

‘Artificial Intelligence’ in the European Artificial Intelligence Act

Mohammad Ataul Karim¹

I. Introduction

The legal definition of Artificial Intelligence (AI) is a *sine qua non* for regulating AI. However, AI is a complex, dynamic, and evolving technology. Thus, a precise definition of AI is difficult. This paper reflects on the definition of AI as outlined in Article 3(1) of the European Artificial Intelligence Regulation 2024 (hereinafter referred to as the AI Act).² It adopts a doctrinal approach: by interpreting Article 3(1) and Recital 12 of the AI Act, which was recently supplemented by the European Commission’s Guidelines on the Definition of AI (issued on 6 February 2025).³

The concept of AI in the AI Act is vital for many reasons. First, the legal definition of AI determines the scope of the AI Act. Thus, it must be clear what constitutes AI. A concise definition of AI creates legal certainty and facilitates the effective enforcement of the AI Act. Second, understanding the definition of AI in the AI Act is crucial because it is the world's first comprehensive regulation for AI. It can potentially serve as a blueprint (due to the so-called Brussels Effect) for AI regulation in other parts of the world.⁴ Moreover, the AI Act has an

¹Mohammad Ataul Karim is a DPhil in Law Researcher (intellectual property law) at the Faculty of Law, University of Oxford. The views expressed in this article are those of the author and do not necessarily represent those of his former and current affiliations. All reference links are checked on 13 August 2025.

² The final text of the AI Act was adopted by the EU parliament, (legislative resolution of 13 March 2024), and approved by the EU Council (14 May 2024), published in official journal on 12 July 2024, entered into force on August 1, 2024, but most of its provisions shall not be enforced until August 2, 2026. Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text with EEA relevance), OJ L, 2024/1689, 12.7.2024, ELI: <http://data.europa.eu/eli/reg/2024/1689/oj>

³ ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

⁴For example, the Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law, 2024, defines AI exactly in the same way as the EU AI Act. Article 2 of the Convention defines the ‘artificial intelligence system’ as “a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content,

extra-territorial effect. For instance, the foreign entities offering AI systems or services in the internal market of the European Union (EU) must comply with the AI Act. Thus, the concept of AI in the AI Act relates to States or businesses outside the EU. It is not only a potential model for AI regulation but also a regulatory requirement for doing business within the EU.

The paper is designed in the following order. Part II of the paper outlines a brief legislative history of adopting the definition of AI. Part III explains key features of the adopted definition of AI in the AI Act, and finally, Part IV provides a conclusion.

II. Definition of Artificial Intelligence: A brief legislative history

Three institutions of the European Union (EU) have specific roles in the legislative process.⁵ They are the European Commission (the executive), the European Parliament (the elected body representing EU citizens), and the European Council (the representatives of the governments of all 27 EU Member States).⁶ The Commission proposes the draft laws, while the Parliament adopts and the Council approves them.⁷ The latter two institutions are referred to as ‘co-legislators’ because they possess the legal authority to adopt and approve the final texts of the law by agreeing on the same texts.⁸ While each institution maintains its position, the representatives of the three institutions meet for (informal) meetings called “trilogues” to reach a compromise on the proposed laws.⁹ Although the Commission is part of the ‘trilogues’, it

recommendations or decisions that may influence physical or virtual environments. Different artificial intelligence systems vary in their levels of autonomy and adaptiveness after deployment.” The Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law, 2024, adopted by the 133rd Session of the Committee of Ministers, (Strasbourg, 17 May 2024), Committee on Artificial Intelligence (CAI), CM(2024)52-final 17 May 2024.

⁵Ordinary legislative procedure, https://www.europarl.europa.eu/infographic/legislative-procedure/index_en.html

⁶ibid

⁷ Fernández-Llorca, D., Gómez, E., Sánchez, I. et al. An interdisciplinary account of the terminological choices by EU policymakers ahead of the final agreement on the AI Act: AI system, general purpose AI system, foundation model, and generative AI. *Artif Intell Law* (2024). <https://doi.org/10.1007/s10506-024-09412-y> p. 2

⁸ ibid

⁹ “In the context of the European Union’s ordinary legislative procedure, a trilogue is an informal interinstitutional negotiation bringing together representatives of the European Parliament, the Council of the European Union and the European Commission. The aim of a trilogue is to reach a provisional agreement on a legislative proposal that is acceptable to both the Parliament and the Council, the co-legislators. This provisional agreement must then be adopted by each of those institutions’ formal procedures.” <https://eur-lex.europa.eu/EN/legal-content/glossary/trilogue>

only plays a mediating role between the co-legislators due to its lack of legislative powers, unlike its counterparts.¹⁰

