



EU policy landscape

**Artificial intelligence:
an EU policy narrative**

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Artificial intelligence: an EU policy narrative

Policy landscape

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Summary

The EU policy landscape provides an overview of legal acts and preparatory documents relevant to understanding the approach developed over the years by the European Union on Artificial Intelligence. Particular focus was provided to preparatory documents made available by the European Commission, as the sole institution with powers of legislative initiative. The first section analyses the texts relevant to the EU policy on AI, from the Digital Single Market strategy in 2017 to the EU AI Act, as well as the most recent developments on AI liability, Web 4.0 and security. The second section focuses on documents relevant to research and innovation as regards AI, notably the developments in infrastructure sharing and coordination within the European Research Area, boosting private sector innovation, addressing security and intellectual property concerns, and the establishment of an AI Office within the European Commission. The third section summarises recent European initiatives and texts to support the development of a pan-European talent pool, high-quality and inclusive digital education and training, and strategies for universities. Finally, the last section addresses other relevant legislation and policy instruments relevant to AI, such as data governance, digital services governance, and developing sustainable digital infrastructure.

Methodology

This document provides an overview of the policies relevant to a European approach to Artificial Intelligence (AI). The primary aim is to identify legal acts and preparatory documents relevant to understanding policy development. It also seeks to broadly highlight some of the trends and challenges highlighted in the policy documents over the years.

The narrative was developed from text analysis of legal acts and preparatory documents published by the co-legislators of the European Union. Particular focus was provided to preparatory documents made available by the European Commission, as to sole institution with powers of legislative initiative. We recognise that the legislative procedure may lead to changes and amendments potentially relevant to understanding different interests and priorities. However, we did not believe this would be the suitable place for such an in-depth analysis, considering the primary aim of the document.

Research was carried using the functionalities offered by the EUR-LEX database, the EU's main official resource of legislative information. Policy texts were screened for context and reference to other relevant policy documents. Search terms used for other literature reviewing work were used to search in text. In particular "artificial intelligence" was searched in document title and returned 98 documents. *EuroVoc* keywords were also used for searching in the database. Document identifiers have been added in the footnotes to facilitate access to relevant documents from all steps of policy procedure via EUR-LEX. The narrative has been produced by Frederico Rocha, on behalf of SAPEA's literature review team. The author can be contacted for further support in finding relevant documents.

EU policy on artificial intelligence

In May 2017, the European Commission published its mid-term review of the *Digital Single Market (DSM)* strategy¹. It highlighted the need to build on the European Union's scientific and industrial strengths, as well as on its innovative startups, to be in a leading position in the development of AI technologies, platforms, and applications. In October 2017, the European Council urged the Commission to propose a European approach to artificial intelligence, based on a "high level of data protection, digital rights and ethical standards"². Earlier in the year, the European Parliament also adopted a Resolution concerning the civil law rules on robotics³, and the European Economic and Social Committee adopted an Opinion on the impact of artificial intelligence in different sectors⁴.

Most EU Member States signed a declaration of cooperation on artificial intelligence in April 2018, which also included Norway and soon-to-depart United Kingdom⁵. Later in the month, the European Commission adopted its first strategy focusing on artificial intelligence⁶. It put forward a three-pronged approach: increasing public and private investments; preparing for socio-economic changes brought about by AI; and ensuring an appropriate ethical and legal framework. Following up on these developments, a coordinated plan of action was unveiled in December 2018⁷, developed by the Commission, EU Member States, Norway and Switzerland. It sought to provide a strategic framework for national AI strategies. It aimed to maximise the impact of investments at EU and national levels, encourage synergies and cooperation across the EU, exchange best practices and collectively define the way forward to ensure that the EU as a whole could compete globally.

