

HIGH RISK ARTIFICIAL INTELLIGENCE SYSTEMS AND LEGAL DOCTRINE OF ESSENTIAL FACILITIES: IN SEARCH FOR A DYNAMIC MODEL

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ABSTRACT

The Regulation of the European Parliament and of the Council on laying down harmonised rules on Artificial Intelligence and amending certain Union Legislative Acts (Artificial Intelligence Act) targets high risk artificial intelligence systems as one of its primary areas of regulatory scope. High risk artificial intelligence systems are considered as software that is developed to use machine learning approaches like supervised, unsupervised and reinforcement learning, deep learning; logic and knowledge-based approaches like knowledge representation, inductive (logic) programming, knowledge bases, inference and deductive engines, symbolic reasoning and expert systems and statistical approaches like Bayesian estimation, search and optimization methods. The essential facilities doctrine in Competition Law / Antitrust Law state that owner(s) of an essential facility for effective competition must provide access to that facility to other competitors in relevant market at a reasonable price. This paper correlates high risk artificial intelligence systems in the scope of Artificial Intelligence Act as potential essential facilities under certain conditions. The paper follows with normative analysis of regulatory requirements of the Artificial Intelligence Act for high risk artificial intelligence systems in light of the essential facilities doctrine. In the final part paper detects primary normative content for future development and outlines dynamic regulatory model for high risk artificial intelligence systems.

KEY WORDS

artificial intelligence, regulation, essential facilities doctrine, high risk artificial intelligence systems

CLASSIFICATION

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INTRODUCTION

European Union legislative process during the last several years experienced regulatory stampede including the Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 [1], popularly known as Markets in Crypto-Assets Regulation (MiCAR) and Regulation of the European Parliament and of the Council on laying down harmonised rules on Artificial Intelligence and amending certain Union Legislative Acts [2], popularly known as EU Artificial Intelligence Act (EU AI Act). Following White Paper on Artificial Intelligence – A European approach to excellence and trust published in February 2020 Proposal for a Regulation laying down harmonised rules on artificial intelligence was published in April 2021. Final version was adopted by the European Parliament on 13 March 2024 and approved by the Council in May 2024. It will entry into legal force gradually during following several years.

This Commission proposal was the result of extensive consultation with all major stakeholders, in which the general principles and minimum standards for consultation of interested parties by the Commission were applied. An online public consultation was launched on 19 February 2020 along with the publication of the White Paper on Artificial Intelligence [3] and ran until 14 June 2020. The objective of that consultation was to collect views and opinions on the White Paper. It targeted all interested stakeholders from the public and private sectors, including governments, local authorities, commercial and non-commercial organisations, social partners, experts, academics and citizens. After analysing all the responses received, the Commission published a summary outcome and the individual responses on its website. In total, 1215 contributions were received, of which 352 were from companies or business organisations/associations, 406 from individuals (92% individuals from EU), 152 on behalf of academic/research institutions, and 73 from public authorities. Civil society's voices were represented by 160 respondents (among which 9 consumers' organisations, 129 nongovernmental organisations and 22 trade unions), 72 respondents contributed as 'others'. Of the 352 business and industry representatives, 222 were companies and business representatives, 41,5% of which were micro, small and medium-sized enterprises. The rest were business associations. Overall, 84% of business and industry replies came from the EU27. Depending on the question, between 81 and 598 of the respondents used the free text option to insert comments. Over 450 position papers were submitted through the EU Survey website, either in addition to questionnaire answers (over 400) or as stand-alone contributions (over 50).

Overall, there was a general agreement amongst stakeholders on a need for action. A large majority of stakeholders agree that legislative gaps exist or that new legislation is needed. However, several stakeholders warn the Commission to avoid duplication, conflicting obligations and overregulation. There were many comments underlining the importance of a technology neutral and proportionate regulatory framework. Stakeholders mostly requested a narrow, clear and precise definition for AI. Stakeholders also highlighted that besides the clarification of the term of AI, it is important to define 'risk', 'high-risk', 'low-risk', 'remote biometric identification' and 'harm'. Most of the respondents are explicitly in favour of the risk-based approach. Using a risk-based framework was considered a better option than blanket regulation of all AI systems. The types of risks and threats should be based on a sector-by-sector and case-by-case approach. Risks also should be calculated taking into account the impact on rights and safety. Regulatory sandboxes could be very useful for the promotion of AI and are welcomed by certain stakeholders, especially the Business Associations. Among those who formulated their opinion on the enforcement models, more than 50%, especially from the business associations, were in favour of a combination of an ex-ante risk self-assessment and an ex-post enforcement for high-risk AI systems.

