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Lex AI: Solution for Governance of Artificial Intelligence in Indonesia

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Abstract
In the third decade of our century, AI is gradually becoming a part of daily life for people. The development of AI-based innovations in different fields such as navigation assistance software, image processing, and chatbots; and AI-based gear that helps paralyzed individuals regain their ability to walk, are convincing examples of how AI is being utilized more and more in daily life. As it develops, legal issues related to the use of AI may also arise, such as ethical issues, legal justice, due process of law, intellectual property, or personal data security. To mitigate legal problems, developing governance over AI is therefore necessary. This research is normative juridical research using statute and conceptual approaches. The legal analysis technique used is the argumentative analysis technique. The study findings indicate that since AI fundamentally differs from coding programs in that it is a dynamic system consisting of a network of algorithms that mimic biological neural networks, a different approach and governance system are required. This can be referred to as *Lex Artificial Intelligence*, or simply *lex AI*. Because of its uniqueness, AI governance cannot exclusively use the standard public or private ordering framework. It is then necessary to present *lex AI* as the sui generis governance with unique regulatory properties that can be paralleled with other laws as a law that complements those other laws.

1. Introduction

Paul Scholten introduced a theoretical idea about the open system of law, which offers an in-between approach to the conundrum of any new development of human life. In his theory, law must always be in an open position towards the development of human life, something that constantly change over time. Thus, law will always be relevant to the development of human life it regulates. Regarding Scholten's theory, it is interesting to take a closer look at the development of *Artificial Intelligence* (AI) usage and applications.

AI is actually nothing new, in fact it has been introduced and developing in human life since the end of the first half of the 20th century. In 1943, Warren McCullough and Walter Pitts wrote an article titled "*A Logical Calculus of Ideas Immanent of Nervous Activity*".[1] The first AI-based program was created in 1951, while the term AI itself was introduced by a professor of Stanford University, John McCarthy, in 1956 at the "*Dartmouth Summer Research Project on Artificial Intelligence*".[2] McCarthy defined AI as "the science and engineering of making intelligent machines".[3]

One of the current populer use of AI in society today is the use of *Chat Generative Pre-Trained Transformer* or the *ChatGPT* which is an AI-based chatbot developed by OpenAI and

[1] Warren S. McCulloch and Walter Pitts, 'A Logical Calculus of the Ideas Immanent in Nervous Activity', *The Bulletin of Mathematical Biophysics* 5, no. 4 (1943), https://doi.org/10.1007/BF02478259.
[2] Administrator, 'Artificial Intelligence (AI) Coined at Dartmouth | Dartmouth', accessed 14 July 2023, https://home.dartmouth.edu/about/artificial-intelligence-ai-coined-dartmouth.
[3] Christopher Manning, 'Artificial Intelligence Definitions', *HAI Stanford University*, 2020.

launched on November 30 2022. ChatGPT uses *natural language processing* to be able to communicate directly with human users, and can be used to create essays, explain an object in question, and compile programming coding for the user. ChatGPT was developed using the *Reinforcement Learning from Human Feedback* (RLHF) method, which is an AI model training method carried out directly by human AI trainers who in the process function both as users and learning assistants for the AI model. These AI trainers then train the ChatGPT AI model with a set of responses that the AI model can use later to present the data set it obtains, which can then produce responses to the user in the form of dialogue as in a conversation with a human user. This AI model is then refined through the *Proximal Policy Optimization* process, to produce the best responses for its users.[4]

As for ChatGPT, there are other AI models that fall into the *Generative Artificial Intelligence* (Generative AI) category. Generative AI is an AI model that is capable of producing text, images or other media in response to commands entered by the user. Generative AI models learn patterns and structures from data fed to the model in training sessions using neural network machine learning techniques, so that they can then produce new data that has similar characteristics.[5] Neural network, also called *Artificial Neural Network* (ANN), which translated as a network of artificial neurons in the form of nodes or nodes consisting of mathematical functions that process input into output.[6] This artificial neuron network imitates the working functions of biological neurons in the human brain.[7] Apart from ChatGPT, other AI-based applications such as Midjourney and FaceApp have also been developed.

Along with the growth of the use and application of artificial intelligence through various applications, problems may also arise, for example those related to the protection of personal data, protection of intellectual property rights, and so on. There have been various debates regarding the use of AI, for example if there is a case of violation of intellectual property rights, who is then responsible for the violation. Indeed, several laws and regulations have been made regarding personal data protection and intellectual property rights. Likewise, there was the Law Number 19 of 2016 concerning the Amandment To Law Number 11 of 2008 concerning Electronic Information and Transactions (hereinafter Law No.19/2016 jo Law No.11/2008). However, none of them explicitly regulates matters relating to the use of AI. The Law No.19/2016 jo Law No.11/2008 , for example, does not yet clearly define what AI is. Several studies have been carried out by several parties, but they are not completely precise. Lawmakers need to understand the characteristics and how AI works before determining actions to regulate AI and mitigate potential problems.

