GLI GLOBAL LEGAL INSIGHTS

AI, Machine Learning & Big Data

2021

Third Edition

Contributing Editors: **Matt Berkowitz & Emma Maconick**

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GLOBAL LEGAL INSIGHTS – AI, MACHINE LEARNING & BIG DATA

2021, THIRD EDITION

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Greece

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Trends

What is the government view with respect to the adoption of AI?

Greece proactively adopts and supports the European initiatives concerning Artificial Intelligence (AI) with a view to embracing innovation and a technology enabled future for the benefit of citizens and the economy. Digital transformation of the country is a main priority for the government.

The Hellenic Ministry of Digital Governance is currently shaping its national strategy on AI, determining a holistic approach for the development and implementation of AI in Greece, including specific priorities and actions, data policy and ethical rules.[1] Greece is also currently establishing a strategy for the digital transformation of the Greek industry, to boost the digital transformation of the Greek economy and capture the full range of benefits from the adoption of digital technologies. The current overall Government Digital Transformation Plan 2020–2025 is contained in the "*Bible of the Digital Transformation*", i.e. a document prepared by a designated Committee of experts in the field which outlines the guiding principles, the "strategic intervention axes", as well as the horizontal interventions that will reform the digital transformation of Greece and containing all the big infrastructure projects that will allow Greece to move forward with digitisation. Its basic axes are Connectivity, Digital Skills, Digital State, Digital Enterprises, Digital Innovation, and Implementation of Technology in every sector of the Economy.[2]

Furthermore, following the signing of the "*Declaration of European Cooperation on AI*" and the participation in the "Coordinated Plan on Artificial Intelligence", Greece also supports the Confederation of Laboratories for Artificial Intelligence Research in Europe (CLAIRE), an initiative by the European AI community aiming to strengthen AI research and innovation in Europe. Moreover, Greece supports the European Lab for Learning and Intelligent Systems (ELLIS), another European initiative for AI, aiming to promote AI in Europe with a focus on research and promotion of machine learning (ML) algorithms.

On 23.09.2020, Greece introduced Law 4727/2020 on Digital Governance and Electronic Communications, transposing Directive (EE) 2018/1972 – the European Electronic Communications Code (EECC). This new legislation aspires to make the country an "innovation laboratory", by enabling 5G-based technical experimentation. The Ministry of Digital Government places emphasis on smart cities, industrial Internet of Things (IoT) (Industry 4.0), intelligent transportation, and smart agriculture for the country's digital transformation. A private 5G initiative will focus on applications like driverless cars, remote-controlled drones, and augmented and virtual reality.

Innovation in IoT, AI and Robotics will be powered by 5G. In Greece, the public 5G auction has been completed and the 5G providers are currently launching commercial 5G services. A

quarter of the fees that 5G providers will have to pay will be directed to the Faistos Fund, a newly created fund which will finance start-ups specialising in applications and services based on new networks to boost an ecosystem around 5G in Greece (Faistos Fund is controlled by the Hellenic Company of Assets and Participations). The Fund will support digital innovation in the transport and logistics, manufacturing, defence, utilities, health, and tourism sectors.

Another novelty is to be found in the judicial sector, as in June 2020 the Hellenic Ministry of Justice prepared a translation of the CEPEJ[3] "European Ethical Chapter on the use of AI in the judicial systems and their environment"[4], i.e. a document, based on four key principles; namely: security; quality; fairness; and respect of fundamental rights, aiming at the appropriate use of AI tools and services in European judicial systems, especially concerning the judicial decision processing and data, with a view to provide better information to the stakeholders on critical issues in relation to the use of AI applications in the area of Justice. In this context, the Ministry of Justice has established a standing scientific committee to examine the impact of the introduction of artificial intelligence on the judicial system.

One of the CEPEJ key priorities for 2021 is the elaboration of tools for the appropriate use of AI in judicial systems (e.g. regarding remote court hearings, online dispute resolution, electronic court filings, etc.) in the form of guidelines and toolkits, as well as the establishment of a possible certification mechanism for AI tools on the basis of the aforementioned Ethical Chapter. The tools to be developed shall be in line with the "*Roadmap and workplan*"[5] adopted by the CEPEJ–GI–CYBERJUST in December 2020.

What is the state of the technology and competitive landscape?