The Commission conducted an impact assessment for this proposal examined by the Commission's Regulatory Scrutiny Board. A meeting with the Regulatory Scrutiny Board was held on 16 December 2020, which was followed by a negative opinion. After substantial revision of the impact assessment to address the comments and a resubmission of the impact assessment, the Regulatory Scrutiny Board issued a positive opinion on 21 March 2021. The Commission examined different policy options to achieve the general objective of the proposal, which is to ensure the proper functioning of the single market by creating the conditions for the development and use of trustworthy AI in the Union.

Four policy options of different degrees of regulatory intervention were assessed:

Option 1: EU legislative instrument setting up a voluntary labelling scheme;

Option 2: a sectoral, "ad-hoc" approach;

Option 3: Horizontal EU legislative instrument following a proportionate risk based approach;

Option 3+: Horizontal EU legislative instrument following a proportionate risk based approach + codes of conduct for non-high-risk AI systems;

Option 4: Horizontal EU legislative instrument establishing mandatory requirements for all AI systems, irrespective of the risk they pose.

According to the Commission's established methodology, each policy option was evaluated against economic and societal impacts, with a particular focus on impacts on fundamental rights. The preferred option was option 3+ in the end, a regulatory framework for high-risk AI systems only, with the possibility for all providers of non-high-risk AI systems to follow a code of conduct. The requirements will concern data, documentation and traceability, provision of information and transparency, human oversight and robustness and accuracy and would be mandatory for high-risk AI systems. Companies that introduced codes of conduct for other AI systems would do so voluntarily.

Thus, idea behind Commission final proposal on the regulatory framework on artificial intelligence is to ensure following objectives:

- ensure that AI systems placed on the Union market and used are safe and respect
- existing law on fundamental rights and Union values;
- ensure legal certainty to facilitate investment and innovation in AI;
- enhance governance and effective enforcement of existing law on fundamental rights and safety requirements applicable to AI systems;
- facilitate the development of a single market for lawful, safe and trustworthy AI applications and prevent market fragmentation.

The EU AI Act sets harmonised rules for the development, placement on the market and use of AI systems in the Union following a proportionate risk-based approach. It proposes a single future-proof definition of AI. Certain particularly harmful AI practices are prohibited as contravening Union values, while specific restrictions and safeguards are proposed in relation to certain uses of remote biometric identification systems for the purpose of law enforcement. The proposal lays down a solid risk methodology to define high-risk AI systems that pose significant risks to the health and safety or fundamental rights of persons. Those AI systems will have to comply with a set of horizontal mandatory requirements for trustworthy AI and follow conformity assessment procedures before those systems can be placed on the Union market. Predictable, proportionate and clear obligations are also placed on providers and users of those systems to ensure safety and respect of existing legislation protecting fundamental rights throughout the whole AI systems' lifecycle. For some specific AI systems, only

minimum transparency obligations are proposed, in particular when chatbots or ‘deep fakes’ are used.

The EU AI Act rules will be enforced through a governance system at Member States level, building on already existing structures, and a cooperation mechanism at Union level with the establishment of a European Artificial Intelligence Board. Additional measures are also proposed to support innovation, in particular through AI regulatory sandboxes and other measures to reduce the regulatory burden and to support Small and Medium-Sized Enterprises (SMEs) and start-ups.