Several previous studies regarding AI governance in Indonesia include research by Qur'ani Dewi Kusumawardani with the title "Progressive Law and the Development of Artificial Intelligence" [8] which discusses the importance of AI governance as a technological development viewed from Satjipto Rahardjo's progressive legal perspective. In his writing, Rahardjo stated that law is for human, and not human for the law.[9] Therefore, it is the laws that should be adjusted to follow human developments, including AI, and not vice versa, in which humans and AI must follow existing laws. Furthermore, the researcher took a more

[4] Open AI, 'Introducing ChatGPT', accessed 14 July 2023, https://openai.com/blog/chatgpt.
[5] 'Generative Artificial Intelligence - Wikipedia', accessed 14 July 2023, https://en.wikipedia.org/-wiki/Generative_artificial_intelligence.
[6] Nur Anisa, 'Mengenal Artificial Neural Network – School of Information Systems', accessed 14 July 2023, https://sis.binus.ac.id/2022/02/14/mengenal-artificial-neural-network/.
[7] 'Artificial Neuron - Wikipedia', accessed 14 July 2023, https://en.wikipedia.org/wiki/Artificial_neuron.
[8] Qur'ani Dewi Kusumawardani, 'HUKUM PROGRESIF DAN PERKEMBANGAN TEKNOLOGI KECERDASAN BUATAN', *Veritas et Justitia* 5, no. 1 (2019): 166–90, https://doi.org/10.25123/vej.3270.
[9] Satjipto Rahardjo, *Biarkan Hukum Mengalir* (Jakarta: PT Kompas Media Nusantara, 2007), 139–47.

concrete step by providing arguments regarding the appropriate form of AI governance to be implemented in Indonesia.

On regulating of AI, Zahrashafa PM and Angga Priancha's wrote an article "Current Indonesian Artificial Intelligence Legal Regulations".[10] Zahrashafa PM and Angga Priancha view AI is an "electronic agent" because it characterizes the "automatic" element stipulated in Article 1 point (8) of the Law Number 19 of 2016 concerning the Amandment To Law Number 11 of 2008 concerning Electronic Information and Transactions (hereinafter Law No.19/2016 jo Law No.11/2008), which defines as "a device of an electronic system created to automatically carry out an action on certain electronic information held by a person". While agrees in the idea of regulating AI, the researcher cannot agree on the categorization of AI as an "electronic agent" on the basis of the word "device" in the same article's point. The word "device" itself should refer to" equipment" according to the Big Indonesian Dictionary or the KBBI.[11] Thus, the context of "device" here refers more to hardware or physical equipment. Therefore, the researcher decided to take a different route and view AI regulation from a totally different perspective.

Futher, regarding the regulation of AI, Eka Nanda Ravizki and Lintang Yudhantaka in an article entitled "Artificial Intelligence as a Legal Subject: Conceptual Overview and Regulatory Challenges in Indonesia" [12] discusses the categorization of AI as a legal subject (i.e. analogous to workers or animals, which is linked to Article 1367 point (1) and (3) jo. Article 1368 of the Indonesian Civil Code (KUHPer). AI is considered as a "servant/ employee/ subordinate" in Article 1367 of KUHPer or an "animal" in Article 1368 of KUHPer, a legal subject, that perform work as assigned by its master or assignor. However, AI is not a legal subject that can have rights and responsibilities.[13] Therefore in this research, while the research agrees with the need to regulate AI, the researcher believes that AI should not be viewed as a legal subject.

Based on considerations from previous researches, the nature of AI should be clearly assessed prior to determining the appropriate form of governance for it. This research will then make observations regarding AI and provide recommendations regarding AI governance in Indonesia. AI governance will also intersect with matters of regulation and laws that will regulate AI in Indonesia. Governance involves the process of decision making, granting authority and control within a syste. [14] In general, the definition of ordering is the establishment of rules, norms and structuring of a community or system to regulate behavior and interactions between parties.

Furthermore, there are two types of governance approaches, namely public ordering and private ordering. Public ordering is the process of establishing and enforcing laws by the government.[15] Meanwhile, private ordering is the process of establishing rules and regulations carried out through private agreements between parties, who then voluntarily comply with

[10] Zahrashafa PM and Angga Priancha, 'Pengaturan Hukum Artifical Intelligence Indonesia Saat Ini', law.ui.ac.id, 30 April 2023.

[11] 'Arti Kata Perangkat - Kamus Besar Bahasa Indonesia (KBBI) Online', accessed 4 August 2023, https://kbbi.web.id/perangkat.

[12] Eka Nanda Ravizki and Lintang Yudhantaka, 'Artificial Intelligence Sebagai Subjek Hukum: Tinjauan Konseptual Dan Tantangan Pengaturan Di Indonesia', *Notaire* 5, no. 3 (31 October 2022): 351–76, https://doi.org/10.20473/ntr.v5i3.39063.