On 21 April 2021, the Commission proposed (the Commission's proposal, hereinafter referred to as the CP) the texts of the AI Act.¹¹ On 25 November 2022, the Permanent Representatives Committee of the Council explained its position on the CP.¹² It was subsequently adopted by the Council on 6 December 2022 (known as the General Approach of the Council).¹³ The Parliament adopted some amendments to the CP on 14 June 2023.¹⁴ The three institutions differed on many issues, including the concept of AI. Therefore, six rounds of 'trilogues' took place before adopting the final texts of the AI Act.

The first four 'trilogues' were held on 14 June 2023, 18 July 2023, 2-3 October, and 24 October 2023, where representatives agreed on less controversial issues, such as measures to support innovations and the classification of some AI systems within the high-risk rubric.¹⁵ The fifth and final rounds of the 'trilogue' were held between 6 and 8 December 2023, during which all

¹⁰ "A trilogue may be held at any stage of the legislative procedure with the aim of resolving outstanding issues and is chaired by the co-legislator hosting the meeting. The Commission's role is to mediate between the parties." <https://eur-lex.europa.eu/EN/legal-content/glossary/trilogue>

¹¹ 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, 2021/0106 (COD), Brussels, 21.4.2021 COM (2021) 206 final

¹² 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 - General approach, 25 November 2022, from Permanent Representatives Committee to Council, Interinstitutional File: 2021/0106(COD), <https://data.consilium.europa.eu/doc/document/ST-14954-2022-INIT/en/pdf>

¹³ 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 - Analysis of the final compromise text with a view to agreement, 26 January 2024, from Presidency to Council, Interinstitutional File:2021/0106(COD), p. 1 <https://data.consilium.europa.eu/doc/document/ST-5662-2024-INIT/en/pdf>

¹⁴ P9_TA (2023)0236, Artificial Intelligence Act, Amendments adopted by the European Parliament on 14 June 2023 on the proposal for a regulation of the European Parliament and of the Council on laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (COM(2021)0206 – C9-0146/2021 – 2021/0106(COD)), https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.pdf

¹⁵ 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 - Analysis of the final compromise text with a view to agreement, 26 January 2024, from Presidency to Council, Interinstitutional File:2021/0106(COD), pp.1-2, <https://data.consilium.europa.eu/doc/document/ST-5662-2024-INIT/en/pdf>

outstanding issues were successfully negotiated, and the institutional negotiations were concluded.¹⁶ In January 2024, the co-legislators undertook technical work to align the texts of the Recitals and Articles with the final trilogue.¹⁷

The three institutions of the EU —namely, the European Commission, the Council, and the Parliament —proposed the following definitions of AI.

European Commission ¹⁸	European Council ¹⁹	European Parliament ²⁰
“Artificial intelligence system (AI system) means software that is developed with one or more of the approaches listed in Annex I and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the	“ ‘Artificial intelligence system’ (AI system) means <u>a system that is designed to operate with elements of autonomy and that, based on machine and/or human-provided data and inputs, infers how to achieve a given set of objectives using machine learning and/or logic- and knowledge based approaches</u> , and produces system-generated outputs such as content (generative AI systems),	“‘artificial intelligence system’ (AI system) means <u>a machine-based system that is designed to operate with varying levels of autonomy and that can, for explicit or implicit objectives</u> , generate outputs such as predictions, recommendations, or decisions, that influence <u>physical or virtual environments.</u> ” ²³

¹⁶ *ibid*, p. 2,

¹⁷ *ibid*

¹⁸ On April 21, 2021, the Commission proposed a technology-neutral definition of AI. 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, 2021/0106 (COD), Brussels, 21.4.2021 COM (2021) 206 final

¹⁹ The General Approach of the Council on the CP adopted the definition of AI. See, P9_TA(2023)0236, Artificial Intelligence Act, Amendments adopted by the European Parliament on 14 June 2023 on the proposal for a regulation of the European Parliament and of the Council on laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (COM(2021)0206 – C9-0146/2021 – 2021/0106(COD)), https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.pdf, See also, REPORT on the proposal for a regulation of the European Parliament and of the Council on laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union Legislative Acts, https://www.europarl.europa.eu/doceo/document/A-9-2023-0188_EN.html#_section2

²⁰ On June 14, 2023, the EU Parliament adopted some amendments to the CP.