Greece shows continuous commitment to advancing new digital technologies – in line with the Digital Europe Programme, having signed the EU Quantum Declaration of cooperation to develop and deploy a European Quantum Communication Infrastructure, and the declaration on cooperation on AI in 2018.[6] As abovementioned, Greece is now developing a national strategy on AI, consulting stakeholders, and working on issues related to data collection and quality, ethical dimension of AI and skills for AI. At the beginning of 2020, Greece had 14 Digital Innovation Hubs covering market sectors as diverse as agriculture, fishing, construction, manufacturing, transport and electricity through a wide spectrum of advanced technologies such as additive manufacturing, AI and cognitive systems, cybersecurity and blockchain, big data and photonics.[7,8]

With regard to the private sector, although the percentage of Greek enterprises deploying AI applications amounts to just around 3% in 2020, a dynamic growth is underway, as businesses from various industries in Greece deploy AI in their business operations. Moreover, according to the findings of a recent Report on AI in Greece, companies deploying AI fall into the following three categories: a) start-ups, which have adopted agile ways of working and are data-driven (elements that enable them to develop and use new technologies) but face challenges in securing funding and networking; b) large corporates, which have extended access to data and funding but their size can hamper agile ways of working and decision-making; and c) innovators, which combine the advantages of both start-ups and the large corporates without most of their disadvantages.[9]

What industries/sectors do you see being leaders in the development and adoption of AI? / How are companies maximising their use of data for machine learning and other applications?

In Greece, there is great scope for anticipated further development and investment in AI, whereas certain business sectors leading the way in terms of AI, Big Data and ML engagement are the following:

- The **telecommunications sector**. This is a key sector for AI engagement and, *inter alia*, for mobile network operators; examples are network analytics for real-time quality control and service improvement, and service analytics for personalised customer experience.
- Furthermore, the **insurance sector** – with automated, ML-driven tools to personalise insurance plan pricing.
- In the **banking sector**, leading institutions have deployed AI algorithms in fraud detection and customer service optimisation, forecasting and pricing and ML-based transaction algorithms, scanning the point of sale (POS) data system and providing anonymised and aggregated insights on clientele as well as benchmarking with other companies in the industry and region, digital business matchmaking and commercial insights.
- The **health sector** is also showcasing increased investment in AI applications such as ML algorithms on estimating the risk associated with clinical trials, clinical trials' optimisation, etc. Such applications will be implemented in the clinical setting of the healthcare professionals by embedding them in smart devices through IoT and could also be used by patients for managing chronic conditions of diseases. Moreover, combining health and tourism sectors, both central to Greece's economy, the summer of 2020, amidst the pandemic, an AI system known as EVA was created, i.e. a machine learning algorithm to predict risk, and select which travellers to test on arrival at the border using basic demographic information along with details about what countries they'd been in recently (targeting testing, thus freeing up valuable testing resources for local residents while still filtering out infected visitors).
- The **energy sector** is also engaging ML algorithms for Operational parameter prediction, system anomaly detection and refinery unit conversion prediction. In the primary sector, AI is used for production optimisation, whereas in retail, chatbots to assist with retail trading are often deployed.
- Other sectors where AI is increasingly used include: commercial shipping; tobacco companies (for customer experience optimisation); online gambling (for fraud detection and addiction patterns recognition); and law technology.

It is estimated[10] that industrial undertakings in Greece may improve: by 5% production efficiency; 13% profitability; 12% fuel savings; and by 10% time of product supply to then market.

What are the key legal issues that are arising out of adoption of AI/big data/machine learning?

Whilst AI applications are regarded as highly beneficial, they can also raise legal concerns. Although the discussion on these issues is still at an early stage, the most important ones focus on issues of ethics, privacy, cybersecurity, intellectual property, consumer protection, liability and issues of discrimination and equal treatment – human rights. Of high concern is algorithmic collusion, personalised pricing and abuse of dominant position in the digital sector, which constitute an area of major focus in the competition law field.

The Hellenic Bioethics Commission (HBC), i.e. an independent specialised advisory body advising state authorities on the interaction between life sciences and contemporary social values will have an essential role to play in tackling ethical challenges.

What artificial intelligence (AI)/big data/machine learning trends are you seeing in your jurisdiction?

Greece follows an open access policy with regard to big data in the public sector. According to Law 4727/2020, datasets of the public sector are kept in the Registry of Open Data, which

is publicly accessible through the website https://www.gov.gr. Moreover, research data are re-usable for commercial or non-commercial purposes, insofar as they are publicly funded, and researchers, research performing organisations or research funding organisations have already made them publicly available through an institutional or subject-based repository.