[13] Pieter E Latumeten, 'REPOSISI PEMBERIAN KUASA DALAM KONSEP "VOLMACHT DAN LASTGEVING" BERDASARKAN CITA HUKUM PANCASILA', *Jurnal Hukum & Pembangunan* 47, no. 1 (2017): 3, https://doi.org/10.21143/jhp.vol47.no1.133.

[14] Herbert L. A. Hart, *The Concept of Law*, 3rd editon (Oxford: Oxford University Press, 2012).

[15] Jonathan R. Macey, 'Public and Private Ordering and the Production of Legitimate and Illegitimate Legal Rules', *Cornell Law Review* 82, no. 5 (1997): 1123–25.

what has been agreed, for example in a contract or agreement.[16] Law in this research is then defined as part of governance in the form of formal rules and regulations established by the government to regulate human, organizational and institutional behavior.[17] Finally, this research will first discuss the development of AI, a discussion of the position of AI in law in Indonesia, before a comparative approach to AI governance, as well as a design for AI governance to be implemented in Indonesia.

2. Methods

In this research method, the researcher explains the type of research used, namely normative juridical or normative legal research. The approach method used is a conceptual approach. The legal materials used are secondary data originating from textbooks, legal journals, webinars, seminars and expert opinions; collected through identification, literature searches, and searches on websites. The legal analysis techniques used are argumentative and comparative analysis techniques.

3. Results and Discussion

3.1. The Nature of AI

Along with the development of AI, the definition of AI has also experienced various developments. Since Alan Turing questioned whether machines could think in his writing "*Computing Machinery and Intelligence*" in 1950, several definitions of AI have been presented.

Stuart J. Russell and Peter Norvig in their book "*Artificial Intelligence: A Modern Approach*" argue that AI is "the study of [intelligent] agents that receive precepts from the environment and take action".[18] Patrick Henry Winston, a Professor in the field of AI from MIT, defines AI as "constraint-driven algorithms exposed by representations supporting models linking thought, perception, and action".[19] Jeremy Archin, CEO of DataRobot, conveyed another definition of AI, namely a computer system capable of carrying out tasks that usually require human intelligence.[20]

In short, AI in the current sense is a form of simulation of human intelligence by machines that are programmed to be able to think, think or argue, and learn like humans. There are three quality parameters that are at the core of artificial intelligence, namely intentionality, intelligence and adaptability.

The main goal of developing AI is to enable machines to perform tasks that usually require human intelligence, such as visual perception, speech recognition, problem solving, decision making, language translation, and so on. In general, there are several types of AI as follows :[21]

a. *Narrow AI* or *Weak AI* or *Artificial Narrow Intelligence* (ANI), an AI designed to perform a specific task or a limited set of tasks, examples include virtual assistants such as Siri and Alexa, recommendation systems on *streaming platforms*, and autonomous vehicles.

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[16] Hart, *The Concept of Law*, 1140–43.

[17] Hart, 1140–43.

[18] Stuart J. Russel and Peter Norvig, *Artificial Intelligence: A Modern Approach*, 4th US edi (Pearson, 2021), vii.

[19] Patrick Henry Winston, *Artificial Intelligence*, 3rd editio (Boston: Addison-Wesley Longman Publishing Co., Inc., 1992).

[20] Jeremy Archin, 'What Is Artificial Intelligence | Artificial Intelligence Wiki', accessed 4 August 2023, https://www.datarobot.com/wiki/artificial-intelligence/.

[21] Michael Batin et al., 'Artificial Intelligence in Life Extension: From Deep Learning to Superintelligence', *Informatica (Slovenia)* 41, no. 4 (2017): 503–4; Eban Escott, 'What Are the 3 Types of AI? A Guide to Narrow, General, and Super Artificial Intelligence | Codebots', accessed 20 July 2023, https://codebots.com/artificial-intelligence/the-3-types-of-ai-is-the-third-even-possible.

b. *General AI* or *Strong AI* or *Deep AI* or *Artificial General Intelligence* (AGI), namely a type of AI that has the ability to understand, learn and apply knowledge in various tasks just like humans.
c. *Superintelligence* or *Artificial Superintelligence* (ASI), the concept of refers to AI systems that surpass human cognitive abilities in all domains, including creativity, problem solving, and emotional intelligence. This concept represents a level of AI that is considered to potentially pose significant ethical and existential risks.