A High-Level Expert Group on Artificial Intelligence had already been set up by the European Commission in March 2018. In April 2019, the Group presented a set of *Ethics Guidelines for Trustworthy Artificial Intelligence*⁸. These include key requirements that AI systems should meet in order to be deemed trustworthy. Later in the month, the European Commission published another Communication on building a human-centric artificial

¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Mid-Term Review on the implementation of the Digital Single Market Strategy. A Connected Digital Single Market for All (COM/2017/228)

² European Council meeting (19 October 2017) – Conclusions (EUCO 14/17)

³ European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))

⁴ Opinion of the European Economic and Social Committee on 'Artificial intelligence — The consequences of artificial intelligence on the (digital) single market, production, consumption, employment and society' (own-initiative opinion)

⁵ This declaration was endorsed by the European Council in June 2018.

⁶ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. Artificial Intelligence for Europe (COM/2018/237)

⁷ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. Coordinated Plan on Artificial Intelligence (COM/2018/795)

⁸ Directorate-General for Communications Networks, Content and Technology (2019) *Ethics guidelines for trustworthy AI*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2759/346720>

intelligence⁹. Its purpose was to launch a piloting phase involving stakeholders to test the practical implementation of ethical guidance for AI development and use. The key requirements were based on work developed by the Commission's High-Level Group, the European Group on Ethics and the EU's Fundamental Rights Agency.

Building on the previous strategies and mindset, a new White Paper setting out a European approach to artificial intelligence was adopted in February 2020, to reflect the Political Guidelines of the new President of the European Commission¹⁰. The policy framework was underpinned by an alignment of efforts at European, national and regional level to develop synergies, and by an "ecosystem of trust" based on full compliance of EU rules, including the protection of fundamental and consumers' rights. A report accompanying the White Paper also identified challenges as regards artificial intelligence and liability rules. Similar concerns were raised by the co-legislators in conclusions and resolutions adopted throughout that year.

In October 2020, the plenary of the European Parliament adopted a Resolution focusing on intellectual property rights (IPR) for the development of artificial intelligence technologies¹¹. It highlights that the matter had not been addressed yet by the European Commission in relevant initiatives, and the importance of an effective IPR system and safeguards in the EU patent system that protect innovative developers. It argues that distinction should be drawn between AI-assisted human creations and AI-generated creations. The Resolution also requests further clarification as regards data protection under copyright law and the potential trademark and industrial design protection for works generated autonomously through AI applications. It calls on the European Commission to provide balanced and innovation-driven protection of intellectual property, to strengthen the international competitiveness of EU companies, and to ensure maximum legal certainty for users. Finally, it acknowledges that AI requires pairing with public investment in infrastructure, training in digital skills and improvements in connectivity and interoperability.

In the same session, the plenary of the European Parliament also adopted a Resolution on ethical aspects of artificial intelligence, robotics and related technologies¹². It calls on the European Commission to propose a comprehensive regulatory framework of ethical principles and legal obligations relating to the development, deployment and use of artificial intelligence, robotics and related technologies within the EU, including the software, algorithms and data used or produced by these technologies.

In April 2021, a further Communication was adopted alongside a legislative package focusing on artificial intelligence¹³. It provided an overview of what was the culmination of three years of policymaking on AI.

⁹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Building Trust in Human-Centric Artificial Intelligence (COM/2019/168).

¹⁰ White Paper on Artificial Intelligence - A European approach to excellence and trust (COM/2020/65)

¹¹ European Parliament resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI))

¹² European Parliament resolution of 20 October 2020 with recommendations to the Commission on a framework of ethical aspects of artificial intelligence, robotics and related technologies (2020/2012(INL))

¹³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Fostering a European approach to Artificial Intelligence (COM/2021/205)

Consultations included feedback from 152 academic or research institutions. An updated coordination plan on AI was also published as an annex to the Communication.

The package comprised, among others, a draft *Artificial Intelligence Act* seeking to establish harmonised rules for the development, placement on the market and use of AI systems in the EU¹⁴, based on the wider principles previously established as the European approach. The initial draft acknowledged that provisions could impose restrictions on the freedom of science to ensure compliance with overriding reasons of public interest. A political agreement between the co-legislators on a compromise text for the AI Act was reached in December 2023.

