public goods and creating public value, through governance approaches that distribute power over AI systems and the data ecosystems they rely on, and that strongly incentivise good behaviour on the part of those developing and deploying those systems»[55]. Otherwise, «developing and deploying AI systems at scale is and will remain for the foreseeable future, a privilege that is mainly accessible to the most powerful actors in society, whether commercial or public-sector»[56].

AI «is a collection of technologies that combine data, algorithms and computing power. Advances in computing and the increasing availability of data are therefore key drivers of the current upsurge of AI. Europe can combine its technological and industrial strengths with a high-quality digital infrastructure and a regulatory framework based on its fundamental values to

52. COM (2018) 795, p. 1.

53. COM (2018) 795, Annex, p. 1.

54. COM (2018) 795, Annex, p. 1.

55. J. Lopez Solano, A. Martin, S. Souza, L. Taylor, *Governing data and artificial intelligence for all: models for sustainable and just data governance*, European Parliament, 2022, p. 65, define «four areas which data and AI governance could serve in order to be qualified as good: preserving and strengthening public infrastructure and public goods; inclusiveness; contestability and accountability, and global responsibility».

56. J. Lopez Solano, A. Martin, S. Souza, L. Taylor, *Governing data and artificial intelligence for all: models for sustainable and just data governance*, European Parliament, 2022, p. 65.

become a global leader in innovation in the data economy and its applications as set out in the European data strategy»[57].

To enable trustworthy and secure AI development in Europe while respecting the values and rights of EU citizens, the «main building blocks are: – The policy framework setting out measures to align efforts at European, national and regional level. In partnership between the private and the public sector, the aim of the framework is to mobilise resources to achieve an "ecosystem of excellence" along the entire value chain, starting in research and innovation, and to create the right incentives to accelerate the adoption of solutions based on AI, including by small and medium-sized enterprises (SMEs). – The key elements of a future regulatory framework for AI in Europe that will create a unique "ecosystem of trust". To do so, it must ensure compliance with EU rules, including the rules protecting fundamental rights and consumers' rights, in particular for AI systems operated in the EU that pose a high risk. Building an ecosystem of trust is a policy objective in itself, and should give citizens the confidence to take up AI applications and give companies and public organisations the legal certainty to innovate using AI»[58].

Using AI correctly and profitably plays a significant role in achieving the Sustainable Development Goals, the European Green Deal, and supporting democratic processes and social rights.

In particular, in the Digital Europe Programme[59], various factors that characterize the digital context are outlined in five objectives. The general objectives of the Program «shall be to support and accelerate the digital

57. COM (2020) 65, February 19, 2020, White Paper "On artificial intelligence: A European approach to excellence and trust", p. 2.

58. COM (2020) 65, p. 3. The Digital transformation scoreboard (who monitoring the transformation of existing industry and enterprises, in particular, the scoreboard adopts national indicators to monitor digital) in 2018 shows that "the adoption of artificial intelligence by businesses has gained speed in recent years. Currently, the share of adoption of artificial intelligence amongst firms is relatively even and low across small firms of less than 250 employees. The share of adoption ranges from 4% in very small firms of less than 10 employees, up to 9% in firms of between 10 and 250 employees. As for large companies in the sample, artificial intelligence is only adopted by 20% of companies in this category. In addition, amongst the firms in the sample, artificial intelligence was mainly adopted by very young companies under 5 years old (22% for firms between 3 and 5 years old), indicating that although artificial intelligence has been around for some time, its business use by firms is only just taking off, mainly in younger firms» see European Commission, "Digital transformation scoreboard 2018: EU businesses go digital: opportunities, outcomes and uptake", Publications Office, 2019, p. 50.

59. European Union, Regulation (EU) 2021/694, April 29, 2021, establishing "the Digital Europe Programme and repealing Decision (EU) 2015/2240.

transformation of the European economy, industry and society, to bring its benefits to citizens, public administrations and businesses across the Union and to improve the competitiveness of Europe in the global digital economy while contributing to bridging the digital divide across the Union and reinforcing the Union's strategic autonomy, through holistic, cross-sectoral and cross-border support and a stronger Union contribution»[60]. The five interrelated specific objectives are high-performance computing, AI, cybersecurity and trust, advanced digital skills, deployment, and best use of digital capacity and interoperability[61]. The Digital Europe Programme aims «to strengthen and promote Europe's capacities in key digital technology areas through large-scale deployment; in the private sector and in areas of public interest, to widen the diffusion and uptake of Europe's key digital technologies, promoting the digital transformation and access to digital technologies»[62].

With reference to the specific objective of "artificial intelligence", the Digital Europe Programme aim to «(a) build up and strengthen core AI capacities and knowledge in the Union, including building up and strengthening quality data resources and corresponding exchange mechanisms, and libraries of algorithms, while guaranteeing a human-centric and inclusive approach that respects Union values; (b) make the capacities referred to in point (a) accessible to businesses, especially SMEs and start-ups, as well as civil society, not-for-profit organisations, research institutions, universities and public administrations, in order to maximise their benefit to the European society and economy; (c) reinforce and network AI testing and experimentation facilities in Member States; (d) develop and reinforce commercial application and production systems in order to facilitate the integration of technologies in value chains and the development of innovative business models and to shorten the time required to pass from innovation to commercial exploitation and foster the uptake of AI-based solutions in areas of public interest and in society»[63].

Meanwhile, the Proposal for a Regulation on "Artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts", April 21, 2021, n. 206, states «by improving prediction, optimising operations and resource allocation, and personalising service delivery, the use of artificial intelligence can support socially and environmentally beneficial

60. Art. 3.1, Regulation (EU) 2021/694.
61. Art. 3.2, Regulation (EU) 2021/694.
62. Art. 3.1, Regulation (EU) 2021/694.
63. Art. 5.1, Regulation (EU) 2021/694.

outcomes and provide key competitive advantages to companies and the European economy»[64]. However, «the same elements and techniques that power the socio-economic benefits of AI can also bring about new risks or negative consequences for individuals or the society»[65].

Considering the balance between risks and benefits of AI, «the EU is committed to strive for a balanced approach. It is in the Union interest to preserve the EU's technological leadership and to ensure that Europeans can benefit from new technologies developed and functioning according to Union values, fundamental rights and principles»[66].

Using AI brings the implications of modifying traditional types of consumption, helping make consumers more aware of their choices; however AI may be able to direct purchasing choices[67] such that the consumer is not fully aware of them[68].

There is «a potential paradox that can characterize choice in the age of automation, artificial intelligence and data-driven marketing» in fact, «some of the benefits that improve the well-being of these technologies can backfire and generate consumer reactivity if they undermine the sense of

64. Communication from the Commission, COM (2021) 206, April 21, 2021, "Proposal for regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain union legislative acts", p. 1. See M. Rabitti, A. Sciarrone Alibrandi, *La proposta di Regolamento europeo sull'Intelligenza Artificiale nel prisma del settore finanziario: uno sguardo critico*, in M. Passalacqua (ed.), *Diritti e mercati nella transizione economica e digitale. Studi dedicati a Mauro Giusti*, Cedam, 2022.