In regulating high-risk AI systems which are safety components of products, EU AI Act will be integrated into the existing sectoral safety legislation to ensure consistency, avoid duplications and minimise additional burdens. In particular, as regards high-risk AI systems related to products covered by the New Legislative Framework (NLF) legislation (e.g. machinery, medical devices, toys), the requirements for AI systems set out in this Act will be checked as part of the existing conformity assessment procedures under the relevant NLF legislation. With regard to the interplay of requirements, while the safety risks specific to AI systems are meant to be covered by the requirements of AI Act, NLF legislation aims at ensuring the overall safety of the final product and therefore may contain specific requirements regarding the safe integration of an AI system into the final product. As regards high-risk AI systems related to products covered by relevant Old Approach legislation (e.g. aviation, cars), this proposal would not directly apply. However, the ex-ante essential requirements for high-risk AI systems set out in this proposal will have to be taken into account when adopting relevant implementing or delegated legislation under those acts.

In regulating AI systems provided or used by regulated credit institutions, the authorities responsible for the supervision of the Union’s financial services legislation should be designated as competent authorities for supervising the requirements in this proposal to ensure a coherent enforcement of the obligations under this proposal and the Union’s financial services legislation where AI systems are to some extent implicitly regulated in relation to the internal governance system of credit institutions. To further enhance consistency, the conformity assessment procedure and some of the providers’ procedural obligations under EU AI Act are integrated into the procedures under Directive 2013/36/EU [4] on access to the activity of credit institutions and the prudential supervision. This EU AI Act is also consistent with the applicable Union legislation on services.

The EU AI Act is developed with digital age in mind, promotion of AI-driven innovation is closely linked to the Data Governance Act, the Open Data Directive and other initiatives under the EU strategy for data.

ARTIFICIAL INTELLIGENCE SYSTEM AS OBJECT OF REGULATION AND RISK BASED APPROACH

Primary object of regulation of EU AI Act is artificial intelligence system (AI system). In that context AI system means software that is developed with one or more of the following techniques and approaches:

- machine learning approaches, including supervised, unsupervised and reinforcement learning, using a wide variety of methods including deep learning;
- logic and knowledge-based approaches, including knowledge representation, inductive (logic) programming, knowledge bases, inference and deductive engines, (symbolic) reasoning and expert systems;
- statistical approaches, Bayesian estimation, search and optimization methods,

and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with.

The risk based approach of the EU AI Act basically means that artificial intelligence systems are classified into four tiers as demonstrated in Table 1.

Table 1. Level of regulation of AI systems in risk based approach.

Level of risk of the AI system	Level of regulation
Unacceptable	Prohibited
High	Specific requirements and conformity assessments
Medium	Transparency and information obligations
Minimal or low risk	Permitted with no restrictions

The following artificial intelligence practices are prohibited by the EU AI Act:

- the placing on the market, putting into service or use of an AI system that deploys subliminal techniques beyond a person’s consciousness in order to materially distort a person’s behaviour in a manner that causes or is likely to cause that person or another person physical or psychological harm;
- the placing on the market, putting into service or use of an AI system that exploits any of the vulnerabilities of a specific group of persons due to their age, physical or mental disability, in order to materially distort the behaviour of a person pertaining to that group in a manner that causes or is likely to cause that person or another person physical or psychological harm;
- the placing on the market, putting into service or use of AI systems by public authorities or on their behalf for the evaluation or classification of the trustworthiness of natural persons over a certain period of time based on their social behaviour or known or predicted personal or personality characteristics, with the social score leading to either or both of the following:
 - i) detrimental or unfavourable treatment of certain natural persons or whole groups thereof in social contexts which are unrelated to the contexts in which the data was originally generated or collected;
 - ii) detrimental or unfavourable treatment of certain natural persons or whole groups thereof that is unjustified or disproportionate to their social behaviour or its gravity;
 - iii) the use of ‘real-time’ remote biometric identification systems in publicly accessible spaces for the purpose of law enforcement, unless and in as far as such use is strictly necessary for one of the following objectives: the targeted search for specific potential victims of crime, including missing children; the prevention of a specific, substantial and imminent threat to the life or physical safety of natural persons or of a terrorist attack; the detection, localisation, identification or prosecution of a perpetrator or suspects of a certain criminal offences (referred in the EU AI Act).

Thus, AI systems that use such practices are prohibited by the EU AI Act (they are deemed to be of unacceptable risk).