As above described, Greece aspires to play a key role on implementing AI initiatives in Europe. In that context, a "*White Paper*"[11] was issued by the Institute of Informatics and Telecommunications of the National Centre for Scientific Research Demokritos, in April 2020, aiming to determine the National AI Strategic Vision for Greece via an open consultation with the stakeholders. The Hellenic AI Task Force and the AI Academia will constitute the AI implementation bodies, responsible for the AI implementation activities.

Greece has also established the Artificial Intelligence Centre of Excellence, the outcome of collaboration between the National Centre for Scientific Research and Ernst & Young Global Services. This regional AI hub is active in the field of document intelligence.

Finally, Greece has attracted a number of big tech companies to invest. Microsoft's announcement to establish the first data centre region in Greece is indicative of such investments. Greece will become the first country in south eastern Europe to host a Microsoft data centre. Another interesting forthcoming investment is the announcement of Pfizer to establish a digital research hub focusing on AI and big data analytics in Thessaloniki.

How has COVID-19 affected these trends, if at all?

The COVID-19 pandemic had a very significant impact on the deployment of AI applications, in several aspects: Firstly, it greatly accelerated digital transformation and big data deployment in Greece, leading to digital governance and public administration improvement and optimisation. Furthermore, in the private sector, e-commerce also experienced a rapid growth, as a plethora of retail businesses were engaged in online sales and relatively untapped until then, and subsequently e-commerce potential grew exponentially. Furthermore, as abovementioned, several COVID-19-related AI applications were developed in the health sector.

In particular, with respect to the digital healthcare sector, during the COVID-19 pandemic, digital infrastructure and services facilitating the treatment, counselling, guidance and support of patients diagnosed with COVID-19 were developed enabling treating physicians to provide their services from a distance via digital means (Law 4690/2020). It should be noted, however, that telemedicine services are mainly and almost exclusively provided by healthcare professionals of the public sector.

Last but not least, the coordination of the National Vaccination Plan against COVID-19 was based on the deployment of algorithms tested by the Ministry of Digital Governance's developers in a start-up environment over December 2020 and January 2021. More precisely, in order to ensure that the vaccines would be available on time due to their short expiration, the Ministry of Digital Governance along with a technical advisor deployed the use of multiple algorithms, such as those used by the supermarkets for fresh milk, which expires within days.

Ownership/protection

Copyright

Algorithms, as part of an AI system, cannot be the object of copyright protection since they do not constitute the expression of an original creation; in application of the respective legal provisions of Greek Law 2121/1993 on the Protection of Intellectual Property [Copyright]

(Greek IP Law), Greek courts have, on many occasion, ruled that algorithms are the procedure for the solution of a problem with the implementation of such procedure being already determined to the last detail; therefore, algorithm implementation does not entail any creative skill or process and cannot be protected.

Provided that they present a certain degree of originality attributed to their creator, computer programs can be copyright protected since their implementation entails the intellectual work and thinking process of their creator for the correct selection of method and relevant criteria, including the selection of the most adequate algorithm(s), which are critical for the minimisation of errors and the due and successful operation of the program. Under Greek law, the software (source and machine code), the preparatory work and the structure of the program can be protected, thus the expression of computer program can be protected and not the ideas and principles on which the different elements of such program are based (algorithms, computer language).

In addition to the protection, as per the above, in terms of AI Systems software, databases as well as AI devices and/or other outputs/products of an AI system could also be copyright protected under the respective applicable provisions, provided that in this case also, they present a certain degree of originality in order to qualify as intellectual property works.

Regarding data and databases: AI data and respective databases raise further copyright related issues making the inclusion of specific and reinforced contract clauses of significant importance:

In accordance with articles 3 and 1, paragraph 2 of Directive 96/9/CE, Greek IP law defines a database as a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means and which, as mentioned above, can be copyright protected, if original (the collection and, separately, the works comprising it).

In addition, and independently of whether a database is protected as an intellectual property work, Greek IP Law recognises the *sui generis* right of the maker of the database as a whole, to prevent extraction and/or reutilisation of the whole or of a substantial part of the database qualitatively and/or substantially evaluated, when a significantly evaluated qualitative and/or quantitative investment for obtaining, verifying or presenting the contents of the database is shown to have taken place.

On the other hand, the provisions of Article 4 of the DSM Directive (Directive (EU) 2019/790 on copyright and related rights in the Digital Single Market) permit the reproduction of copyrighted works and the extraction of information from databases in order to carry out text and data mining (TDM), provided that the access of the user is lawful and provided that such activity "*has not been expressly reserved by the right holders in an appropriate manner*".