Later in the month, the co-legislators formally adopted a Regulation establishing the *Digital Europe Programme* for the period 2021–2027¹⁵. One of the specific objectives of the Programme relates to artificial intelligence. The Programme ought to build up and strengthen core AI capacities across the EU, make them accessible to public administrations and businesses, reinforce and network existing and newly established AI testing and experimentation facilities in the Member States. The Act also foresees the establishment of a new generation of *Digital Innovation Hubs* serving, among others, as access points for the latest digital capacities, including artificial intelligence.

In December 2021, the Council of the European Union adopted a Decision revising the composition and mandate of the European Research Area and Innovation Committee (ERAC)¹⁶. The ERAC is a high-level strategic policy joint advisory committee, providing early advice to the EU institutions and Member States on strategic research and innovation (R&I) policy issues. The revision was adopted, inter alia, to include a role in updating the *ERA Policy Agenda*.

In May 2022, the plenary of the European Parliament adopted a Resolution focusing on artificial intelligence¹⁷, which was also the final report of a Special Committee set up in 2020. It argues that the global digital transformation – where AI plays a key role – has triggered a competition for technological leadership, and that the EU has been lagging behind. It calls on the European Commission to create an AI skills framework for individuals and for investment in research to better understand the impact of AI in the labour market. It also urges the EU to increase investment in research into AI and other key technologies, and to prioritise funding to AI research that focuses on sustainable and socially responsible artificial intelligence.

¹⁴ Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain union legislative acts (COM/2021/206)

¹⁵ Regulation (EU) 2021/694 of the European Parliament and of the Council of 29 April 2021 establishing the Digital Europe Programme and repealing Decision (EU) 2015/2240 (Text with EEA relevance)

¹⁶ Council Decision (EU) 2021/2241 of 13 December 2021 on the composition and the mandate of the European Research Area and Innovation Committee (ERAC)

¹⁷ European Parliament resolution of 3 May 2022 on artificial intelligence in a digital age (2020/2266(INI))

In order to address challenges relating to AI and liability rules, and also to avoid fragmentation through the adoption of national rules, the European Commission adopted a draft law in September 2022 introducing a targeted harmonisation of liability rules for artificial intelligence¹⁸.

The European Commission adopted in July 2023 a Communication setting out its strategy and potential actions aimed at providing a head start as regards Web 4.0 and the virtual worlds¹⁹. The fourth generation of the World Wide Web is expected to use advanced artificial and ambient intelligence. The Communication's accompanying staff working²⁰ document further expands on the use of artificial intelligence in this context. It also highlights potential challenges such as data copyright and GDPR compliance.

In October 2023, the European Commission adopted a Recommendation setting out critical technology areas for the EU's economic security for further risk assessment in conjunction with Member States²¹. AI technologies are listed as one of such critical areas, which includes High Performance Computing, cloud and edge computing, data analytics technologies and computer vision, language processing and object recognition.

¹⁸ Proposal for a Directive of the European Parliament and of the Council on adapting non-contractual civil liability rules to artificial intelligence (AI Liability Directive) (COM/2022/496)

¹⁹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. An EU initiative on Web 4.0 and virtual worlds: a head start in the next technological transition (COM/2023/442)

²⁰ Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. An EU initiative on Web 4.0 and virtual worlds: a head start in the next technological transition (SWD/2023/250)

²¹ Commission Recommendation (EU) 2023/2113 of 3 October 2023 on critical technology areas for the EU's economic security for further risk assessment with Member States

Research and innovation

In April 2016, the European Commission adopted a Communication setting out the *European Cloud Initiative*²². In it, the Commission presented its vision for *European Open Science Cloud (EOSC)* as part of the *Digital Single Market (DSM)* strategy. The objective was to give the EU a global lead in research data management. The Initiative also foresaw the creation of a *European Data Infrastructure* underpinning high-capacity cloud solutions with super-computing capacity. The implementation roadmap for the EOSC was published by the European Commission in March 2018²³.