AI can then be implemented using various techniques or methods as follows:

a. *Machine Learning*: a subset of AI that focuses on algorithms and statistical models that allow computers to learn from data without explicit programming Machine learning can be further divided into: [22]
   i. *Supervised Learning*, namely an algorithm trained using labeled data, where input-output pairs have been provided beforehand. An AI system or model learns by mapping input to the correct output, enabling it to make predictions on new data.
   ii. *Unsupervised Learning*, namely algorithms that are trained using unlabeled data, and the system must find patterns and structures in the data without explicit guidance.
   iii. *Reinforcement Learning*, namely a computer program or system (also called an "agent" in AI) that learns to make decisions by interacting with the environment through sensors and receiving feedback in the form of rewards and punishments. The agent then aims to maximize the reward cumulatively over time.
b. *Deep Learning*: namely a sub-field *of machine learning* that uses *ANN* with many layers (deep neural networks) to automatically learn hierarchical data representations. *Deep Learning* has demonstrated its success in tasks such as image recognition, natural language processing, and game play.[23]
c. *Natural Language Processing* or NLP: namely techniques that enable computers to understand, interpret, and produce language that humans can understand. NLP involves tasks such as text analysis, *sentiment analysis* , language translation, and *chatbot interactions.*[24]
d. *Computer Vision*: namely an AI method that focuses on teaching computers to be able to interpret and understand visual information from images or videos. Applications include object recognition, image classification, and facial recognition.[25]
e. *Expert Systems*: namely knowledge-based AI systems that utilize human expertise and rules to solve complex problems in certain domains. These systems store knowledge in a structured format and use reasoning algorithms to make decisions.[26]
f. *Genetic Algorithms:* namely optimization techniques inspired by the processes of natural selection and genetics. This algorithm imitates the evolutionary process of finding the best solution to a problem through sequential solution proposals.[27]

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[22] Christopher M. Bishop, *Pattern Recognition and Machine Learning* (New York: Springer Science+Business Media, LLC, 2006).
[23] Ian Goodfellow, *Deep Learning (Adaptive Computation and Machine Learning Series)* (Cambridge: The MIT Press, 2016).
[24] Ashish Vaswani et al., 'Attention Is All You Need', 12 June 2017.
[25] Jia Deng et al., 'ImageNet: A Large-Scale Hierarchical Image Database', in *2009 IEEE Conference on Computer Vision and Pattern Recognition* (IEEE, 2009), 248–55, https://doi.org/10.1109/CVPR.2009.5206848.
[26] Michael Negnevitsky, *Artificial Intelligence: A Guide to Intelligent System*, 3rd editio (North York: Pearson Education Canada, 2011).
[27] David E. Goldberg, *Genetic Algorithms in Search, Optimization and Machine Learning*, 1st editio (Boston: Addison-Wesley Publishing Company, Inc., 1989).

g. *Fuzzy Logic*: namely a method that deals with uncertainty and imprecision in data by allowing the emergence of variables that have a degree of truth (between 0 and 1), rather than a binary position of true or false.[28]
h. *Knowledge Representation and Reasoning*: namely a technique for representing knowledge in such a way that an AI system can understand a problem and then use it in decision making and problem solving, examples include semantic networks or frame networks, ontology, and logical reasoning.[29]
i. *Robotics*: namely the combination of AI and engineering techniques *to* design and develop intelligent machines capable of performing tasks in the physical world. Robotics involves *computer vision*, *motion planning* and autonomous decision making for agents.[30]

In recent years, AI has progressed significantly and its applications are now widespread in various fields such as health, finance, transportation, education, and others. However, on the other hand, concerns also arise about the impact of AI socially and on ethical matters, including issues related to privacy, deviation or bias , the replacement of human workers with machines, and the potential for abuse.

3.2. AI Governance: Indonesia and Lessons from Other Countries

The use of AI in human life certainly requires a certain form of *governance* , so that its social or ethical impacts can be minimized. Regarding the use of AI in people's lives, specifically in Indonesia, until now there are no specific regulations governing AI. This was revealed in a public discussion with the title "Artificial Intelligence: Disrupsi Bagi Ekonomi?" which was held on March 9 2023 in Jakarta.[31]

On the other hand, the government of the Republic of Indonesia through the Agency for the Assessment and Application of Technology (AAAT) has indeed published the "National Strategy for Artificial Intelligence for Indonesia 2020-2045". It should be noted that this publication does not clearly regulate AI governance in detail or specifically yet, and is only a national policy directives.[32]

In the "National Strategy for Artificial Intelligence Indonesia 2020-2045" it is stated that since AI is a part of Science and Technology (IPTEK), its regulation must also comply with legal norms governing science and technology.[33] Several important things that must be considered from the "National Strategy for Artificial Intelligence for Indonesia 2020-2045" are the arrangements that are planned to be divided as follow:[34]

(1) Regulations governing specific AI technologies (e.g. automated decision making, facial recognition).
(2) Regulations that specifically regulate the application of technology or the application of technology in the business sector (for example: finance, health, and human resource management)

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[28] Timothy J. Ross, *Fuzzy Logic with Engineering Applications*, 3rd editio (New Jersey: John Wiley & Sons, Ltd, 2010), https://doi.org/10.1002/9781119994374.
[29] Hector J. Levesque, 'LOGIC OF IMPLICIT AND EXPLICIT BELIEF.', in *Proceedings of the Fourth AAAI Conference on Artificial Intelligence*, 1984, 198–202.
[30] Nikolaus Correll et al., *Introduction to Autonomous Robots: Mechanisms, Sensors, Actuators, and Algorithms* (Cambridge: The MIT Press, 2022).
[31] Mediana, 'Penerapan Kecerdasan Buatan Perlu Payung Hukum Yang Jelas - Kompas.Id', accessed 20 July 2023, https://www.kompas.id/baca/ekonomi/2023/03/09/regulasi-perlu-mendukung-penerapan-beretika-aman-dan-melindungi-data-pribadi.
[32] Badan Pengkajian dan Penerapan Teknologi, *Strategi Nasional Untuk Kecerdasan Artificial* (Jakarta: Sekretariat Nasional Kecerdasan Artifisial Indonesia, 2020), 1.
[33] Badan Pengkajian dan Penerapan Teknologi, 42.
[34] Badan Pengkajian dan Penerapan Teknologi, 43.