65. COM (2021) 206, p. 1.

66. COM (2021) 206, p. 1.

67. The most recent study perspectives on the choices that consumers make show how the digital market can "assist" them in their choices through the so-called "Digital assistants", that is «Digital Agents based on algorithms that can handle entire transactions: from using data to predict consumers' preferences, to choosing the products or services to purchase, to negotiating and executing the transaction, and even automatically forming coalitions of buyers to secure optimal terms and conditions. Human decision-making could be completely bypassed. Such algorithms may be written by consumers for their own use or supplied by external firms. We call these digital assistants "algorithmic consumers"» see M. Gal, N. Elkin Koren, *Algorithmic consumers*, in *Harvard Journal of Law and Technology*, 2017; and K.N. Lemon, P.C. Verhoef, *Understanding customer experience throughout the customer journey*, in *Journal of Marketing*, 2016, n. 6.

68. The challenges associated with consumer protection are such that in 2018, the European Commission issued the Communication COM (2018) 183, April 11, 2018, "A New Deal for Consumers", «the "New Deal for Consumers" builds on the existing consumer policy framework and takes it a step further by proposing modern rules fit for today's changing markets and business practices, stronger public and private enforcement tools, and better redress opportunities» (p. 3).

autonomy consumers seek in their decision-making. This can occur when consumers feel deprived of their ability to control their choices: predictive algorithms are getting better and better at anticipating consumer preferences and decision aids are often too opaque for consumers to understand (how they might influence preferences and decisions)»[69].

Several studies «suggest that consumers oppose algorithmic advice, a phenomenon described as algorithm aversion. Dietvorst *et al*., for example, found that individuals were less likely to choose algorithmic advice over inferior human advice to predict student performance after seeing an algorithm err. In the medical domain, scholars have shown that patients do not trust algorithmic advice, arguing that patients are afraid that it neglects human uniqueness. In a similar vein, Castelo *et al*. found that algorithm aversion was higher for intuitive, subjective tasks than for quantifiable, objective tasks. However, a study by Logg *et al*. has called algorithm aversion into question. Focusing on different domains such as business forecasts or prediction of romantic attraction, they found that people generally appreciated advice from an algorithm over human advice. Hildebrand and Bergner showed that people appreciated algorithmic financial advice more strongly if it used a human-like, conversational style. In sum, these contradictory results point to the existence of additional factors which may affect adoption of algorithmic advice»[70].

The situation is subject to continuous changes and developments that can generate positive and negative impacts concerning the consolidated protections provided by the EU for consumers.

3. From Industry 4.0 to Industry 5.0, the role of social and environmental factors

The digital transition underway in the global economy affects the industrial sector as well.

Digital technologies represent a determining factor for an increase in productivity; digital innovations have been increasingly integrated into all sectors, including industries. Progress «in digital technologies in

69. A. Quentin, C. Ziv, W. Klau, A. Crum, F. Douglas, *Consumer Choice and Autonomy in the Age of Artificial Intelligence and Big Data*, in *Customer Needs and Solutions*, 2018, n. 1-2, p. 29.

70. B. von Walter, D. Kremmel, B. Jäger, *The impact of lay beliefs about AI on the adoption of algorithmic advice*, in *Marketing Letters*, 2022, n. 1, p. 144.

combination with other key enabling technologies is changing the way we design, produce, commercialize, and generate value from products and related services. Advances in technologies such as the Internet of Things (IoT), 5G, cloud computing, and data analytics and robotics are transforming products, processes, and business models in all sectors ultimately creating new industrial patterns as global value chains shift. The challenge ahead is for the European industry to seize fully and swiftly these digital opportunities. This is essential to ensure Europe's mid and long term competitiveness with implications for overall welfare»[71].

In the Digital Single Market strategy, the second pillar of "maximizing the growth potential of the digital economy" contains «all the major levers for improving industry digitization with actions in areas such as the data economy, IoT, cloud computing, standards, skills, and e-government. It is part of a coherent strategic framework of Commission initiatives aimed at strengthening the overall competitiveness of industry»[72].

Although the integration of digitization into industrial processes must be as per the company's will, «an urgent EU-level effort to help coordinate national and regional initiatives to digitize industry is important»[73].

The integration between physical components, information and communication technology, and the digital economy in the industrial sector becomes central to the definition of Industry 4.0, as highlighted by a group of German scholars in a 2013 report entitled "Securing the future of the German manufacturing industry. Recommendations for implementing the strategic initiative Industrie 4.0".

The report stresses, «the first three industrial revolutions came about as a result of mechanisation, electricity, and IT. Now, the introduction of the Internet of Things and Services into the manufacturing environment is ushering in a fourth industrial revolution. In the future, businesses will establish global networks that incorporate their machinery, warehousing systems, and production facilities in the shape of Cyber-Physical Systems (CPS)»[74].

71. Communication from the Commission, COM (2016) 180, April 19, 2016, "Digitising European Industry. Reaping the full benefits of a Digital Single Market", p. 2.

72. COM (2016) 180, p. 2.

73. COM (2016) 180, p. 2.

74. *Securing the future of the German manufacturing industry. Recommendations for implementing the strategic initiative industrie 4.0*, p. 5, continues «Industrie 4.0 holds huge potential. Smart factories allow individual customer requirements to be met and mean that even one-off items can be manufactured profitably. In Industrie 4.0, dynamic business and engineering processes enable last-minute changes to the production and deliver the ability to

Thus, physical production and virtual systems coexist in the industry[75], and digital technologies exist «that enable new and more efficient process[es], and which in some cases yield new goods and services. The associated technologies are many, from developments in machine learning and data science, which permit increasingly autonomous and intelligent systems, to low-cost sensors which underpin the IoT, to new control device[s] that make second-generation industrial robotics possible»[76].

This new production model is gradually establishing itself. Its importance was underlined by the Opinion of the European Economic and Social Committee on "The impact of business services in industry" in October 2014, which stated that «a quantum leap results from a vertical and horizontal cooperation from machine to internet, machine to human, and machine to machine along the value chain in real time. Islands of automation will get interconnected in innumerable networks and variations. Software and networks will connect intelligent products, digital services, and customers to the new innovative "products" of the future. This development is widely discussed. A pioneering economic and political approach is the German project Industry 4.0, which pays due attention both to business services and to the wider economic context which is undergoing a fundamental transformation»[77].

Smart factories of the future are «of a very sophisticated complexity,

respond flexibly to disruptions and failures on behalf of suppliers, for example. End-to-end transparency is provided over the manufacturing process, facilitating optimized decision-making. Industrie 4.0 will also result in new ways of creating value and novel business models. In particular, it will provide start-ups and small businesses with the opportunity to develop and provide downstream services. In addition, Industrie 4.0 will address and solve some of the challenges facing the world today, such as resource and energy efficiency, urban production, and demographic change. Industrie 4.0 enables continuous resource productivity and efficiency gains to be delivered across the entire value network. It allows work to be organized in a way that takes demographic change and social factors into account. Smart assistance systems release workers from having to perform routine tasks, enabling them to focus on creative, value-added activities».