Research and innovation are largely national competences. Building a *European Research Area* thus relies on national policy reforms and national initiatives. In this context, the European Commission adopted in September 2020 a Communication setting out an action plan to implement a renewed *European Research Area*²⁴. It sought to incentivise better coordination and cooperation among the EU, its Member States and the private sector, lead to more investment in research and innovation, strengthen the mobility of researchers, their expertise, and the flow of knowledge. The strategy also includes support to innovation-based competitiveness and the fostering of technological sovereignty in key strategic areas, including in artificial intelligence.

The Staff Working Document accompanying this Communication²⁵ highlighted that the Action Plan addressed primarily horizontal issues and did not set priorities in specific areas such as AI. However, artificial intelligence is listed among those deep changes that are relevant for R&I policy. The document argues that AI is an example of a research field and disruptive technology where the EU needs to boost its effort to promote talent production and retention. Notably, this includes an increase in the number of students and professionals with an AI-related academic background and/or AI technical competences and skills acquired, through training. It also includes developing the right environment for them to work in the EU and tools to attract talent from abroad, considering the dominance of US universities and companies in retaining such talent. Finally, the document concludes that integrating directionality in innovation policy is not an easy task and yet important to improve the performance of European businesses in the changing global landscape, particularly as regards AI and its applications as the EU tries to keep pace with the main global competitors.

In May 2021, the European Commission adopted a Communication setting out a global approach to research and innovation through cooperation²⁶. It includes the promotion of digital partnerships and an

²² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. *European Cloud Initiative - Building a competitive data and knowledge economy in Europe* (COM/2016/178)

²³ Commission Staff Working Document. *Implementation Roadmap for the European Open Science Cloud* (SWD/2018/83)

²⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. *A new ERA for Research and Innovation* (COM/2020/628)

²⁵ Commission Staff Working Document accompanying the Communication *A new ERA for Research and Innovation* (SWD/2020/214)

²⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Global Approach to Research and Innovation Europe's strategy for international cooperation in a changing world (COM/2021/252)

enhanced focus and research partnerships on key technologies such as artificial intelligence. It specifically mentions a joint task force on AI with India to establish common ground for collaboration on specific use-cases and on topics such as research and innovation on ethical artificial intelligence and standardisation.

The Council of the European Union adopted in July 2021 a revised framework establishing the *European High Performance Computing (HPC) Joint Undertaking*²⁷. HPC is seen as the engine that powers the data economy, with the potential to enable technologies like artificial intelligence. The Joint Undertaking foresees the value in the application of HPC in convergence with advanced digital technologies such as AI.

In November 2021, the Council of the European Union adopted a Recommendation on a *Pact for Research and Innovation in Europe*²⁸, as well as conclusions focusing on a governance structure for the *European Research Area*²⁹. The Recommendation sets out commonly agreed values and principles, and it identifies the areas where Member States ought to jointly develop priority actions, supporting the implementation of the 2020 Action Plan. Research infrastructure is seen as a priority for joint action among Member States, notably to increase capacity to explore the digital transition and technologies such as artificial intelligence. The conclusions include the first *ERA Policy Agenda*, setting out 20 voluntary actions for the period 2022–2024³⁰. Measures include the adoption of a legislative framework for copyright and data for research, the promotion of attractive research careers, the strengthening of research infrastructures, and the enhancement of public research institutions' strategic capacity.

In July 2022, the European Commission adopted a Communication setting out a *New European Innovation Agenda*³¹. It set out measures aimed at leveraging the strengths of the EU's single market, industrial and talent base, institutions, and democratic societies to drive deep tech innovation in the EU. The accompanying staff working document³² highlights that the EU lags behind the United States and China in terms of patent applications in digital technologies. It also singles out an analysis on AI-enabled innovations in certain critical economic sectors which shows that the two countries vastly outperformed the EU in number of patents filed.