Ownership

Copyright protection under Greek IP Law vests in the creator of the work who must be a natural person. Copyrights on collaboration works are equally attributed to the collaborating creators, and in the case of a collective work, the coordinator is considered the creator (individual parts of the collective work – if these can be separated – still vest in their respective creators).

Thus, use, exploitation and economic rights in a copyrighted work (software or other) can only secondarily be obtained by legal entities through assignment (by law or contractual); works of employees vest automatically in the entity-employer (unless a written agreement/clause in the employment contract stipulates otherwise, only the powers/rights necessary

for the purpose of the employment agreement shall automatically vest in the company). In case of independent contractors, assignment agreements should take place.

Deviation from the "natural person" requirement is introduced by the definition of the "maker of a database" who is the individual or legal entity taking the initiative and bearing the risk of investment (the database contractor shall not be considered as a maker). However, this definition does not regard the database as intellectual property work and its creator (natural person).

It should be noted that moral rights always remain with the creator, while Greek law provides for their limitation (not waiver) upon the creator's respective consent.

Patent

Algorithms alone cannot be patented under Greek Law. The provisions of Law 1733/1987 on patents (Greek Patent Law) provide that patents shall be granted for any inventions which are new, which involve an inventive step, and which are susceptible of industrial application. The invention may relate to a product, a process or an industrial application, however and among others, mathematical methods, schemes, rules, programs for computers and presentation of information are not regarded inventions.

Based on the above, an AI process or device/product making use of algorithms or including software may be patentable, provided that all above absolute requirements are met (new – inventive step – industrial application) and provided that such invention does not regard the algorithm and/or the software and/or relevant methods only.

Ownership

The right to a patent shall belong to the inventor or belong:

- entirely to the employer, if it is a service invention, *i.e.* if the invention is the outcome of a contractual relation between the employee and the employer for the development of inventive activity (to be noted that if the invention proves particularly profitable to the employer, the employee has the right to request additional reasonable compensation);
- 40% to the employer and 60% to the employee, if it is a dependent invention, *i.e.* an invention made by an employee with the use of materials, means or information of the employer. The employer is entitled to exploit the invention by priority provided that compensation proportional to the economic value of and the profits made by the invention is paid to the employee. The inventor must notify in writing the employer on the accomplishment of the invention and provide all necessary data for the filing of a joint patent application. Absence of answer or action of the employer within four months from the above notification gives the employee full right to the patent;
- to the employee, if it is a free invention, *i.e.* created independently and without any contribution whatsoever of the employer as per the above;
- if more than one person proceeded to the invention independently of each other, the right to the patent shall belong to the person who filed the patent application first or to the person who has a priority right against the others; or
- in case of a joint invention, the rights belong jointly to all of the inventors, unless provided for otherwise in a respective agreement. Each co-beneficiary may freely assign their share.

Agreements restricting the abovementioned rights of the employee shall be considered null.

Presumption of ownership in favour of the applicant of the patent is provided for by Greek Patent Law; in all cases, the name of the inventor shall be mentioned in the patent and the inventor has the right *vis-à-vis* the applicant/owner of the patent to demand recognition as inventor.

Trade secrets

Algorithms may be protected as trade secrets, in application of the provisions of Law 4605/2019 (adopting the EU Trade secrets directive and by virtue of which the adopted provisions were introduced in the text of Greek Patent Law). All respective legal requirements need to be fulfilled for an algorithm to qualify as a trade secret: i) be secret, in the sense that it is not generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question; ii) have commercial value because of it being secret; and iii) reasonable and adequate secrecy protection measures to have been put in place (these are connected also to the circumstances, the type of the trade secret under protection, etc.).

Natural persons but also entities (legal persons) may be holders of trade secrets, provided in any case that they lawfully control the information.

Concluding remarks

For the time being, trade secrets appear to be the only (and less legally challenging way) for entities to protect algorithms, since copyright and patent legislation do not permit direct protection thereof.

It is further noted that copyright legislation is intrinsically related to the natural persons and their imprint on the protected work, while patent legislation attributes inventions to human beings. Though AI produced creations are not excluded explicitly, the letter of the law and its interpretational margin is limited to that regard. Further interpretation of the existing rules with the adoption of additional provisions seems unavoidable, as is always the case with technological advancements.

Antitrust/competition laws

What happens when machines collude? What antitrust concerns arise from big data?