75. K. Schwab, *The Industrial Revolution*, World Economic Forum, 2016.

76. Organisation of Economic Co-operation and Development (OECD), *The next production revolution: implications for governments and business*, OECD Publishing, Paris, 2017, p. 27. The report stress that «how production might evolve has far-reaching consequences for productivity, employment, skills, income distribution, trade, well-being and the environment and the policy implications of the next production revolution are far-reaching. Indeed, it is difficult to mention a major area of policy that will be unaffected from research and education, to data security and infrastructure, and the future of production is central to many aspects of the OECD's work» (p. 3).

77. Opinion of the European Economic and Social Committee on "The impact of business services in industry", points 1.9 and 1.10.

embedded in fine-tuned networking due to further developed software applications and systems»[78]: the potential «for industry and the economy is immense»[79].

This revolution requires specific attention from the EU, which must support companies in accessing a suitable infrastructure for the demand for digital services (for example, broadband internet infrastructure) and to prevent potentially adverse effects on the labor market[80].

In 2014, the European Commission intervened in industrial policy with the Communication "For a European Industrial Renaissance"[81], highlighting that the global economy is experiencing a digital transition. This transition requires constant adaptation of industrial policy because digital technologies will soon be determining factors that increase industrial productivity, «the challenge is to roll out digitally enabled networks with the level of security and resilience required to support the businesses in their operations. The impact of these changes is starting to emerge and will provide market opportunities, notably for key enabling Technologies»[82].

The broad impact of digitization on industry is detailed in the Communication "Investing in a smart, innovative, and sustainable Industry. A renewed EU Industrial Policy Strategy"[83], which underlines that «digital transformation is at the core of the ongoing industrial revolution. Progress in technologies such as big data, artificial intelligence and robotics, the Internet of Things and high-performance computing is impacting the very nature

78. Opinion of the European Economic and Social Committee on "The impact of business services in industry", point 4.4.

79. Opinion of the European Economic and Social Committee on "The impact of business services in industry", point 4.5.

80. See Opinion of the European Economic and Social Committee on "The impact of business services in industry", points 5.2 and 5.3; «it is worrying that this sea change in the economy, with all its consequences for society and the labor market, is still insufficiently analyzed and is not being discussed more widely in circles other than the business and scientific communities. Consequently, there are many reasons why this transition to totally new perspectives in the economy must be discussed widely in politics and in society, both nationally and at the EU level. This process affects the day-to-day life of many citizens in regions and towns in terms of employment as well as unemployment. It will thus also influence the choices of people regarding their own future. The social and cultural aspects involved should be duly highlighted and taken into account».

81. European Commission, COM (2014) 14, January 22, 2014, "For a European Industrial Renaissance".

82. COM (2014) 14, p. 5.

83. Communication from the Commission, COM (2017) 479, September 13, 2017, "Investing in a smart, innovative and sustainable industry: A renewed EU industrial policy strategy".

of work and society as a whole. With the advent of digital technologies, the service component of industry is becoming ever more important. Boosting the uptake of smart technologies along and across industrial value chains and promoting firm growth is therefore key to Europe's growth and competitiveness»[84].

Regarding the literature: «Alcace *et al*. state that Industry 4.0 is leading the age of digitization. Vaidyya *et al*. consider it Industry 4.0 marks the increasingly individualized needs of customers because it involves a rigorous human being integration into the production process to continuously improve and focus on value-added activities and avoid spoil. Zhou, Le Cardinal state that Industry 4.0 is a great opportunity and a great challenge for enterprises. Nwaiwu *et al*. identify digital technologies in the manufacturing environment, which include: strategy, organizational suitability, competitiveness, performance and human resources. Kumar *et al*. mention it digitization and technology play a key role in changing market trends. This opens up a wide range of possibilities and business potential in the manufacturing sector market. Hofmann, Rüsch state that Industry 4.0 it is currently a hotly debated topic that is thought to affect all sectors by changing the design of the goods, the method of production, delivery and payment. The authors mentioned above discuss the potential of Industry 4.0 in context of logistics management. Wichman *et al*. consider new technologies as a key feature of the industry revolution, are combined with new business logic. The new generation of offers can have a whole new value component, which could create learning and development tools for the customer. Solvsberg *et al*. analyze it Industry 4.0 is the result of the industrial integration of Internet Items (IIoT) and manufacturing. Javaid *et al*. consider that Industry 4.0 provides an automated solution for a variety of manufacturing and other industries related areas»[85].

In the post-pandemic context, the digital and technological evolution that has characterized the last few years modifies the reference points for the industry and regulators; digitization is the epochal change underway, and the renewed attention to environmental issues has assumed a central role.

In this sense, a new reference paradigm for the industrial sector has recently been defined and closely connected with Industry 4.0: Industry 5.0.

Industry 4.0 «is based on the concept of smart factory, where smart products, machines, storage systems, and data unite in the form of the

84. COM (2017) 479, p. 8.

85. M. Išoraitė, G. Gulevičiūtė, N. Ambrusevič, *Impact of Industry 4.0 on business studies*, in *Entrepreneurship and Sustainability*, 2022, n. 3, p. 66.

cyber-physical production systems. In the technical aspect, Industry 4.0 has improved the human–machine interaction, but in the socially sustainable aspect, technological transformations of Industry 4.0 should carefully consider the central role of humans. The role and importance of employees was emphasized during the Covid-19 pandemic, and the pandemic itself triggered rethinking of the Industry 4.0 paradigm. Consequently, the idea of Industry 5.0 appeared as the extension to Industry 4.0 with social and environmental dimension. On the one side, Industry 5.0 is focused on the workers' skills, knowledge, and abilities to cooperate with machines and robots, and on the other side, on flexibilities in production processes and environmental impact. The obstacles to introduce Industry 4.0, arising from technological and organizational points of view, lead to rethinking the process about the shortcomings of the Industry 4.0 approach. Several drivers encourage thinking and discussion about the new paradigm»[86].

Besides the human factor, scholars have recently «noted research gaps in sustainability, responsibility, safety, and others in the Industry 4.0 concept (Longo *et al*.). Saniuk *et al*. attempted to systematize the barriers of Industry 4.0 in the following categories: social and market, concerning particular groups of stakeholders of changes. Other authors (scientists, researchers) also participated in discussing social and environmental problems (gaps) of Industry 4.0. Ranghino undertook a discussion about environmental risks. Bonilla *et al*. wrote about the impact of Industry 4.0 technology on the environment and sustainability, creating optimistic and pessimistic scenarios. The sustainability aspect of Industry 4.0 was also a topic of publication: Gajdzik *et al*., Luthra and Mangla, Lopes *et al*., Pagoropoulos *et al*. and others. Gajdzik *et al*. discussed the place and role of sustainability in the concept of Industry 4.0. Luthra and Mangla presented a topic about sustainability in the supply chain, and Lopes *et al*. about Industry 4.0 and the circular economy. A similar topic was analyzed by Pagoropoulos *et al*. but in the influence of digital technologies on the circular economy. At the same time, Terlau and Hirsch discussed sustainable consumption in the development of industries and economies. Sustainable Manufacturing in Industry 4.0 topic was presented by Stock and Seliger»[87].