²³ Amendment 165, Article 3 – paragraph 1 – point 1, P9_TA (2023)0236, Artificial Intelligence Act, Amendments adopted by the European Parliament on 14 June 2023 on the proposal for a regulation of the European Parliament and of the Council on laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and

environments they interact with.” ²¹	predictions, recommendations or decisions, influencing the environments with which <u>the AI system</u> interacts.” ²² <i>(underlines are mine to show the changes from the CP)</i>	<i>(underlines are mine to mark the changes from the CP and General Approach of Council)</i>
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It can be observed that the Commission’s definition is the broadest, the Council’s is the most detailed, and the Parliament’s falls somewhere in between. The definition of AI proposed by the Parliament may be easier to envision and comprehend with the specific features of AI. At the same time, a broader definition may be more inclusive, especially given the fast pace at which this technology is evolving.

III. The Adopted Definition of AI and Its Key Features

The final text of Article 3(1) of the AI Act adopted the following definition.

“ ‘AI system’ means a machine-based system that is designed to operate with varying levels of autonomy that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments.”²⁴ *(Underlines are mine to mark changes from the earlier version of the Parliament.)*

amending certain Union legislative acts (COM(2021)0206 – C9-0146/2021 – 2021/0106(COD)), https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.pdf

²¹ Article 3(1), 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, 2021/0106 (COD), Brussels, 21.4.2021 COM (2021) 206 final

²² Article 3(1), 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 - General approach, 25 November 2022, <https://data.consilium.europa.eu/doc/document/ST-14954-2022-INIT/en/pdf>

²⁴ Article 3(1), Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text with EEA relevance)

PE/24/2024/REV/1, OJ L, 2024/1689, 12.7.2024, ELI: <http://data.europa.eu/eli/reg/2024/1689/oj>

Interpretations of different elements of AI can be done through the explanation of Article 3. Some key terms of the definition have been explained in Recital 12 of the AI Act. Article 96(1)(f) of the AI Act requires the European Commission to develop guidelines on the application of the definition of AI that has been adopted.²⁵ Accordingly, the Commission issued guidelines on 6 February 2025, following due consultations with relevant stakeholders and the European Artificial Intelligence Board.²⁶ The guidelines are prepared to determine what constitutes an AI system within the meaning of the AI Act, facilitating the effective application and enforcement of the AI Act.²⁷ They are not binding since any authoritative interpretation can only be given by the Court of Justice of the European Union (CJEU).²⁸ They are also not exhaustive, as a comprehensive list of all potential AI systems cannot be captured due to the rapid development and dynamic nature of the technology.²⁹ The guidelines focus on clarifying the definition of AI. However, they do not explain a general-purpose AI model or system. This refers to a particular AI system or model, specifically generative AI, that is explicitly regulated under Chapter V of the AI Act.³⁰

The guidelines state seven key elements of the definition of AI. They are 1) AI is a machine-based system, 2) it is designed to operate with varying levels of autonomy, 3) it may exhibit adaptiveness after deployment, 4) that for implicit and explicit objectives, 5) it has inference capabilities from the input to generate certain outputs, 6) the outputs include predictions, content, recommendations or decisions, 7) the outputs can influence the physical or virtual environments.³¹ The definition of AI comprises the life cycle of an AI system in two phases: a) the pre-development or building phase, and b) the post-development or use phase.³² It should

²⁵ Article 96(1)(f), *ibid*

²⁶ ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

²⁷ Para-3, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

²⁸ Para-7, *ibid*

²⁹ Para-6, *ibid*

³⁰ Para-64, *ibid*

³¹ Para-9, *ibid*

³² Para-10, *ibid*

be noted that the seven elements may not be concurrently present in both phases but may only be available in one of them.³³

First, AI systems are **‘machine-based’ systems**. The AI Act does not cover the whole discipline of AI. Instead, it addresses specific AI systems, as it defines AI systems (not just AI). AI, as ‘machine-based’ systems, mean that the AI systems run on machines, including computers or other digital devices such as smartphones.³⁴ The term ‘machine-based’ systems can be explained in the following two ways. First, it includes both hardware and software components. The former refers to physical infrastructure for computation (processing units, memory, storage, devices, etc.). In contrast, the latter refers to non-physical elements of an AI system (computer code, instructions, programs, operating systems).³⁵ It can be seen that the Commission’s proposal, which initially restricted AI to software, has been expanded to include hardware as well. Second, ‘machine-based’ systems only include software, not hardware (the physical aspect). For example, the term "machine learning" consists of the word ‘machine’ but it refers to algorithms, not a physical device.