The Council of the European Union adopted in November 2022 a Decision supporting the implementation of a project relating to the promotion of responsible artificial intelligence in the areas of peace and security³³. The specific objective is to support greater engagement of the civilian AI community in mitigating

²⁷ Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488

²⁸ Council Recommendation (EU) 2021/2122 of 26 November 2021 on a Pact for Research and Innovation in Europe

²⁹ Future governance of the European Research Area (ERA) - Council conclusions (14308/21)

³⁰ Directorate-General for Research and Innovation (2022) *European Research Area policy agenda: overview of actions for the period 2022–2024*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2777/52110>

³¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A New European Innovation Agenda (COM/2022/332)

³² Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A New European Innovation Agenda (SWD/2022/187)

³³ Council Decision (CFSP) 2022/2269 of 18 November 2022 on Union support for the implementation of a project 'Promoting Responsible Innovation in Artificial Intelligence for Peace and Security'

the risks that the diversion and misuse of civilian AI research and innovation irresponsible actors may pose to international peace and security.

In the following month, the Council of the European Union adopted conclusions concerning research infrastructures in the context of the *European Research Area*³⁴. They acknowledge the need to further strengthen those infrastructures and facilitate broader access to them. The Council invites the European Commission and the Member States to develop the next edition of the Roadmap for the *European Strategy Forum on Research Infrastructures (ESFRI)* by the end of 2025 and the Commission to present an initiative on a revised *European Charter for Access to Research Infrastructures*.

Still in December 2022, the Council adopted a Recommendation setting out guiding principles for knowledge valorisation³⁵. It delivers on an action listed in the *ERA Policy Agenda*. It seeks to raise the research community's awareness of the importance of intellectual property (IP) management, promote the effective use and deployment of IP, and ensure easier access to and sharing of IP-protected asset. It aims to help leveraging the diverse talents, intellectual talents and industrial capabilities across the EU, and also to strengthen the capacity of R&I systems to support evidence-informed policymaking, public administrations and better regulation. In March 2023, the European Commission adopted a Recommendation setting out a Code of Practice on the management of intellectual assets for knowledge valorisation in the European Research Area³⁶.

In August 2023, the European Commission published the third report on the application of Council Regulation (EC) No 723/2009 establishing a legal framework for a *European Research Infrastructure Consortium (ERIC)*³⁷. This Act provided a legal framework to facilitate partnerships and simplify procedures with the scope of establishing and operating a research infrastructure between members from different countries. The progress report highlights that research infrastructure provide the foundations for groundbreaking research and infrastructure, and the increasing role these Consortiums in addressing emerging challenges, including on artificial intelligence.

In December 2023, the Council of the European Union adopted a Recommendation setting out a horizontal framework aimed at attracting and retaining research, innovation and entrepreneurial talents³⁸. It delivers on one of the actions of the *ERA Policy Agenda*.

The European Commission adopted in January 2024 a so-called *AI Innovation Package* of initiatives aimed at supporting startups and SMEs in the development of AI in line with the principles of the European approach. It included an amendment to *EuroHPC Regulation* to set up a new pillar for the EU's supercomputers Joint

³⁴ Research Infrastructures – Council conclusions (15429/22)

³⁵ Council Recommendation (EU) 2022/2415 of 2 December 2022 on the guiding principles for knowledge valorisation

³⁶ Commission Recommendation (EU) 2023/499 of 1 March 2023 on a Code of Practice on the management of intellectual assets for knowledge valorisation in the European Research Area

³⁷ Third Report on the Application of Council Regulation (EC) No 723/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium (ERIC) (COM/2023/488)

³⁸ Council Recommendation of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe

Undertaking activities³⁹, a Decision to establish an *AI Office* within the European Commission⁴⁰ to ensure the development and coordination of AI policy at European level, as well as the implementation of the *AI Act*. Two further Communications were also adopted by the European Commission: one relating to the Commission's own strategic approach to the use of Artificial Intelligence⁴¹, and another setting out a strategic investment framework in trustworthy AI⁴².