The concept of Industry 4.0 transitions to Industry 5.0 by considering

86. M. Zizic, M. Mladineo, N. Gjeldum, L. Celent, *From Industry 4.0 toward Industry 5.0: A Review and Analysis of paradigm Shift for the People, Organization and Technology*, in *Energies*, 2022, n. 14, p. 2.

87. S. Grabowska, S. Saniuk, B. Gajdzik, *Industry 5.0: improving humanization and sustainability of Industry 4.0*, in *Scientometrics*, 2022, n. 6, p. 3118.

additional factors and objectives[88]. Industry 5.0 «recognises the power of industry to achieve societal goals beyond jobs and growth, to become a resilient provider of prosperity, by making production respect the boundaries of our planet and placing the wellbeing of the industry worker at the centre of the production process. It complements the existing "Industry 4.0" paradigm by having research and innovation drive the transition to a sustainable, human-centric and resilient European industry. It *moves focus* from solely shareholder value to stakeholder value, for all concerned»[89].

Industry 5.0 «addresses recent knowledge and learning from the Covid pandemic and the fundamental need to build resilience across value chains and secure people's lives and livelihoods whilst living within planetary boundaries. It proposes a very different set of enabling approaches to Europe's so-called "twin transition", intending to connect the digital transformation with sustainability and climate action»[90].

The twin ecological and digital transitions «will affect every part of our economy, society and industry. They will require new technologies, with investment and innovation to match»[91].

Regarding ecological transition, the European Green Deal represents

88. European Commission, *Industry 5.0: toward a sustainable, human-centric, and resilient European industry*, January 2021, p. 8, stress «industry 5.0 should not be understood as a chronological continuation of, or an alternative to, the existing Industry 4.0 paradigm. It is the result of a forward-looking exercise, a way of framing how European industry and emerging societal trends and needs will co-exist. As such, Industry 5.0 complements and extends the hallmark features of Industry 4.0. It emphasizes aspects that will be deciding factors in placing industry in future European society, these factors are not just economic or technological in nature, but also have important environmental and social dimensions».

89. European Commission, *Industry 5.0: toward a sustainable, human-centric, and resilient European industry*, January 2021, p. 4.

90. European Commission, *Industry 5.0: toward a sustainable, human-centric, and resilient European industry*, January 2021, p 6; European Commission, *Advanced technologies for industry: B2B platforms*, 2021, p. 8, highlighting the relevance of B2B industrial digital platforms in Europe underlines «in order to thrive in this phase, the European industry will not only adapt to shifting customer needs and market conditions, but also proactively shape the needs and the market to match their strengths, innovations, and business models, with the help of IT. In the "next normal" a continuum of applications and data that stretches from machines, assets, processes, up to the boardroom – combined with historical data, enterprise systems and global information – will continually detect the environment and put it into a new context. In this context, competitiveness is determined by how data is transformed into insight to create high-value differentiators for products, customers and markets; and how effectively organizations deliver meaningful, value-added learning, predictions and actions that improve engagement, processes, enterprise decision making, resilience competitive advantage».

91. Communication from the Commission, COM (2020) 102, March 10, 2020, "A New Industrial Strategy for Europe", p. 2.

a multisectoral roadmap that «aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use»[92].

This broad connection to the transition requires «a realignment of policy, to support business innovation and transformation aligned with regenerative circular economy principles and to encourage all companies to orient away from linear, extractive, wasteful and polluting practices»[93].

A «regenerative vision for industry through an Industry 5.0 approach would offer the timely opportunity to include specific holistic sustainability and resilience targets within Europe's digital roadmap, so digitalisation becomes a lever for lowering the carbon and material footprint of Europe's economy and industry within it and shifts to a people and planet-centred approach. Digital technologies could be harnessed to deliver on climate commitments, bringing digital and green properly together. Artificial Intelligence (AI), for example, can and should be designed and deployed for sustainability rather than being independent or ignorant of it. Distributed ledger technologies, smart contracts and NFTs can be coded for radical transparency, shared ownership of the commons and automation on the principles of resilience, regeneration and sustainability»[94].

The governance of these changes and challenges requires public policies that are able to face these challenges and define regulatory frameworks within which the complex system can develop.

The system must consider the role of "Society 5.0", that is, a society that «attempts to balance economic development with the resolution of societal and environmental problems. Society 5.0 is a society in which advanced IT technologies, Internet of Things, robots, artificial intelligence and augmented reality are actively used in everyday life, industry, healthcare and other spheres of activity, not primarily for economic advantage but for the benefit and convenience of each citizen»[95].

Therefore, balancing the many factors connected to the transition represents the real future challenge for European Institutions.

92. Communication form the Commission, COM (2019) 640, December 11, 2019, "The European Green Deal", p. 2.

93. European Commission, *Industry 5.0, a transformative vision for Europe: governing systemic transformations towards a sustainable industry*, December 2022, p. 10.

94. European Commission, *Industry 5.0, a transformative vision for Europe: governing systemic transformations towards a sustainable industry*, December 2022, p. 12.

95. European Commission, *Industry 5.0: toward a sustainable, human-centric, and resilient European industry*, January 2021, p. 9.

4. Monetary innovations: Virtual currencies and Digital euro

The affirmation of the digital context is connected to the development of a multiplicity of phenomena, among which different ways of saving and paying can be analyzed. Digitization has a transversal relevance, and «money is no exception. The ways in which we pay and save are changing, driven by considerations of convenience and a demand for immediacy»[96].

The various payment methods are now well known and connected to the affirmation of e-commerce, increasingly leading to the dematerialization of money[97]. In such a case, the creation of different currencies in this digital context cannot be overlooked, such as fiat currency, which refers to the creation of virtual currency.

Historically, the first reference to virtual currency is contained in a paper by Satoshi Nakamoto entitled "Bitcoin: A Peer-to-Peer Electronic Cash System". The author underlines: «commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments […] but no mechanism exists to make payments over a communications channel without a trusted party» and then proposes «an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party»[98].

The regulatory implications associated with this phenomenon are immediately evident at the European and international level. Thus, in 2012, the European Central Bank, in a report entitled "Virtual Currency Schemes", noted, «virtual currency schemes have become relevant in several areas that

96. S. Grünewald, C. Zellweger-Gutknecht, B. Geva, *Digital euro and ECB powers*, in *Common Market Law Review*, 2021, n. 4, p. 1029. In general, we can consider the importance of the European Union's Digital Financial Regulation Package, which «consists of 4 "subpackages" the Digital Finance Strategy, the Retail Payments Strategy, the Regulation of the European Parliament and the Council on crypto-asset markets – MiCA – and the Digital Operational Resilience Act – DORA», see Z. Varga, *The innovative response of the European union to managing the Digital finance*, in *European Integration Studies*, 2021, n. 2, p. 108.