Second, AI systems are **designed to operate with varying levels of autonomy**. The European Council adopted ‘the elements of autonomy’, but the parliament introduced ‘varying levels of autonomy’ in designing the operation of an AI system. Both phrases attempted to cover the autonomous character of AI systems. It means AI systems have some degree of independence from human intervention or are capable of operating without human involvement.³⁶ The core issue of autonomy is the interaction between systems and humans, specifically ‘human involvement’ and ‘human intervention’.³⁷ It is worth noting that human developers design AI systems; in this sense, how far they remain autonomous is also determined by them. Thus, the autonomy of the AI system is not absolute, but rather delegated or supervised by humans. In

³³ *ibid*

³⁴ Recital 12, the AI Act, 2024

³⁵ Para-11, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

³⁶ Recital 12, the AI Act, 2024

³⁷ Para-16, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

this logic, the AI system is designed with varying levels of autonomy (a certain level of independence from human intervention while the AI systems are in use).

Third, AI systems may **exhibit adaptiveness after deployment**, which refers to the self-learning capabilities of AI systems, allowing them to adapt or change while in use.³⁸ In other words, the evolving nature or self-learning nature of AI systems (at least for some AI systems) has been recognised. The definition used the term ‘may’ (not shall) to qualify the adaptiveness of the AI systems. Thus, the ‘adaptiveness’ of the AI system is an optional feature (not a must) for determining the AI system. AI systems, particularly those based on machine learning, may be evolved for specific purposes after their initial development.³⁹ For example, speech recognition systems adapt after deployment to individual voices, and music recommendation systems.⁴⁰

Fourth, AI systems operate **for explicit or implicit objectives**.⁴¹ The legislative history shows that the CP proposed the phrase ‘for a given set of human-defined objectives’ instead of explicit or implicit objectives. The Council dropped ‘human’ from the phrase ‘human-defined objectives’ to make it more flexible. The Parliament and final texts of the AI Act adopted the ‘*explicit or implicit objectives*’ instead.

An AI system’s objectives can be *explicit or implicit* in the following ways. The explicit objectives (typically human-defined) occur when developers write code directly to the system through objective functions. For example, simple classifier systems for classification purposes, optimisation of a cost function, a probability, or a cumulative reward.⁴² The implicit objectives refer to goals that are not explicitly stated but can be inferred from the underlying assumptions or rationales of the AI systems.⁴³ Explicit rules dictate that the AI systems respond according to the circumstances or their interaction with a specific environment. For instance, an AI

³⁸ Recital 12, the AI Act, 2024

³⁹ OECD, Explanatory Memorandum on the Updated OECD Definition of an AI System, OECD Artificial Intelligence Papers, No. 8, (March 2024), p. 6

⁴⁰ *ibid*

⁴¹ Recital 12, the AI Act, 2024

⁴² Para-24, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

⁴³ *ibid*

driving system with a function to stop when traffic lights are red.⁴⁴ The ultimate objectives of such a function may be implicit. For example, the purpose of the AI-driven system is to stop at red traffic lights, comply with traffic laws, and prevent accidents.⁴⁵

Fifth, another key characteristic of AI systems is **the ‘inference capability’ to generate outputs**.⁴⁶ The inference process involves generating outputs, such as predictions, content, recommendations, or decisions.⁴⁷ It refers to the steps by which an AI system generates outputs from its inputs or data.⁴⁸ Seemingly, this happens in the use phase of an AI system.⁴⁹ However, inference is not solely confined to the ‘use phase’ because it also includes the capability of the AI systems to derive models or algorithms, or both, from inputs or data.⁵⁰ Thus, inference could involve the ‘building phase’ of the AI system.⁵¹

The inference capability of the AI system is employed by the AI techniques.⁵² In that regard, the AI Act outlines three AI techniques: a) inference through machine learning methods that learn from data on how to obtain particular objectives,⁵³ b) logic and knowledge-based approaches that learn from encoded knowledge or symbolic representation of the task to be

⁴⁴ OECD, Explanatory Memorandum on the Updated OECD Definition of an AI System, OECD Artificial Intelligence Papers, No. 8, (March 2024), p. 7

⁴⁵ *ibid*

⁴⁶ Recital 12, the AI Act, 2024

⁴⁷ *ibid*

⁴⁸ OECD, Explanatory Memorandum on the Updated OECD Definition of an AI System, OECD Artificial Intelligence Papers, No. 8, (March 2024), p. 9