The development and use of AI, Algorithms and Big Data together with the rise of data-driven business models have become an area of focus of both academics and Competition Authorities (CAs), because of their potential to impact competition and the consumers.[12]

Algorithms are considered to make markets more prone to collusion, make explicitly collusive agreements more stable and replace explicit collusion with tacit collusion. Various types of algorithms may affect competition, such as "*monitoring*", "*parallel*", "*signalling*" and "*self-learning*" algorithms. "*Pricing algorithms*" used for setting prices are of high concern as according to the relevant theories of harm, several harmful scenarios are possible, namely the "*messenger*", the "*hub and spoke*" and the "*tacit collusion*" scenarios. Of these scenarios, "*hub and spoke*" is likely to present the most immediate risk, as competitive firms using the same algorithmic pricing model or delegating their pricing decisions to a common intermediary providing algorithmic pricing services might be able to set the market price or react to market changes.[13]

Tacit collusion seems to be a real challenge for CAs, as it is quite difficult to identify collusion from conscious lawful parallel conduct in highly transparent markets. It has been stated that one of the main risks of algorithms is that "*they expand the grey area between unlawful explicit collusion and lawful tacit collusion, allowing firms to sustain profits above the competitive level more easily without necessarily having to enter into an agreement*".[14] However, it must be noted that no actual case law involving tacit collusion has been established in Greece and the tacit collusive scenario is quite remote for the time being, given also the required evidentiary thresholds.

Further to the above, the use of new technologies in digital markets may raise abuse of dominance issues, as there are potential theories of harm covering a range of exploitative and exclusionary abuses.

Another area of focus arising from the increasing availability of Big Data is the interaction between pricing algorithms and personalised pricing. According to a UK Competition and Markets Authority (CMA) research paper,[15] the combined use of Big Data and pricing algorithms, particularly in the retail sector, might lead to personalised pricing, which is potentially harmful to consumer welfare under specific risk factors.[16]

In the light of the above, certain academics believe that the core competition rules need to be reformed in order to tackle the aforementioned challenges. There is some academic support that the notion of "agreement" needs to be reformed in order to combat tacit collusion.[17] Another difficult question inherent to AI is whether antitrust liability can be established when pricing decisions are made by a machine using an algorithm rather than by human beings.

The Greek antitrust legislation reflects the respective European framework. At the time being, no specific provision exists in Law 3959/2011 ("Competition Act") to tackle the aforementioned concerns. However, a forthcoming draft competition bill amending the Competition Act includes, *inter alia*, a provision regarding the abuse of a dominant position in an ecosystem of structural importance for competition in the Greek Territory, aiming to address the specifities of multi-sided markets, asymmetries of power and market tipping.[18] The said provision would be applicable only in case the aggregate worldwide turnover of the company in a dominant position amounts to at least 300 million Euros.

All in all, it seems that the intersection between the new technologies and competition law, especially in the field of algorithmic collusion, is going to be on the spotlight, as algorithms may be seen as "*moving targets under continuous development*".[19]

Finally, the Hellenic Competition Commission (national competition authority) cooperates with other bodies and Authorities to gather data for its Economic Intelligence Platform (i.e. a tool for collecting and processing economic data for a large number of products in various markets in Greece, in real time). HCC developed an algorithm in order to use data from the open public procurement https://diavgeia.gov.gr. The development of algorithms that enable the automated analysis of Big Data derived from publicly available procurement databases is a pivotal objective for HCC.

Board of directors/governance

To implement digital transformation projects, a digital transformation strategy, aligned with the company's business strategy and covering risk management, governance and legal requirements must be in place. This must include an adjustment of management attitude and policies, as well as personnel skills and HR priorities. Reliance on third-party providers is needed, which entails increased security and protection of personal data requirements. However, no specific provisions exist with regard to the application of AI into corporate governance; the corporate governance legislation applies. (Please see below under 'Implementation of AI'.)

Regulations/government intervention

Algorithms, whether with structured data completing tasks without being programmed, or with unstructured data for the management of unforeseen circumstances, have turned into companies' most important assets, being the core "ingredient" of AI and machine learning.

Systems of and/or including AI create a competitive advantage for a company in the respective business sectors and commercial markets, however, their development, testing and implementation entail significant and constant investments which need to be duly protected in matters of intellectual property.

Such protection raises various legal issues, especially regarding the type of intellectual property protection and ownership of the different elements AI systems include and the results/products created therefrom.