97. See A. Canepa, *The Role of Payment Services in the Development of the Big Tech Ecosystem*, in *European Business Law Review*, 2022, n. 7.

98. S. Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, p. 1; which continues to highlight how «transactions that are computationally impractical to reverse would protect sellers from fraud, and routine escrow mechanisms could easily be implemented to protect buyers. In this paper, we propose a solution to the double-spending problem using a peer-to-peer distributed timestamp server to generate computational proof of the chronological order of transactions. The system is secure as long as honest nodes collectively control a more CPU power than any cooperating group of attacker nodes».

traditionally fall within the scope of the financial system and especially so in relation to the tasks of central banks». In this report, the European Central Bank stressed «virtual currency schemes visibly lack a proper legal framework, as well as a clear definition of rights and obligations for the different parties. Key payment system concepts such as the finality of the settlement do not seem to be clearly specified»[99]. Therefore, it becomes relevant to «consider the extent to which they might affect a central bank's tasks in the areas of payment systems, regulation, financial stability, monetary policy and price stability»[100].

Therefore, observing how the phenomenon appears to be new, such that there is not even a common definition is important. In 2012, the European Central Bank defined virtual currency as «a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community»[101]. In their subsequent 2015 report, "Virtual Currency Schemes – a further analysis", the European Central Bank broadened their previous definition by considering virtual currencies as «a digital representation of value, not issued by a central bank, credit institution or e-money institution, which in some circumstances can be used as an alternative to money»[102]. The report specified that the term virtual currency is used «to describe both the aspect of value and that of the inherent or in-built mechanisms ensuring that value can be transferred»[103].

In 2014, the European Banking Authority (EBA) defined virtual currency in the document "Opinion on virtual currencies"[104] «as a digital representation of value that is neither issued by a central bank or public authority nor necessarily attached to a fiat currency, but is used by natural or legal persons as a means of exchange and can be transferred, stored or traded electronically»[105]. The EBA focuses primarily on the difference between money and virtual currency, specifying that money is characterized by being

99. European Central Bank, *Virtual currency schemes*, 2012, p. 42.

100. European Central Bank, *Virtual currency schemes*, 2012, p. 33.

101. European Central Bank, *Virtual currency schemes*, 2012, p. 13.

102. European Central Bank, *Virtual Currency Schemes – A further analysis*, 2015, p. 4.

103. European Central Bank, *Virtual Currency Schemes – A further analysis*, 2015, p. 4.

104. The European Banking Authority in September 2013 underlines «virtual currencies emerged on the EBA's radar as one of the many innovations to monitor. Following three months of analysis, the EBA issued a public warning on 13 December 2013, making consumers aware that VC are not regulated and that the risks are unmitigated as a result», and in autumn 2013, «the EBA noticed increased VC activity across EU Member States, with a growing number of VC schemes being launched, an increasing number of merchants, and a rising number of individuals using VCs, and Bitcoins in particular, not only as an investment but as a means of paying for goods and services» (p. 6).

105. European Banking Authority, *EBA Opinion on "virtual currencies"*, p. 19.

a «unit of account, a means of exchange and a store of value»[106]. Virtual currency does not satisfy these requirements.

In June 2014, the eFinancial Action Task Force (FATF) defined virtual currency as «a digital representation of value that can be digitally traded and functions as (1) a medium of exchange; and/or (2) a unit of account; and/or (3) a store of value, but does not have legal tender status (i.e., when tendered to a creditor, is a valid and legal offer of payment) in any jurisdiction. It is not issued nor guaranteed by any jurisdiction, and fulfils the above functions only by agreement within the community of users of the virtual currency»[107].

The Bank for International Settlements, while not providing a legal definition of virtual currency, in their November 2015 Report on "Digital currencies", released by the Committee on Payments and Market Infrastructures, identified three key aspects relating to virtual currencies. First, relating to *assets*[108], and second, with «the way in which these digital currencies are transferred, typically via a built-in distributed ledger»[109]. The third aspect is connected to the «variety of third-party institutions, almost exclusively non-banks, which have been active in developing and operating digital currency and distributed ledger mechanisms»[110].

The distinction between virtual currency and electronic money is also underlined by the European Central Bank, which highlights that «electronic money schemes are regulated and electronic money institutions that issue means of payment in the form of electronic money are subject to prudential supervisory requirements. This is not the case for virtual currency schemes[111]». Furthermore, «electronic money is primarily subject to the operational risk associated with potential disruptions to the system on which the electronic money is stored. Virtual currencies are not only affected by credit, liquidity

106. European Banking Authority, *EBA Opinion on "virtual currencies"*, p. 24.

107. Financial Action Task Force (FATF), *Virtual currencies: Key definitions and potential AML/CFT risks*, 2014, p. 4.

108. Bank for International Settlements, Committee on payments and Market Infrastructures, *Report Digital currencies*, November 2015, p. 1, specifies that «these assets typically have some monetary characteristics (such as being used as a means of payment), but are not typically issued in or connected to a sovereign currency, are not a liability of any entity and are not backed by any authority. Furthermore, they have zero intrinsic value, and, as a result, they derive value only from the belief that they might be exchanged for other goods or services, or a certain amount of sovereign currency, at a later point in time».

109. Bank for International Settlements, Committee on payments and Market Infrastructures, *Report Digital currencies*, November 2015, p. 1.

110. Bank for International Settlements, Committee on payments and Market Infrastructures, *Report Digital currencies*, November 2015, p. 1.

111. European Central Bank, *Virtual Currency Schemes*, p. 17.

and operational risk without any kind of underlying legal framework, these schemes are also subject to legal uncertainty and fraud risk, as a result of their lack of regulation and public oversight»[112].

The different ways of "creating" and using virtual currency are interesting because they allow us to analyze the impact it can have on the real economy: the first scheme is called "closed virtual currency schemes" and allows the creation and use of a virtual currency within a "virtual game". In the second scheme, the "virtual currency schemes with unidirectional flow", the virtual currency is purchased with fiat money and used in the scheme. This method impacts the real economy by changing the amount of fiat money in circulation, affecting «the demand for the central bank's liabilities and interfere in the control of the supply of money through open market operations»[113]. In particular, "virtual currency schemes with bidirectional flow" can impact the real economy because people can buy and sell virtual currency with real currency and buy virtual and real goods and services.

We have thus discussed how virtual currency clearly cannot be considered money and how it is actually created and used through a system of network relationships. The different ways in which virtual currency is used and the risks connected to it allow us to understand how virtual currency had no reference regulatory context before 2018.

In 2018, several issues connected to the dissemination and use of virtual currency led the European legislator to define virtual currency within the Directive (EU) 2018/843 of the European Parliament and the Council of May 30, 2018 "amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing".

The directive in Article 1.2 states that "virtual currencies" refer to «a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically».

112. European Central Bank, *Virtual Currency Schemes*, p. 17. Equally, the Financial Action Task Force, *Virtual currencies: Key definitions and potential AML/CFT risks*, p. 4, underlines that virtual currencies differ from fiat currency because fit currencies are «coin and paper money of a country that is designated as its legal tender, circulates; and is customarily used and accepted as a medium of exchange in the issuing country»; and from e-money because e-money is «digital representation of fiat currency used to electronically transfer value denominated in fiat currency».