⁴⁹ Para-28, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

⁵⁰ Recital 12, the AI Act, 2024

⁵¹ Para-28, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

⁵² The guidelines from the European Commission termed them ‘AI techniques’. Para-30, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

⁵³ Recital 12, the AI Act, 2024

solved,⁵⁴ c) inference from the basic data processing by enabling learning, reasoning, or modelling.⁵⁵

Sixth, the AI system **produces some outputs**. This simply refers to the outputs generated by AI systems when performing various functions. They include predictions, content, recommendations, and decisions.⁵⁶ Different category of outputs requires various levels of human involvement and intervention. Predictions are the most common AI outputs, which require the least human involvement.⁵⁷ A prediction is an estimate of an unknown value (the output) from the known value provided to the system (the input).⁵⁸ Based on their varying capacities, AI systems can make predictions in both simple and complex situations. For example, an AI system can predict dynamically and in real time within self-driving cars. It can also predict energy consumption or weather forecasts by analysing input data.⁵⁹

Within the listed outputs, content refers to the generation of new materials by an AI system, which may range from texts, images, videos, music, to other forms of outputs.⁶⁰ The generative AI (which includes AI tools like the generative pre-trained transformer (GPT)) is an obvious example of generating content. Although content may be viewed as a sequence of predictions or decisions, it is categorised separately due to its widespread prevalence.⁶¹ On the other hand, recommendations are suggestions for specific actions, products, or services tailored to users based on their preferences, behaviours, or other data inputs.⁶² The final category of outputs is decisions. Decisions refer to conclusions or choices made by a system, which is now widely applied to automate processes that were traditionally performed by human judgment.⁶³

⁵⁴ *ibid*

⁵⁵ *ibid*

⁵⁵ *ibid*

⁵⁶ *ibid*

⁵⁷ Para-54, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

⁵⁸ *ibid*

⁵⁹ Para-55, *ibid*

⁶⁰ Para-56, *ibid*

⁶¹ *ibid*

⁶² Para-57, *ibid*

⁶³ Para-58, *ibid*

The final feature of the definition is that an AI system **can influence physical or virtual environments**. It refers to the relevant contexts in which AI systems operate.⁶⁴ The inclusion of physical and virtual environments in the definition of AI suggests that AI systems can have an impact on both physical elements (such as robot arms or physical infrastructure) and digital elements (such as data, software, and digital space).⁶⁵

Overall, the adopted definition of AI nicely captures the basic elements of an AI system. The definition did not depart significantly from the earlier version proposed by the Parliament, except for adding three issues to enhance clarity and precision. First, the definition added the possibility of an AI system to ‘exhibit adaptiveness after deployment’. It supplements the varying levels of autonomy of the AI system and clarifies the dynamic nature of AI technology. Second, the definition encompasses the role of inputs in determining the inference capacity of an AI system. This demonstrates the causal links between inference capacity, inputs and outputs of the AI system. Finally, the definition added that AI outputs ‘*can*’ influence physical or virtual environments. The earlier proposal of the Parliament definitively states that AI outputs influence physical or virtual environments, whereas the adopted definition makes it less definitive.

IV. Conclusion

A definition of AI is essential for effective AI regulation. However, the complex and evolving nature of AI technology makes it difficult to describe. It is not possible to provide an exhaustive list of AI systems and a comprehensive analysis of them. This paper provides a conceptual overview of AI, based on Article 3(1) and Recital 12 of the AI Act, supplemented by the European Commission’s Guidelines on the Definition of AI in the AI Act. Seven key elements of AI systems are explained, providing valuable guidance for understanding the concept of AI in the AI Act. They are 1) AI is a machine-based system, 2) it is designed to operate with varying levels of autonomy, 3) it may exhibit adaptiveness after deployment, 4) that for implicit and explicit objectives, 5) it has inference capabilities from the input to generate certain outputs, 6) the outputs include predictions, content, recommendations or decisions, 7) the outputs can influence the physical or virtual environments. It should be noted that explanations

⁶⁴ Recital 12, the AI Act, 2024

⁶⁵ Para-60, ANNEX to the Communication to the Commission Approval of the content of the draft Communication from the Commission - Commission Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 2024/1689 (AI Act). Brussels, 6.2.2025 C (2025) 924 final

on the different aspects of the AI definition are not authoritative. Any authoritative interpretations and explanations on the definition of AI can only be provided by the CJEU upon the referral being made. This has not been the case so far.