(3) Legal liability for unintended consequences of the use of AI (e.g. criminal, and civil).
(4) A code of ethics created voluntarily means a code of ethics created either by associations of AI industry players or other groups.

In the same document, several important notes are also conveyed, for example :[35]

(1) That humans are appointed as supervisors in the governance mechanism by using *Human-In-The-Loop* (HITL), *Human-On-The-Loop* (HOTL), or *Human-in-Command* (HIC) approaches
(2) That AI systems must be developed with a preventive approach to risk, including having a backup plan if a problem occurs with the AI system
(3) That artificial intelligence cannot be said to be a legal subject, which has rights and obligations, because AI is a product of human technology.

The note regarding the inability to classify AI as a legal subject also negates the argument presented by Clara Anusya Aprilinda, in her article "Artificial Intelligence: Could it Become a New Entity in Criminal Accountability?" [36] although it can be assumed that there is *actus reus* and *mens rea*. Likewise, Hanif Abdul Halim's opinion in his article "The Legal Position of Artificial Intelligence: Challenges and Debates" [37] which is published bykliklegal.com. There are also other arguments that suggest treating AI as a social actor based on *Actor-Network Theory* or ANT [38] which was introduced by Bruno Latour, Michel Callon, and John Law, as stated by Mallory Reed in her thesis " *The Classification of Artificial Intelligence as 'Social Actors'* " [39] cannot immediately be implemented in Indonesia.

Designing AI governance for the Indonesian context can be done by paying close attention to developments in AI regulations or governance carried out in other regions of the world. The United States has just entered *the blueprint* or policy directives phase as is the case in Indonesia, through *the Blueprint for An AI Bill of Rights* [40] which was released in October 2022 and most recently through *the National Institute of Standards and Technology* (NIST) released *the AI Risk Management Framework* or AI RMF 1.0 on January 26, 2023.[41] AI RMF 1.0 is intended as a framework to be used voluntarily in order to minimize potential violations of AI systems against humans, legal entities and associated ecosystems (including global business and the environment). To support the implementation of AI RMF 1.0, *an Artificial Intelligence Resource Center (AIRC)* was also formed on March 30 2023.

In other parts of the world, the European Union has issued the first comprehensive regulation regarding AI, known as *the EU AI Act* on 8 June 2023.[42] In this case the European

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[35] Badan Pengkajian dan Penerapan Teknologi, 39, 40, 43.
[36] Clara Anisya Aprilinda, 'Artificial Intelligence: Mungkinkah Menjadi Entitas Baru Dalam Pertang-gungjawaban Pidana? – CTRL UGM', accessed 4 August 2023, https://ct-rl.law.ugm.ac.id/2021/0-3/15/artificial-intelligence-mungkinkah-menjadi-entitas-baru-dalam-pertanggungjawaban-pidana/.
[37] Hanif Abdul Halim, 'Kedudukan Hukum Artificial Intelligence: Tantangan Dan Perdebatannya', accessed 20 July 2023, https://kliklegal.com/kedudukan-hukum-artificial-intelligence-tantangan-dan-perdebatannya/.
[38] Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory, 1st Editio*, 1st editio (Oxford University Press, 2007), 16.
[39] Mallory Reed, 'The Classification of Artificial Intelligence as "Social Actors"' (Georgia State University, 2018), 18, https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1059&context=-rs_theses.
[40] Office of Science and Technology Policy, 'Blueprint for an AI Bill of Rights', The White House, 2022.
[41] National Institute of Standards and Technology, 'AI Risk Management Framework | NIST', accessed 4 August 2023, https://www.nist.gov/itl/ai-risk-management-framework.
[42] European Parliament, 'EU AI Act: First Regulation on Artificial Intelligence | News | European Parliament', accessed 4 August 2023, https://www.europarl.europa.eu/news/en/headlines/society/-20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence.

Union has taken a step forward compared to the United States with its AI RMF 1.0. The *EU AI Act* specifically regulates several things, including the use of Generative AI, which must meet the following requirements related to transparency:[43]

a. AI-generated content disclosure
b. Designing an AI model that can prevent it from generating illegal content
c. Publishing copyrighted data summaries for use in AI model training.