113. European Central Bank, *Virtual Currency Schemes*, p. 37.

This reference is extremely interesting because it unmistakably recalls Article 128.1 of the Treaty on the Functioning of the European Union, which states «the European Central Bank shall have the exclusive right to authorise the issue of euro banknotes within the Union. The European Central Bank and the national central banks may issue such notes. The banknotes issued by the European Central Bank and the national central banks shall be the only such notes to have the status of legal tender within the Union». In connection with Article 16 of the Consolidated version of the Treaty on the European Union, Protocol n. 4 on the Statute of the European System of Central Banks and the European Central Bank states, «in accordance with Article 128(1) of the Treaty on the Functioning of the European Union, the Governing Council shall have the exclusive right to authorise the issue of euro banknotes within the Union. The ECB and the national central banks may issue such notes. The banknotes issued by the ECB and the national central banks shall be the only such notes to have the status of legal tender within the Union. The ECB shall respect as far as possible existing practices regarding the issue and design of banknotes».

On the issue of the digital euro, this study fits the context[114]. The digital euro represents a significant novelty in monetary policy and is connected to the idea that in the digital age, analyzing and reflecting on how money changes is needed.

In addition to considering the growing role that digital currencies have in the life of citizens and businesses, an essential factor in this study is related to the change characterizing the payment system. Currently, the payment systems are registering trends toward the shift to electronic payments.

The "Study on the payment attitudes of consumers in the euro area (SPACE) – 2022" shows that «all day-to-day payments, 17% were made online in 2022, compared with only 6% in 2019. In terms of value, the share of online payments in 2022 was 28% (up from 14%), indicating that online payments were more frequently used for larger payment amounts»[115].

114. On the subject see: R. Adalid, Á. Álvarez-Blázquez, K. Assenmacher, L. Burlon, M. Dimou, C. López-Quiles, N.M. Fuentes, B. Meller, M.A. Muñoz, P. Radulova, C. Rodriguez d'Acri, T. Shakir, G. Šílová, O. Soons, A.V. Veghaz, *Central bank digital currency and bank intermediation. Exploring different approaches for assessing the effects of a digital euro on euro area banks*, Occasional Paper Series, European Central Bank – Eurosystem, May 2022; R. Aneja, R. Dygas, *Digital Currencies and the New Global Financial System*, Routledge, 2022; and S. Grünewald, C. Zellweger-Gutknecht, B. Geva, *Digital euro and ECB powers*, in *Common Market Law Review*, 2021, n. 4.

115. European Central Bank, *Study on the payment attitudes of consumers in the euro area (SPACE) – 2022*, 2022, p. 11.

Meanwhile, «the share of cash payments at the point of sale in terms of volume has declined in recent years. This decline accelerated during the pandemic. In 2022, 59% of transactions were carried out using cash. Three years earlier the share of cash transactions was 72%; in 2016 the figure was 79%. However, cash remained the most frequently used method for payments at the POS in the euro area. When measuring POS transactions in terms of value, the share of card transactions in 2022 (46%) was higher than the share of cash transactions (42%) for the first time. In 2019 the share of cash transactions by value was 47% and the equivalent share of card transactions 43%. Consumers were making payments using mobile phone apps more often than before. However, their share in total POS payments was still relatively low compared to cash and card payments. Mobile phone payments accounted for 3% of the number of transactions in 2022 (up from 1% in 2019) and 4% of the value (up from 1%)»[116].

A strong network effect characterizes payment systems, because payment systems increase their importance in the context by increasing the number of users.

The "Report on a digital euro" by European Central Bank – Eurosysem, October 2020, examined «the issuance of a central bank digital currency (CBDC) – the digital euro – from the perspective of the Eurosystem. Such a digital euro would be a central bank liability offered in digital form for use by citizens and businesses for their retail payments. It would complement the current offering of cash and wholesale central bank deposits»[117].

The considerations expressed in this report led to the subsequent "Investigation phase of the digital euro project", launched in July 2021 for 24 months. This phase «aim to address key issues regarding design and distribution. A digital euro must be able to meet the needs of Europeans while at the same time helping to prevent illicit activities and avoiding any undesirable impact on financial stability and monetary policy. This will not prejudge any future decision on the possible issuance of a digital euro, which will come only later. In any event, a digital euro would complement cash, not replace it»[118]. The recent "Progress on the investigation phase of a digital euro" report[119] underlines that «a digital euro would preserve the role of public money as the anchor of the payments system in the digital age. It would

116. SPACE 2022, p. 12.

117. European Central Bank, *Report on a digital euro*, 2020, p. 3.

118. European Central Bank – Eurosystem, 2021.

119. European Central Bank – Eurosystem, *Progress on the investigation phase of a digital euro*, September 2022.

ensure the smooth coexistence, convertibility, and complementarity of the various forms that money takes. People need to have confidence that private money can always be converted into central bank money. By providing a monetary anchor, central bank money plays a key role in maintaining a well-functioning payment system, financial stability, and, ultimately, trust in the currency. This in turn is a pre-condition for preserving the transmission of monetary policy, and hence for protecting the value of money»[120].

The role that the digital euro can play in the system is so important that in January 2023, "The Digital Euro Scheme Rulebook Development Group" was established aiming to «develop a draft digital euro rulebook building on the design decisions taken by the Governing Council of the Eurosystem»[121]. Furthermore, the group «will develop as main deliverable a draft digital euro rulebook which will consist of a set of rules, practices and "standards" that will allow the distribution of digital euro through intermediaries by the means of (a) User management i.e., lifecycle management of digital euro users and their payment instruments. (b) Liquidity management i.e., funding and defunding of end users' holdings from commercial bank sources, or from cash (c) Transaction management i.e., initiation, authentication, validation, settlement instructions and post settlement activities incl. reconciliation»[122].

As highlighted above, the Digital Euro project continues to be studied and requires regulators to carefully analyze its impact on citizens and businesses and, more generally, on banking and financial systems.

120. European Central Bank – Eurosystem, *Progress on the investigation phase of a digital euro*, September 2022, p. 3.

121. Art. 1, Mandate of the digital euro scheme Rulebook Development Group.

122. Art. 2, Mandate of the digital euro scheme Rulebook Development Group. Art. 3 specifies "Key guiding working principles": «1) The digital euro RDG shall develop the digital euro rulebook based on the design decisions taken by the Governing Council or any delegated body. 2) Digital euro solutions as enabled by the Eurosystem and potentially being voluntarily complemented by the market shall be attractive to all actors in the European retail payment market, but most importantly to the users of the digital euro. 3) The design of the digital euro rulebook shall enable the market to develop further services and digital euro solutions on top of the initial scope foreseen for the digital euro. The digital euro however shall function as a basic means of payment in the euro zone for payment users without any such additional market-driven developments. 4) The digital euro RDG shall leverage and progress on existing standards and scheme solutions to the degree possible, while not limiting the Eurosystem's freedom of choice in the further development of the digital euro».