HIGH RISK ARTIFICIAL INTELLIGENCE SYSTEMS

According to the EU AI Act high risk artificial intelligence systems are artificial intelligence systems specifically stipulated in the following areas:

- **Biometric identification and categorisation of natural persons** – AI systems intended to be used for the ‘real-time’ and ‘post’ remote biometric identification of natural persons.

- **Management and operation of critical infrastructure** – AI systems intended to be used as safety components in the management and operation of road traffic and the supply of water, gas, heating and electricity.
- **Education and vocational training** – AI systems intended to be used for the purpose of determining access or assigning natural persons to educational and vocational training institutions; AI systems intended to be used for the purpose of assessing students in educational and vocational training institutions and for assessing participants in tests commonly required for admission to educational institutions.
- **Employment, workers management and access to self-employment** – AI systems intended to be used for recruitment or selection of natural persons, notably for advertising vacancies, screening or filtering applications, evaluating candidates in the course of interviews or tests; AI intended to be used for making decisions on promotion and termination of work-related contractual relationships, for task allocation and for monitoring and evaluating performance and behaviour of persons in such relationships.
- **Access to and enjoyment of essential private services and public services and benefits** – AI systems intended to be used by public authorities or on behalf of public authorities to evaluate the eligibility of natural persons for public assistance benefits and services, as well as to grant, reduce, revoke, or reclaim such benefits and services; AI systems intended to be used to evaluate the creditworthiness of natural persons or establish their credit score, with the exception of AI systems put into service by small scale providers for their own use; AI systems intended to be used to dispatch, or to establish priority in the dispatching of emergency first response services, including by firefighters and medical aid.
- **Law enforcement** – AI systems intended to be used by law enforcement authorities for making individual risk assessments of natural persons in order to assess the risk of a natural person for offending or reoffending or the risk for potential victims of criminal offences; AI systems intended to be used by law enforcement authorities as polygraphs and similar tools or to detect the emotional state of a natural person; AI systems intended to be used by law enforcement authorities to detect deep fakes; AI systems intended to be used by law enforcement authorities for evaluation of the reliability of evidence in the course of investigation or prosecution of criminal offences; AI systems intended to be used by law enforcement authorities for predicting the occurrence or reoccurrence of an actual or potential criminal offence based on profiling of natural persons or assessing personality traits and characteristics or past criminal behaviour of natural persons or groups; AI systems intended to be used by law enforcement authorities for profiling of natural persons in the course of detection, investigation or prosecution of certain criminal offences; AI systems intended to be used for crime analytics regarding natural persons, allowing law enforcement authorities to search complex related and unrelated large data sets available in different data sources or in different data formats in order to identify unknown patterns or discover hidden relationships in the data.
- **Migration, asylum and border control management** – AI systems intended to be used by competent public authorities as polygraphs and similar tools or to detect the emotional state of a natural person; AI systems intended to be used by competent public authorities to assess a risk, including a security risk, a risk of irregular immigration, or a health risk, posed by a natural person who intends to enter or has entered into the territory of a Member State; AI systems intended to be used by competent public authorities for the verification of the authenticity of travel documents and supporting documentation of natural persons and detect non-authentic documents by checking their security features; AI systems intended to assist competent public authorities for the examination of applications for asylum, visa and residence permits and associated complaints with regard to the eligibility of the natural persons applying for a status.

- **Administration of justice and democratic processes** – AI systems intended to assist a judicial authority in researching and interpreting facts and the law and in applying the law to a concrete set of facts.

Furthermore, deemed as high risk are AI systems intended to be used as a safety component of a product, or is itself a product, covered by the Union harmonisation legislation:

- civil aviation security,
- two or three-wheel vehicles and quadricycles,
- agricultural and forestry vehicles,
- marine equipment,
- railways.

High risk artificial intelligence systems are under EU AI Act subjected to specific requirements and conformity assessments. This requirements and conformity assessments include:

- risk management system,
- data and data governance,
- technical documentation,
- record keeping,
- transparency and provision of information to users,
- human oversight,
- accuracy, robustness and cybersecurity.