AI models are closely associated with large-scale processing of diverse and disparate data, sometimes involving personal data. Although AI systems do not necessarily rely on, or even require personal data, the function of an AI-driven system, even where it is fed by Big Data, may ultimately end up leading to data processing, due to ineffective anonymisation techniques and the risk of re-identification stemming from the accumulation of vast amounts of data, which leaves room for recognising patterns and connections and hence for identification. The relationship between AI systems and data should be thus conceived as twofold: the data streams fuel the development of algorithmic models, which in turn generate more data in the course of their operation, especially when they develop on a continuous basis.

AI is not regulated in Greece by law, while no regulatory guidance on the relationship between AI and personal data nor relevant decisions have been issued to date by the Hellenic Data Protection Authority (HDPA), out of which conclusions could be drawn as to the norms defining its use. In the absence of a specific regulatory framework on AI, the technology neutral data protection legislation, including primarily the GDPR and Greek GDPR supplementing legislation, Law 4624/2019, could play a key role in accommodating AI technologies involving personal data processing and laying down the scope of their operation.

Given that pooling huge amounts of data results in increased security risks, companies are advised to take account of the following data protection requirements in the area of security and accountability in order to build and implement AI-powered solutions which entail data processing, and which ideally are robust and safe throughout their entire lifecycle. Following the risk-based approach of the GDPR, companies should consider setting up a privacy governance framework centred on the DPO, and take all security organisational and technical security measures required to mainly prevent unauthorised access and tampering of algorithms. Data protection principles and obligations should be embedded at the design process of AI systems from the outset in accordance with the principle of privacy by design and by default, rather than be deferred until the implementation and use stage. Data Protection Impact Assessments (DPIAs) could be seen as an important tool for detecting and managing risks posed by processing and involving the use of AI systems, which entities are prompted to make use of even voluntarily. In any case, AI applications will most probably meet the criteria of Articles 35 and 36 of the GDPR for conducting a DPIA and consulting the HDPA and are also included in the HDPA list of processing activities subject to an obligation to conduct a DPIA.

In addition, compliance with data protection principles should become a centrepiece of the efforts of companies to build compliant AI technologies provided that they fall within the ambit of data protection law. In the same vein, HDPA Decision 3/2020 reiterates that surveillance tools incorporating AI technology should be in line with fundamental data protection principles and fundamental rights enshrined in Article 8 European Convention of Human Rights. However, the chilling effect of AI technology on the right to privacy and

data protection and its tension with data protection principles has been widely discussed among legislators, regulatory authorities and scholars.

More specifically, effective development and application of AI presupposes increased collection, use and retention of vast quantities of data, which may have been collected for other purposes in the past. It is therefore evident that the operational model of AI runs counter to the principles of data minimisation and purpose limitation. In addition, principles of transparency and fairness, which prescribe that users shall be furnished with clear information on the use of AI systems, such as its logic, significance and implications, could be found to clash with the opacity of algorithms and the need to protect trade secrets and IP rights. Moreover, notice requirements, particularly those relating to predefining the processing purpose, are equally hard to meet. The "unpredictability by design" which is inherent in the design phase of an AI system, renders it impossible to determine and explain to individuals the processing purposes at the time of collection. In addition, the GDPR restrictions in relation to automated decision making which produces legal effects, establishing among others a right to human redress, can hardly tie in with the very essence of the AI, which appears as a form of automated processing aimed to substitute human intervention. Similarly, the necessity of vast datasets to train algorithms and prevent as well as detect bias and error and the "black box" effect could hinder enforcement of data subject rights, predominantly of the right of access.

The challenging relationship between data protection law and the concept of AI underlines that with the advent of AI the need for adoption of a homogenous specific regime for a trustworthy AI has become even more pressing. Legislature and regulators are called upon to strike the right balance between achieving protection of personal data and bolstering AI development.

Implementation of AI/big data/machine learning into businesses

Civil liability

An AI system cannot itself be held liable for its actions. Moreover, AI systems do not have capacity to have rights and obligations under Greek Law. In order to substantiate tort, any damage caused by AI systems must be linked to a human behaviour. Therefore, the liability problem should be examined under the existing general principles, which are applied to humans. There is no way to deal with liability when using AI technology, other than invoking principles set out in "traditional" Civil Law. However, specific provisions regarding consumer protection, personal data and corporate liability may also apply.