Conclusion

The importance of digital technologies for consumers and enterprises in Europe is now well established.

In the European context, the creation of the strategy for the Digital Single Market marks an important point in the construction of a legal framework that is developing over time.

In fact, if the historic European single market was the result of a mediation between the different values[1] and objectives of the founding member states of the Union, which, in being built, became a union of their different regulatory approaches, the context for the historic single market is partially different from the events that led to the definition of the Digital Single Market.

The definition of the Digital Single Market Strategy of 2015 took place on the basis of principles and values that already belonged to the European Union, which, at that historical moment, considered the future of the economy and society in the digital context. Therefore, the definition of the Digital Single Market represents the first significant step toward the development of new regulatory frameworks concerned with the various phenomena of the digital world.

In the European and global economic and cultural contexts, there are two main challenges, the transition to a digital and green future[2], Europe wants to «lead the transition to a healthy planet and a new digital world. This twin challenge of a green and digital transformation has to go hand-in-hand»[3].

1. L.S. Rossi, *Il valore giuridico dei valori. L'Articolo 2 TUE: relazioni con altre disposizioni del diritto primario dell'UE e rimedi giurisdizionali*, in *Federalismi.it*, 2020, n. 19.

2. See United Nations General Assembly, A/RES/70/1 Resolution adopted by the General Assembly on September 25, 2015, "Transforming our world: The 2030 Agenda for Sustainable Development". With reference to Italy see M. Belletti, *Dinamiche evolutive delle materie trasversali, tra tentativi di stabilizzazione e prospettive di involuzione*, in *Federalismi.it*, 2022, n. 20 and N. Zorzi, *L'ambiente come nuovo bene costituzionalmente protetto*, in F. Galgano (ed.), *Diritto privato*, Wolters Kluwer Italia, 2022.

3. Communication from the Commission, COM (2020) 67, February 19, 2020, "Shaping Europe's digital future", p. 1.

In a general sense, the main objectives defined by the European Union defined in 2020 for the digital context intended to build a «clear framework that promotes trustworthy, digitally enabled interactions across society, for people as well as for businesses»[4]. These objectives are as follows: «– Technology that works for people: Development, deployment and uptake of technology that makes a real difference to people's daily lives. A strong and competitive economy that masters and shapes technology in a way that respects European values. – A fair and competitive economy: A frictionless single market, where companies of all sizes and in any sector can compete on equal terms, and can develop, market and use digital technologies, products and services at a scale that boosts their productivity and global competitiveness, and consumers can be confident that their rights are respected. – An open, democratic and sustainable society: A trustworthy environment in which citizens are empowered in how they act and interact, and of the data they provide both online and offline. A European way to digital transformation which enhances our democratic values, respects our fundamental rights, and contributes to a sustainable, climate-neutral and resource-efficient economy»[5].

The role of the Digital Single Market in the European Union is such that constant attention is dedicated to its affirmation, as is demonstrated by the consideration of a digital transformation in the regulation establishing the Recovery and Resilience Facility[6] following the Covid-19 pandemic[7].

The regulation, which is mentioned in article 175 of the Treaty on the Functioning of the European Union, states that «Member States are to coordinate their economic policies in such a way as to attain the objectives on economic, social and territorial cohesion»[8] and underlines that «the Covid-19 outbreak in early 2020 changed the economic, social and budgetary outlook in the Union and in the world, calling for an urgent and coordinated response both at Union and national level in order to cope with the enormous economic and social consequences as well as asymmetrical effects for Member States». In

4. Communication from the Commission, COM (2020) 67, February 19, 2020, "Shaping Europe's digital future", p. 2.

5. Communication from the Commission, COM (2020) 67, February 19, 2020, "Shaping Europe's digital future", p. 3.

6. Regulation (EU) 2021/241, February 12, 2021, establishing the Recovery and Resilience Facility.

7. The role of the Next generation EU is also essential, see M. Lamandini, D. Ramos, C. Bosque, *Next Generation EU: its meaning, challenges, and link to sustainability*, in *Financial Stability Amidst the Pandemic Crisis: On Top of the Wave*, European Banking Institute, 2021.

8. Whereas n. 2, Regulation (EU) 2021/241; see C. Golino, *L'intervento pubblico per lo sviluppo economico delle aree depresse tra mercato e solidarietà*, Giappichelli, 2018.

fact, «the Covid-19 crisis as well as the previous economic and financial crisis have shown that developing sound, sustainable and resilient economies as well as financial and welfare systems built on strong economic and social structures helps Member States respond more effectively and in a fair and inclusive way to shocks and recover more swiftly from them»[9], for this reason, the regulation established the Recovery and Resilience Facility (the "Facility")[10], and declared that the specific objective of the Facility shall be to provide Member States «financial support with a view to achieving the milestones and targets of reforms and investments as set out in their recovery and resilience plans»[11].

The scope of the Facility «shall refer to policy areas of European relevance structured in six pillars»[12], one of which is specifically dedicated to "digital transformation" in particular. The plans prepared by the Member States must include measures that contribute efficiently and effectively to the digital transitions.

The new priorities that emerge over time in the European Union are changing the traditional concept of "economic, social and territorial cohesion", which expands and partially changes toward "digital cohesion"; this concept «calls for the recognition of the essential role that technology plays in our life, and requires the integration of the Cohesion objectives in the digital rights, principles and policies of the Union»[13] Thus, the concept of digital cohesion «entails every citizen in Europe having decent access to the internet and to digital services and that the sovereignty and resilience of the EU's digital infrastructure be enhanced»[14].

To accomplish this, «the EU needs to work to make the digital transformation as accessible as possible to all EU citizens and to pay particular attention to help the less developed regions as well as those suffering from permanent natural or demographic disadvantages, such

9. Whereas n. 6, Regulation (EU) 2021/241.

10. Article 1, Regulation (EU) 2021/241.

11. Article 4.2, Regulation (EU) 2021/241.

12. Article 3, Regulation (EU) 2021/241; the six pillars are: «(a) green transition; (b) digital transformation; (c) smart, sustainable and inclusive growth, including economic cohesion, jobs, productivity, competitiveness, research, development and innovation, and a well-functioning internal market with strong SMEs; (d) social and territorial cohesion; (e) health, and economic, social and institutional resilience, with the aim of, inter alia, increasing crisis preparedness and crisis response capacity; and (f) policies for the next generation, children and the youth, such as education and skills».

13. Opinion of the European Committee of the Regions – Digital Cohesion, October 12, 2022, point n. 2.

14. Opinion of the European Committee of the Regions – Digital Cohesion, October 12, 2022, point n. 4.

as archipelagos, outermost regions, islands, cross-border and mountain regions, to speed up their digital transformation, given the unique challenges they face while maximising their assets, and the importance of peer to peer collaboration»[15].

Technology is a «key tool to help us adapt to challenging situations affecting all spheres of society, the prominent role of digital technology in responding and building resilience to Covid-19 has highlighted shortcomings in digital infrastructure and literacy, and has made the digital divides in the EU even more pronounced»[16].