The risk management system must consist of a continuous iterative process run throughout the entire lifecycle of a high-risk AI system, requiring regular systematic updating. It has to comprise following steps:

- identification and analysis of the known and foreseeable risks associated with each high-risk AI system,
- estimation and evaluation of the risks that may emerge when the high-risk AI system is used in accordance with its intended purpose and under conditions of reasonably foreseeable misuse,
- evaluation of other possibly arising risks based on the analysis of data gathered from the post-market monitoring system referred,
- adoption of other stipulated suitable risk management measures.

Specific requirements and conformity assessment obligations relating to high risk AI systems are primary targeted to AI system providers, importers and distributors. We could summarise their obligations in following categories: quality management system; drawing up technical documentation; conformity assessments; keeping the automatically generated logs; cooperation with competent authorities and appointment of the legal representative. However even the end users of high risk AI systems (and that will be consumers in many cases) have some obligations under EU AI Act. Mainly to keep automatically generated logs and to monitor operation of the high risk AI system with due standard of care.

LEGAL DOCTRINE OF ESSENTIAL FACILITIES HIGH RISK AI SYSTEMS AND ESSENTIAL FACILITIES: DYNAMIC MODELLING

The doctrine essential facilities is an idea that the owner of a facility which is not replicable by the ordinary process of innovation and investment, and without access to which competition on a market is impossible or seriously impeded has to share it with a rival [5; p.1074]. The essential facilities doctrine is one of the most controversial aspects of Competition law [6].

The term essential facilities doctrine originated in commentary on United States Antitrust case law. The essential facilities doctrine is said to have originated in the judgment. in the judgment of the US Supreme Court in the Terminal Railroad [7] case from 1912 the US Supreme Court imposed a duty on an association of railroad companies to give competitors access to certain railroad bridges and terminal facilities they had acquired. Without this form of shared access, competitors would not have been able to offer their own railroad service beyond the Mississippi River into and out of Saint Louis. This would have harmed the interests of consumers due to the lack of choice for competing services outside of the control of the owners of the railroad bridges and terminal facilities. The competition intervention by the Supreme Court in Terminal Railroad later became known as the ‘essential facilities doctrine’.

The leading U.S. essential facilities case is MCI Communications Corp. v. AT&T [8] from 1983. The Court said that there were four elements necessary to establish liability under the essential facilities doctrine:

- control of the essential facility by a monopolist,
- a competitor’s inability practically or reasonably to duplicate the essential facility,
- the denial of the use of the facility to a competitor,
- the feasibility of providing the facility.

In the Competition Law of the European Union [9] the EU Courts have developed four conditions for the application of the essential facilities doctrine under Article 102 on Treaty on Function of the European Union [10] in cases such as Magill [11] from 1995, Bronner [12] from 1998, IMS Health [13] from 2005 and Microsoft [14] from 2007.

Abuse of dominance only exists in exceptional circumstances, namely if a refusal to deal by a dominant undertaking:

- relates to an indispensable asset,
- prevents the emergence of a new product (this condition is only mentioned in cases concerning access to intellectual property-protected assets),
- excludes effective competition on a downstream market,
- has no objective justification.

HIGH RISK AI SYSTEMS AND ESSENTIAL FACILITIES: DYNAMIC MODELLING

Research question that this article labours to answer are the following:

RQ1: Can the high risk artificial intelligence systems be considered as essential facilities?

In case the answer is NO than there is no need for further development of the research. If the answer is YES additional research question is analysed by this article:

RQ2: Is there an inherent tendency in high risk artificial intelligence systems to be regarded as essential facility?