Nevertheless, the existing doctrines are not always sufficient and do not definitively cover all issues arising when using AI technology, especially in the field of negligence and malpractice. In medical malpractice, for example during a robotic surgery, it is quite hard to distinguish between the human error of the doctor on the one hand and the hardware and/or software malfunction on the other. And even if one can prove that only the AI system is to blame, it is again difficult to prove that the manufacturer is liable, because AI systems are by definition autonomous, which means that the manufacturer's negligence is excluded.

Despite various attempts made at EU level regarding the introduction of the concept of "electronic personhood" in the domestic legislations of the Member States (see for example the study "Artificial Intelligence and Civil Liability" requested by the JURI Committee on Legal Affairs), which would probably offer a solution to the problems analysed above, there is little to no discussion in this respect in Greece. In any case, attention should also be paid to establishing principles of ethics, which will determine the way to utilise AI systems in a

reliable way, with benefits for economy and society as a whole (*cf*. European Commission Staff Working Document on liability for emerging digital technologies).

Criminal issues

What if an AI robot or system directly commits a crime?

In today's world, characterised by an amazing technological progress, it is rather easy to think about the possibility of criminal acts committed by AI systems. Actually, such acts may occur in everyday life, such as in cases of autonomous vehicles involved in traffic accidents, as well as in exceptional circumstances, e.g. targeted killings through drone strikes.

However, if an AI robot or system commits a crime, the main issue which arises is the extent to which the said AI robot or system can satisfy the requirements for criminal liability. In particular, one of the basic principles of Criminal Law is *mens rea*. A criminal act can only be attributed to its perpetrator if it is due to his fault (criminal intent or negligence). Accordingly, this means that the perpetrator must possess the cognitive capacities needed for responsibility. Evidently, these conditions cannot exist in AI robots or systems, which are programmed by humans to perform specific acts, or to be more specific, to perform specific motion sequences according to the orders received. These sequences of movements may as well be semi-autonomous, but they are always based on pre-existing software programmes, algorithms, etc.

The only logical and acceptable solution, in terms of criminal law, would be the punishment of the individuals (the manufacturer, the software programmer, etc.) who programmed the AI robot or system and are thus criminally liable. Usually, it would be a human's fault that led to a software malfunction and to the commission of a crime. There are basically two situations to be considered: (a) the case where the AI robot or system is purposely programmed to commit a crime; and (b) the case where a human failed to take all measures necessary in order to avoid such a crime. In the first case, the human who acted on purpose and intended to cause harm, which for example is the case in targeted killings with the use of drones, is undoubtedly criminally liable and punishable. Similarly, in cases of criminal negligence, such as malfunctions leading to property damage or bodily injuries and which could be predicted and prevented by adequate technical checks, the individual is again criminally liable without the need to seek liability in a robot.

However, there are also cases which stand on the borderline between human fault and acts of robots that are beyond any human control. Since criminal punishment is practically useless if imposed on robots, maybe the legislature should focus on risk management and on preventing such crimes by enforcing a strict regulatory regime (e.g. regarding autonomous vehicles).

What if AI causes others to commit a crime?

The "Blue Whale Challenge" was an example of software (social network) which led several individuals to self-harm, or even to suicide. More specifically, this "game" consisted of a series of tasks assigned to players including elements of self-harm and the final challenge being suicide (see https://en.wikipedia.org/wiki/Blue_Whale_Challenge). Hypothetically, the player in a similar game/network may as well have been urged to cause harm to others.

The case of the "Blue Whale Challenge", though not directly relevant to AI systems, clearly illustrates the possibility of AI systems influencing individuals to perform wrongful acts. However, the main issue here is that, unlike the existence of an administrator who assigns the tasks to the players, AI systems operate independently and autonomously. Therefore, it

is hard to attribute liability to a human behind it. Moreover, the notion of abetting criminal acts is closely linked to human interaction. According to Greek Criminal Law, there needs to be a mental communication between the abettor and the perpetrator; the perpetrator must have been incentivised by the abettor through persuasion and/or importunity, which is hard to conceive in cases of robots. In conclusion, it seems that the principles of Greek Criminal Law cannot apply in relevant cases.