Some other notes from *the EU AI Act* include :[44]

a. It is planned to define AI that is cross-technological (*technology-neutral*) as an anticipatory step towards further developments in AI technology in the future
b. Assessment of AI systems deemed to be high risk (e.g. those related to navigation, medical, biometrics, critical infrastructure management, education, law enforcement) before public use and throughout their lifetime.

The EU AI Act also stipulates that AI systems must be supervised by humans, and not by automation to avoid potentially damaging problems. Therefore, the EU AI Act regulates that AI systems used in the European Union must meet the criteria of security, transparency, traceability , discrimination-free and environmentally friendly. It is also necessary to pay attention to the People's Republic of China or China, as one of the countries actively promoting the use of AI in everyday life. Regarding AI governance, the *Development Plan for the New-Generation Artificial Intelligence* was introduced as a road map for developing AI governance in China on July 20 2017. Furthermore, on June 17 2019, *Governance Principles for New Generation AI: Develop Responsible Artificial Intelligence was also issued* as an AI governance guide which includes rules regarding privacy, security, AI control, and agile governance to respond to unexpected changes and to meet the ever-changing needs of society.

In a further development, AI governance in China also regulated AI algorithms and *deepfakes* on December 7 2020. On September 25 2021, regulations were adopted regarding the importance of humans remaining in control of AI and therefore taking full responsibility for AI systems. On December 31 2021, AI governance was issued to regulate content distributed online and also regulate the protection of workers affected by AI algorithms. Furthermore, on March 20 2022, management regulations related to ethics were also issued, especially those related to medicines and life sciences. AI governance related to deepfakes was further tightened through *Provisions on the Administration of Deep Synthesis Internet Information Services* on November 25 2022 to prevent fake news. In the latest developments on April 11 2023, a draft was also issued for *Measures for the Management of Generative Artificial Intelligence Services* to regulate generative AI in the form of chatbots to ensure that AI development uses training data and produces correct and appropriate content. The regulation draft was later finalized on July 13, 2023 and came into effect as of August 15, 2023.[45]

Observing the progress of AI regulation in other countries, discussing AI *governance* in Indonesia by then requires a lot of consideration of various relative main factors. Previously it was mentioned that Indonesia is currently still drafting laws that regulate AI, through the National Strategy for Artificial Intelligence for Indonesia 2020-2045. However, it should be noted that in the formation of laws relating to digital technology, there were shortcomings that were not anticipated by the makers of public laws. Conventional approaches taken by law makers towards digital technology, which has developed so rapidly, have resulted in policies and regulations that are confusing, overlapping and even inappropriate in their use. Examples

[43] European Parliament.
[44] European Parliament.
[45] Arjun Kharpal, 'China Introduces Rules Governing Generative AI Services like ChatGPT', accessed 31 July 2023, https://www.cnbc.com/2023/07/13/china-introduces-rules-governing-generative-ai-services-like-chatgpt.html.

of governance that are still not properly regulated are ride hailing services and social commerce regulations

Hence, a different approach should be taken in forming laws governing AI in Indonesia. Private ordering, as well as hybrid approaches need to be considered in AI settings. Previously, private ordering application in digital technology regulation had been introduced in the *lex informatica* concept.[46] What is meant by "*lex informatica*" according to Joel R. Reidenberg are the legal principles and rules that regulate the use and management of information technology and the digital world. *Lex informatica* is believed to be able to bridge the gap between law and technology, by dealing with legal issues arising from the use, development and dissemination of information and communication technology.

3.3. Lex Informatica: A Study Case of Private Ordering

Joel R. Reidenberg in his writing "*Lex Informatica: The Formulation of Policy Rules through Technology*" in 1997 [47], introduced *lex informatica* as a concept in the world of law that was adopted from the practice of *lex mercatoria* or *law of merchants*.[48] *Lex mercatoria* itself is a form of *private ordering* that was concepted from a set of rules, principles and customs that have existed in trade practices between countries for hundreds of years. *Lex mercatoria* was initiated to establish a separate rule or standard standard (*private ordering*) which was then accepted by inter-state trading businesses, which transcended national borders with their different rules and customs.[49] It is based on the principles of fairness, justice or appropriateness, and customs in the world of trade or commerce. These principles were then also used in international trade and arbitration activities in the future.

Lex Informatica argues for the need for a new legal framework to overcome the specific challenges and complexity presented by technology and its developments. *Lex informatica* covers various areas of law, such as intellectual property law, privacy law, data protection, cyber security, e-commerce, digital rights, and electronic transactions. The aim of *lex informatica* is to establish legal norms, principles and regulations that guide the use, access and protection of information and digital technologies.[50] The characteristics of *lex informatica* are in the arrangement of matters related to:[51]

(1) Restrictions regarding content, including filtering mechanisms;
(2) Treatment of personal data, including handling and prevention mechanisms;
(3) Protection of intellectual property, including handling and prevention solutions.