- i) First let us consider can the high risk artificial intelligence systems be considered as essential facility. Legal doctrine of essential facilities, as we have seen, has different criteria for its application in different jurisdictions, but with the same basic idea in its core. There is nothing in definition and broad scope of EU AI Act that would preclude high risk AI systems to be excluded from the concept of essential facility. In other words, high risk artificial intelligence systems have capacity to be regarded as essential facility in general and in EU legal order in particular. However, this does not mean that every artificial intelligence system is an essential facility. Usual steps in application of EU Competition Law [15] should

be applied to the providers, distributors and importers of high risks AI systems. Firstly, provider, distributor or importer should be determined to be an undertaking within the meaning of the EU Competition Law (as shown in Figure 1). Secondly analysis should demonstrate that this undertaking or undertakings (in case of collective dominance) is in the dominant position on the relevant market (that of course means that relevant market should be determined). Thirdly analysis should demonstrate that behaviour of undertaking or undertakings relates to indispensable asset, prevents the emergence of a new product, excludes effective competition on a downstream market and has no objective justification. Finally, analysis should answer on the effect of denial of indispensable facility on trade between Member states.

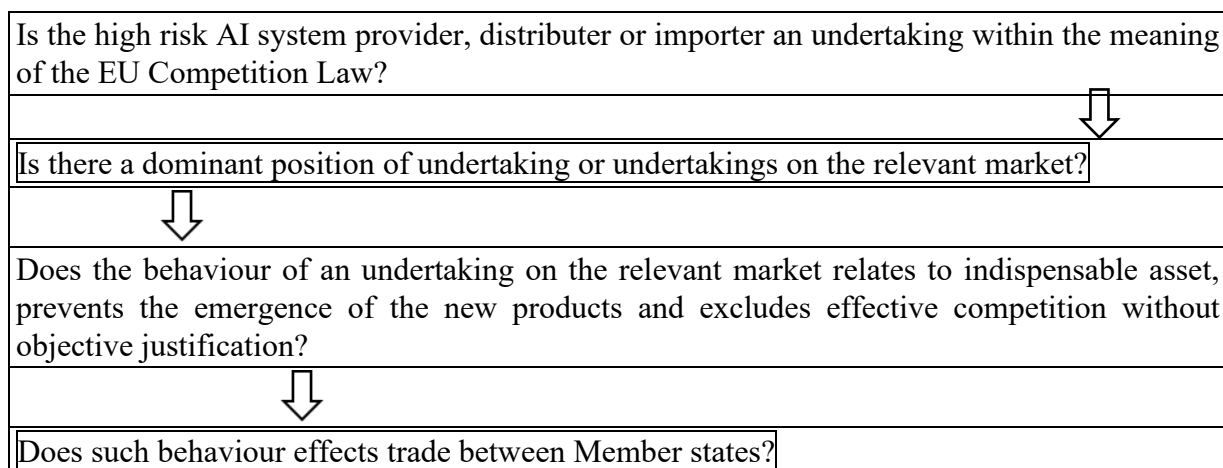


Figure 1. Analysis of the application of essential facilities doctrine for high risk AI systems in EU Competition Law.

ii) Secondly let us consider possibility of an inherent tendency in high risk artificial intelligence systems to be regarded as essential facility. Broad definition and scope high risk AI systems in the EU AI Act makes answer to the posed question rather difficult to answer. We already concluded that high risk AI systems have capacity to be regarded as essential facility but that does not necessary means that they have inherit tendency to be so. Although generally providers, distributors and importer of such AI systems could be considered as prone to the establishment of market dominance, either individual or collective, by the design characteristics of such systems in the current state of technological development. Furthermore, there are certain fields where oligopolistic and monopolistic markets are known to emerge more frequently than others and that are specifically covered by EU AI Act on high risk AI systems. These areas are:

- civil aviation (in particular markets of wide-body passenger aircrafts),
- railways.

Aforementioned areas are stipulated in EU AI Act as high risk if AI systems intended to be used as a safety component of a product (civil aviation security and railways). Interestingly first case law form which legal doctrine of essential facilities originated was, as we have seen, in the *Terminal Railroad* case exactly in the field of railways. Preliminary we can conclude that at least in the case of high risk AI systems that are used as safety component or a product in civil aviation security and railways there is inherent tendency to the application essential facility doctrine. This conclusion develops first (primary) conclusion that high risk AI systems have general capacity to be regarded as essential facility. Therefore, we can conclude that regulatory model for interaction between Competition law/Antitrust law rules and AI regulation in the future is particularly to be developed for high risk artificial intelligence systems.

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