The theme of the digital divide is central to the definition of concrete access to the Digital Single Market. If, over time, the legislature regulates different aspects of the digital phenomena, the general reference framework must not be neglected, with particular attention to the most recent definition of Digital Rights and Principles.

The definition of Digital Rights and Principles is connected to the Communication of the European Commission on March 9, 2021, entitled "2030 Digital Compass: the European way for the Digital Decade"[17], which seeks «to pursue digital policies that empower people and businesses to seize a human centred, sustainable and more prosperous digital future»[18].

In fact, «in just a year, the Covid-19 pandemic has radically changed the role and perception of digitalisation in our societies and economies, and accelerated its pace. Digital technologies are now imperative for working, learning, entertaining, socializing, shopping and accessing everything from health services to culture. It has also shown the decisive role that disruptive innovation can play»[19].

To achieve these objectives, accelerating the digital transformation by making the Digital Single Market fully functional and defining further public policies is necessary. Among the four cardinal points that comprise the Digital Compass, «the first two are focused on digital capacities in infrastructures and education & skills, and the two other are focused on digital transformation of business and public services»[20].

However, these four cardinal points are «not sufficient to define the EU's

15. Opinion of the European Committee of the Regions – Digital Cohesion, October 12, 2022, point n. 5.

16. Opinion of the European Committee of the Regions – Digital Cohesion, October 12, 2022, point n. 6.

17. COM (2021) 118.

18. COM (2021) 118, p. 1.

19. COM (2021) 118, p. 1.

20. COM (2021) 118, p. 4.

approach to its digital future; it is also necessary to enable all Europeans to make full use of digital opportunities and technologies. In the digital space, we need to make sure that the same rights that apply offline can be fully exercised online»[21].

With reference to rights in the digital context[22], the Joint Declaration by the European Parliament, Council and European Commission in January 23, 2023, contains the "European Declaration on Digital Rights and Principles for the Digital Decade".

The preamble of the Joint Declaration reaffirms that «the European Union (EU) is a "union of values", as enshrined in Article 2 of the Treaty on European Union, founded on respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. Moreover according to the Charter of Fundamental Rights of the European Union, the EU is founded on the indivisible, universal values of human dignity, freedom, equality and solidarity. The Charter also reaffirms the rights as they result, in particular, from international obligations common to the Member States»[23].

However, considering the role of the digital in society and the economy, it is necessary to spell out how «values and fundamental rights applicable offline should be applied in the digital environment. The digital transformation should not entail the regression of rights. What is illegal offline, is illegal online»[24].

Through the Joint Declaration, the Institutions «aim to promote a European way for the digital transformation, putting people at the centre, built on European values and EU fundamental rights, reaffirming universal human rights, and benefiting all individuals, businesses, and society as a whole», and therefore declare that they want to «putting people at the centre

21. COM (2021) 118, p.12.

22. The subject of rights in the digital context was analyzed in Communication from the Commission, COM (2010) 245, May 19, 2010, "A Digital Agenda for Europe", which emphasized that «today, under EU law, citizens in the EU enjoy a series of rights that are relevant to the digital environment, such as freedom of expression and information, protection of personal data and privacy, requirements for transparency and universal telephone and functional internet services and a minimum quality of service. However, these rights are scattered across various laws and are not always easy to grasp. Users must be able to find simple, codified explanations of their rights and obligations, set out in a transparent and understandable».

23. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", n. 1.

24. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", n. 3.

of the digital transformation»[25] because «technology should serve and benefit all people living in the EU and empower them to pursue their aspirations, in full security and respect for their fundamental rights»[26]. Simultaneously, the principles of "solidarity and inclusion" are affirmed, that is, «technology should be used to unite, and not divide, people. The digital transformation should contribute to a fair and inclusive society and economy in the EU»[27]. The European Union's vision «for digital transformation puts people at the centre, empowers individuals and fosters innovative businesses»[28].

Another principle is "freedom of choice"[29], defined as «interactions with algorithms and artificial intelligence systems», that is, «artificial intelligence should serve as a tool for people, with the ultimate aim of increasing human well-being»[30], and as the "fair digital environment", that is, «everyone should be able to effectively and freely choose which online services to use, based on objective, transparent, easily accessible, and reliable information»[31], and «everyone should have the possibility to compete fairly and innovate in the digital environment. This should also benefit businesses, including SMEs»[32].

In addition, there is the principle of "participation in the digital public space", that is, «everyone should have access to a trustworthy, diverse and multilingual digital environment. Access to diverse content contributes to a pluralistic public debate and effective participation in democracy in a non-discriminatory manner. Everyone has the right to freedom of expression and information, as well as freedom of assembly and of association in the digital environment. Everyone should be able to access information on who owns or controls the media services they are using. Online platforms, particularly very large online platforms, should support free democratic debate online.

25. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", n. 3.

26. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter I, point n. 1.

27. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter II, point n. 2.

28. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter II, n. 6.

29. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter III.

30. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter III, point n. 8.

31. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter III, point n. 10.

32. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter III, point n. 11.

Given the role of their services in shaping public opinion and discourse, very large online platforms should mitigate the risks stemming from the functioning and use of their services, including in relation to misinformation and disinformation campaigns, and protect freedom of expression»[33].

The Joint Declaration aims to guarantee «safety, security and empowerment» in «a protected, safe and secure digital environment» «privacy and individual control over data», and «protection and empowerment of children and young people in the digital environment»[34].

Finally, the principle of "sustainability" is defined, that is, «to avoid significant harm to the environment, and to promote a circular economy, digital products and services should be designed, produced, used, repaired, recycled and disposed of in a way that mitigates their negative impact on the environment and on society and avoids premature obsolescence. Everyone should have access to accurate, easy-to-understand information on the environmental impact and energy consumption of digital products and services, their reparability and lifetime, allowing them to make responsible choices»[35].

Broadly, the definition of European regulatory intervention in the digital context requires due consideration of the construction of principles and rights that can be bearers of true inclusion and can support the growth of society and the economy.

The principles and rights aim to define a technologically advanced and unanimously aware society that is able to define a participatory democracy[36].

33. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter IV, point n. 12-15.

34. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter V.

35. European Parliament, European Council, European Commission, "European Declaration on Digital Rights and Principles for the Digital Decade", Chapter VI, point n. 23-24.

36. R. Pini, *Argomenti seminaristi di Diritto Pubblico. Itinerari della Repubblica verso una società nuova*, Giappicchelli, 2023, and R. Pini, *Democrazia bella, Democrazia incompiuta, Democrazia infranta*, Giappichelli, 2019, p. 165.

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 ISBN 9788835152460

European Union Digital Single Market

This study analyzes the evolution of the legal framework of the Digital Single Market in Europe, beginning with the first acts issued by the European Union on the subject of an information society. The gradual evolution of multiple regulatory frameworks aimed at aspects of digital technologies highlights how public regulation is now reaching the definition of the guiding principles for the Digital Single Market: in the digital era, this will increasingly dominate the lives of enterprises and citizens.

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