According to Reidenberg, policy makers should learn to view *lex informatica* as an supplemental legal instrument in order to achieve the goal of establishing legislation and governance arrangements related to technology, which was previously difficult to achieve with conventional legislative approaches. In fact, according to him, the approach strategy and implementation mechanism should be based on *lex informatica* as a single norm for matters relating to technology, rather than the approach strategy and implementation mechanism of conventional laws and regulations.[52]

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[46] Steven L. Schwarz, 'Private Ordering', *Northwestern University Law Review* 97 (2002): 324.
[47] Joel R. Reidenberg, 'Lex Informatica: The Formulation of Information Policy Rules Through Technology', *Texas Law Review* 76, no. 3 (1998): 553.
[48] Reidenberg, 554.
[49] Harold J. Berman and Colin Kaufman, 'The Law of International Commercial Transactions (Lex Mercatoria)', *Harvard International Law Journal* 19, no. 1 (1978): 221–27.
[50] Reidenberg, 'Lex Informatica: The Formulation of Information Policy Rules Through Technology', 554.
[51] Reidenberg, 557–58.
[52] Reidenberg, 556–556.

Reidenberg reminded that in general legal developments are always slower than technological developments.[53] Therefore, if governance relies entirely on conventional law, there will always be deficiencies or gaps in certain matters relating to the technology it will regulate. Therefore, *lex informatica* is considered suitable for use as a separate legal system[54] or in parallel with the conventional legal system, because there are distinguishing features that are still in line with the principles of conventional legislation. These distinguishing features include information system architecture standards and network or algorithm characteristics. Ultimately, information technology regulation can be carried out through regulation of the technology itself, through legislation that provides guidance on the implementation of the technology, or through legislation that limits user actions.[55]

Compared to substances related to conventional legal practice, for example related to the interpretation of applicable legal provisions or the jurisprudence of judicial bodies, *lex informatica* can directly use definitions related to technical capabilities and general practices in technology.[56] These technical capabilities and general practices then determine the standard rules in *lex informatica*. Likewise, if in conventional legal systems the source of legal regulation is the state or government, then in *lex informatica,* the legal governance arrangements can be determined by technology developers and social processes which then develop along with their use.[57] In *private ordering,* the parties can regulate their own governance and mechanisms regarding what matters are agreed to be regulated. The use of *lex informatica* as a parallel legal source, according to Reidenberg, can overcome problems that exist in the legal administration that regulates technology, including regulatory conflicts and legal uncertainty that still exist.

Specifically, *lex informatica* provides a new way to deal with problems faced in the use of technology, including content regulation, personal data violations, and protection of intellectual property.[58] There are several advantages to using *lex informatica,* including:

(1) Jurisdictional advantage, namely that it can be applied to activities in the network environment, including cross-border network activities;[59]
(2) The advantage of customization is that adjustments can be made based on the technological standards and settings used. This is also related to the principle of freedom of contract in contract law; [60]
(3) The advantage in law enforcement is that when compared to conventional law which is based on *ex post* or after a violation occurs (or is repressive), then *lex informatica* can be carried out *ex ante* or before a violation occurs or preventively.[61]

Regarding point (2) above, *lex informatica* governance can flexibly follow the nature of the technology that will be regulated, including the development of the technology in the future. Likewise, there is flexibility in governance in point (3) to be able to regulate based on *ex ante* or preventive or mitigative steps before a problem occurs. Preventive regulations are very important because some countries such as Indonesia do not have many preventive regulations.

The use of technical standards in *lex informatica* also directly makes the technical community (namely the initiators and creators of technology), become part of *the stakeholders* in the formation of governance. The governance that is created can have a direct impact on the

[53] Reidenberg, 566.
[54] Reidenberg, 555.
[55] Reidenberg, 568–69.
[56] Reidenberg, 570.
[57] Lawrence Lessig, 'Reading The Constitution in Cyberspace', *SSRN Electronic Journal*, 2005, 897, https://doi.org/10.2139/ssrn.41681.
[58] Reidenberg, 'Lex Informatica: The Formulation of Information Policy Rules Through Technology', 577.
[59] Reidenberg, 577–78.
[60] Reidenberg, 579.
[61] Reidenberg, 581.

community of people who use the technology, so the government as a conventional policy maker needs to pay attention to the accountability of policies made by the technical community. Thus, conventional policy makers are also required to have sufficient understanding, apart from paying great attention to the process of creating governance based on *lex informatica.* Without sufficient understanding and attention, inequality or injustice in management can result in disruption to public order. Of course, this is not easy, considering the potential differences in legal culture between conventional policy makers and *lex informatica policy makers*.[62]

The integration of the concept of *lex informatica* in the formation of laws and regulations that regulate the management (or *governance*) of technology can help achieve the goals of good and effective governance. Different institutional tools and legal mechanisms are also required compared to conventional government regulations. Therefore, policy makers should start paying attention to the concept of *lex informatica* in the formation of laws and regulations governing technology. In its development, *lex informatica* can be developed from a private ordering into a private law as stated by Jorge L.Contreras in his article " *From Private Ordering to Public Law: The Legal Frameworks Governing Standard-Essential Patents* ".[63]

In relation to the regulation or governance of AI which is the focus of this research, the development of the concept of *lex informatica* as a technology governance can be used as a basis for thinking about creating a legal system that is in accordance with the characteristics of AI as a technological product. Ahmad M. Ramli, professor *of Cyberlaw* from Padjadjaran University, in his article "AI RMF 1.0 Guidelines for Artificial Intelligence in the US and Legal Calibration" even argues that *lex informatica* is a form of calibration of conventional law.[64] In essence, a sui generis form of governance such as *lex informatica* can be used together with conventional legislation in parallel, side by side (*coexistent*), and continuously in order to regulate the governance of systems built on technology, including AI.