³⁹ Proposal for a Council Regulation amending Regulation (EU) 2021/1173 as regards an EuroHPC initiative for start-ups to boost European leadership in trustworthy Artificial Intelligence (COM/2024/29)

⁴⁰ Commission Decision of 24 January 2024 establishing the European Artificial Intelligence Office

⁴¹ Communication to the Commission. Artificial Intelligence in the European Commission (AI@EC). A strategic vision to foster the development and use of lawful, safe and trustworthy Artificial Intelligence systems in the European Commission (C/2024/380)

⁴² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on boosting startups and innovation in trustworthy artificial intelligence (COM/2024/28)

Education and training

The European Commission adopted in September 2020 a Communication setting out a roadmap to achieving a *European Education Area* by 2025⁴³. It advocates closer and deeper cooperation between higher education institutions, in order to develop a pan-European talent pool, including in cutting-edge scientific disciplines and technologies such as artificial intelligence, cybersecurity and high performance computing. It also argues for a stronger focus on specialised education programmes in advanced digital skills (such as those mentioned earlier) given the acute lack of experts in these fields.

In parallel, the Commission also adopted its new *Digital Education Action Plan* for the period 2021–2027⁴⁴. It sets out measures for high-quality and inclusive digital education and training. Whereas the previous Action Plan focused on the digitalisation in education, this one focuses on the longer-term digital change in education and training. Looking to support a high-performing digital education ecosystem, the European Commission vows to promote understanding of emerging technologies and their applications in education, develop ethical guidelines on AI and data usage in teaching and learning for educators and support related research on innovation activities through *Horizon Europe*. Building on the *Ethics Guidelines* published in 2019, a training programme for researchers and students on the ethical aspects of AI is to be set up. The accompanying staff working document⁴⁵ further expands on artificial intelligence in the context of the Action Plan.

In May 2021, the plenary of the European Parliament adopted a Resolution on artificial intelligence in education, culture and audiovisual sectors⁴⁶. It argues that the development, deployment and use of AI in these sectors must fully respect fundamental rights, freedoms and values enshrined in the EU treaties. Members stress the importance of respective ethical principles, and of ensuring EU-wide mastery of basic digital and AI skills by developing training opportunities for teachers. The Resolution calls on the European Commission to include education in the regulatory framework for high-risk AI systems, and to take into account AI and robotics initiatives in the educational field in future legislative initiatives on AI.

In July 2021, the European Commission launched an informal Expert Group on artificial intelligence and data in education and training, delivering on one of the priorities of the *Digital Education Action Plan*. Its aim was to assist the Commission in the development of ethical guidelines on the use of AI and data in teaching and

⁴³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on achieving the European Education Area by 2025 (COM/2020/625)

⁴⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Resetting education and training for the digital age (COM/2020/624)

⁴⁵ Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Resetting education and training for the digital age (SWD/2020/209)

⁴⁶ European Parliament resolution of 19 May 2021 on artificial intelligence in education, culture and the audiovisual sector (2020/2017(INI))

learning for educators. Building on already existing guidelines, a new set was presented in October 2022⁴⁷. They were designed to help educators understand the potential that the applications of AI and data usage can have in education and to raise awareness of the possible risks so that they are able to engage positively, critically and ethically with AI systems and exploit their full potential.

The European Commission adopted in January 2022 a Communication setting out its strategy for universities⁴⁸. The strategy aims at contributing to unlocking the potential of the higher education sector as a promoter of skills and knowledge, and as the engine for innovation. In order to connect and encourage cooperation between universities, sufficient digital capacity and infrastructure is required. Technology must be interoperable, have a solid European basis, and should serve education and research in an integrated manner. In this context, the strategy foresees support – through the *Digital Europe Programme* - to specialised education and training programmes in cutting-edge digital technologies and for multi-disciplinary courses in fields such as artificial intelligence and high performance computing. It also includes support to the launch and rollout of a targeted platform for cooperation between universities, compatible with the European Open Science Cloud (EOSC). The strategy's accompanying staff working document⁴⁹ highlights that the programmes offered by the European Institute of Innovation and Technology (EIT) emphasise the role of disruptive technologies, such as artificial intelligence. It also argues that all students ought to learn how to use advanced digital technologies like AI, and points to the lack of qualified teaching staff to teach them such skills.