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* * *

Endnotes

1. https://digitalstrategy.gov.gr/project/ethniki_stratigiki_texnitis_noimosinis. In that context, the possibilities of utilising AI in public administration to improve internal operations and to design better services for citizens and businesses will be analysed. Such applications are, eventually, automatic control mechanisms to combat tax evasion, to monitor the system of fuel inputs and outputs, to automatically codify legislation or to establish a system of risk forecasts related to civil protection.
2. https://digitalstrategy.gov.gr/principles_of_implementation. Ongoing or scheduled for midterm relevant projects in the context of the national digital strategy are, indicatively: New identity Cards; Single Digital Map – Phase II; Digital Land Use Bank; Digitisation of Public Property; Interoperability Register; National Infrastructure for Citizen Authentication; National Notification Service; Central Government Software Licensing Agreement; Central and Unified Fiscal Policy System (Government ERP); Expansion of Central Document Handling System; Codification and Reform of Greek Legislation; "Clarity" programme; National Public Procurement Database; Digital Transformation of Public Procurement; Register of Contracting Authorities; Redesign of the National Electronic Public Procurement System (ESIDIS); eShops and eMarketplaces in Public Procurement; Design and implementation of a certification process for specialised information systems – bidding platforms in the field of Public Procurement; Electronic invoicing; e-books (myDATA) and cash register interface; Implementation of a Data Analytics service support platform; Integrated Citizen Relationship Management System; Central system for receiving and managing proposals from citizens; ICT action monitoring system; Quality Assurance in ICT Implementation (QA); Digital Information Centre; Digitisation of the General Archives of the State; Central Electronic Document Handling System – Phase II; know-your-Customer; National Communication Register; and Data Centre Infrastructures GRNET.
3. Council of Europe, European Commission for the Efficiency of Justice (CEPEJ).
4. The first "*European Ethical Charter on the use of AI in the judicial systems and their environment*", as adopted at the 31st plenary meeting of the European commission for the efficiency of justice (CEPEJ) CEPEJ (Strasbourg, 3–4 December 2018) adopted

in December 2018, available at https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c.

5. The "*Roadmap and workplan*", as adopted at the 34th plenary meeting of the CEPEJ on 8 December 2020, available at https://rm.coe.int/cyberjustice-roadmap-en-cepej-2020-14/1680a0ae12.
6. See also EU Commission Coordinated Plan to foster the development and use of AI in Europe and White Paper of the European Commission (19 February 2020) "On Artificial Intelligence – A European approach to excellence and trust". See also OECD AI Policy Observatory: https://www.oecd.ai/dashboards/countries/Greece.
7. DESI 2020 Greece.
8. See also SEV Proposal of a National Strategy for the Development of Artificial Intelligence https://www.sev.org.gr/Uploads/Documents/53335/%CE%91%CE%99_strategy_v26_11_20.pdf?cmid=abbd0639-3b67-4f08-8721-fd03736ef27f.
9. See Boston Consulting Group Paper, September 2020: Harnessing The Power of AI in Greece.
10. See Hellenic Federation of Enterprises (SEV) newsletter.
11. http://democratisingai.gr/#open-consultation.
12. J. Crémer, Y.A. de Montjoye – H. Schweitzer, Competition Policy for the Digital Era Final Report (upon request of the European Commission), contains a very calibrated and inclusive analysis of issues, theories of harm (stating that these must be designed with a view both to the relevant error costs and with a view to the practicality of applying them) and proposed regulatory treatment with regard, *inter alia*, to dominant platforms, acquisitions of start-ups by dominant platforms or ecosystems, data access, data interoperability etc. https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf.
13. *Ezrachi /Stucke*, Artificial Intelligence & Collusion, University of Illinois Law Review 2017, p. 1775 *et seq*.
14. OECD (2017), *Algorithms and Collusion: Competition Policy in the Digital Age*, available at https://www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm, p. 25.
15. CMA, *Pricing Algorithms, Economic working paper* on the use of algorithms to facilitate collusion and personalised pricing, October 2018.
16. CMA, *Pricing Algorithms, Economic working paper* on the use of algorithms to facilitate collusion and personalised pricing, October 2018, pp 43–44.
17. See OECD (2017), *Algorithms and Collusion: Competition Policy in the Digital Age*, p. 36.
18. For a definition of the concept of the ecosystem and more information on the draft provision background see M. Jacobides, I. Lianos, Ecosystems and Competition Law in Theory and Practice, January 2021, CLES Research Paper Series. The new provision will not apply if the concern falls under the scope of the Digital Markets Act (DMA) of the European Commission. As stated therein, the draft provision may apply on platforms and ecosystems in tourism and hospitality, but also agrotech or Fintech, which would be outside the Gatekeeper regulation but could impact a broad swathe of the Greek economy.
19. *Autorité de la concurrence/Bundeskartellamt, Algorithms and Competition*, (November 2019), p. 69.

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