⁴⁷ Directorate-General for Education, Youth, Sport and Culture (2022) *Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2766/153756>

⁴⁸ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a European strategy for universities (COM/2022/16)

⁴⁹ Commission Staff Working Document accompanying the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a European strategy for universities (SWD/2022/6)

Other relevant legislation and policy instruments

The European Commission adopted in February 2020 its *European Strategy for Data*⁵⁰, alongside the *White Paper on Artificial Intelligence*. It oversees the establishment of the right regulatory framework regarding data governance, access and reuse between businesses, between businesses and government, and within administrations. It includes support to the development of the technological systems and the next generation of infrastructures, as well as the launch of sectoral specific actions. It notes that the availability of data is essential for training AI systems, and that cloud uptake in the public sector is low which may lead to less efficient digital public services, notably because governments need the scalability of cloud computing to deploy technologies like artificial intelligence. The strategy foresees funding in a High Impact Project on European data spaces and federated cloud infrastructures, to the benefit of artificial intelligence ecosystems among others.

In March 2021, the European Commission adopted its *Digital Compass* for the period leading up to 2030⁵¹. The Communication translates the digital transformation into actions. Once again, it identifies the challenges and ambitions as regards development, deployment and use of AI, in line with EU values.

In October 2022, the co-legislators adopted a Regulation establishing a single market for digital services in the European Union, in what also became known as the *Digital Services Act (DSA)*. It applies to intermediary services offered to recipients of the service that have their place of establishment or are located in the EU. Online intermediary services are essential to the backbone of the internet, agile innovators and first users of emerging technologies, from the internet of things (IoT) to artificial intelligence. The DSA seeks to ensure the best conditions for the provision of innovative digital services in the internal market, to contribute to online safety and the protection of fundamental rights, and to set a robust and durable governance structure for the effective supervision of providers of intermediary services.

In December 2022, the institutions of the European Union signed a *Declaration on Digital Rights and Principles for the Digital Decade*⁵². Under Chapter III on freedom of choice, the signatories vow to promote human-centric, trustworthy and ethical intelligence systems throughout their development, deployment and use, in line with EU values. They also agree to take measure ensuring that research in artificial intelligence respects the highest standards and relevant EU law.

⁵⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A European Strategy for Data (COM/2020/66)

⁵¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. 2030 Digital Compass: the European way for the Digital Decade (COM/2021/118)

⁵² European Declaration on Digital Rights and Principles for the Digital Decade

Other relevant legislation and policy instruments

In the same month, the co-legislators adopted the legislative framework for the *Digital Decade Policy Programme 2030*⁵³. One of the general objectives of the Programme is to develop a comprehensive and sustainable ecosystem of interoperable digital infrastructures, where high performance, edge, cloud, quantum computing, artificial intelligence, data management and network connectivity work in convergence.

In June 2023, the co-legislators adopted a Regulation updating the legislative framework as regards machinery products⁵⁴. The draft law had been adopted by the European Commission in 2021 as part of a package focusing on artificial intelligence. The revision was justified, in part, by the need to account for the emergence of new digital technologies, such as artificial intelligence, and the inherent new challenges in terms of product safety and liability. The Act takes into consideration the integration of AI systems into machinery products.

The co-legislators adopted in December 2023 a Regulation introducing new rules on who can use and access data generated in the EU, in what also became known as the *Data Act*⁵⁵. This framework is seen as a key pillar of the *European Strategy for Data*. The draft law pointed out that the Act would deal with highly strategic technologies such as cloud computing and artificial intelligence systems.

⁵³ Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 (Text with EEA relevance)

⁵⁴ Regulation (EU) 2023/1230 of the European Parliament and of the Council of 14 June 2023 on machinery and repealing Directive 2006/42/EC of the European Parliament and of the Council and Council Directive 73/361/EEC (Text with EEA relevance)

⁵⁵ Regulation (EU) 2023/2854 of the European Parliament and of the Council of 13 December 2023 on harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (Data Act)



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