3.4. *Lex AI*: a *Sui Generis* Governance for AI

Regarding the development of regulation for AI, Karni A. Chagal-Feferkorn and Niva Elkin-Koren in their article entitled " *Lex AI: Revisiting Private Ordering By Design* ", introduce the next generation of Reidenberg's *lex informatica concept* which they call *Lex AInformatica* or abbreviated as *LexAI*.[65] This concept was developed as a step to anticipate the development of the use of AI which is increasingly being used in people's daily lives.

Fundamental difference between *lex informatica* and *lex AI* generally lies in the object of governance. In *lex informatica*, governance is implemented at the algorithm level through the implementation or addition of certain coding, in accordance with established rules or laws. In *lex AI*, the algorithm is very different from conventional programs, namely that the AI algorithm is formed by a *machine learning* or *data-driven mechanism* and is no longer based on coding from the programmer. Therefore, it can be understood that different governance is needed.[66]

Algorithms in an AI model are trained using large amounts of data, allowing the Artificial Intelligence system to learn from past experiences. AI systems can compare past data

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[62] Reidenberg, 592.
[63] Jorge L. Contreras, 'From Private Ordering to Public Law: The Legal Frameworks Governing Standards-Essential Patents', *Harvard Journal of Law & Technology* 30 (28 January 2017): 218–20.
[64] Ahmad M. Ramli, 'AI RMF 1.0 Pedoman Kecerdasan Buatan Di AS Dan Kalibrasi Hukum Halaman All - Kompas.Com', accessed 20 July 2023, https://tekno.kompas.com/read/2023/05/21/08000087/ai-rmf-1.0-pedoman-kecerdasan-buatan-di-as-dan-kalibrasi-hukum?page=all#page2.
[65] Niva Elkin-Koren and Karni A. Chagal-Feferkorn, 'Lex AI: Revisiting Private Ordering By Design', *Berkeley Technology Law Journal* 36, no. 3 (3 November 2022): 918.
[66] Elkin-Koren and Chagal-Feferkorn, 918.

with data obtained at this time to then produce predictions for the best results that can be obtained, based on decisions that have been taken in the past. Therefore, AI systems can then be used to assist, supplement, or even replace humans in making decisions, including to directly and systematically direct the behavior of humans or social actors.[67]

As society increasingly relies on AI technology, the need for a well-defined and adaptive legal or governance framework becomes critical to mitigate potential legal issues that may arise in the use of artificial intelligence. As stated at the beginning, AI also has loopholes that have the potential to become legal problems, for example, in matters related to ethics, bias or discrimination, personal data, or intellectual property.

The existence of an element of public interest or *common good* in the use of AI has given rise to the view that AI governance should be more appropriately included in the public law category rather than the private law category. On the other hand, there are also things related to AI that can become obstacles to the use of governance based on public law for AI. One of them is related to the broad scope of AI that needs to be regulated. Referring to the types of AI that have been explained in the previous section, of course it is not appropriate to make certain settings for AI which then become the standard rules that are *one-size-fits-all* for all types of AI. Oversimplification, as stated by Dickinson[68]in his book "*The Danger of Oversimplification*" has been done in the past to regulate the governance of several technological products in Indonesia. Excessive simplification has been proven to give rise to new problems, for example in the governance of *ride hailing services applications* in Indonesia as mentioned in the previous section.

On the other hand, other problems can also arise related to the implementation of AI governance based on public law or public ordering, namely whether decisions made by AI based on past data truly reflect the user's current choices. The user's choice of several alternative solutions for a matter or problem can change over time, which can be due to timing factors or when decisions are made in life, their relationships with humans or other lives, or their human agents [69]. It can also happen that a choice made in the past is not actually the best choice , or at least only the best option among the other bad options available.[70] There is also another possibility that a choice that has become a general consensus or majority choice regarding something, is not necessarily a form of *common good*.

The one million dollar question should then be raised on whether AI governance falls into public odering realm (which in turn will be ruled under public laws), or the private ordering, as it is in *lex informatica*. If *lex AI* is then seen as a form of *governance* that is in the realm of private law, on the grounds that users are given freedom in its use or customization, then a deeper study of it is needed. Personalization in AI systems, although initially based on input from the user, is actually more personalization carried out by the AI system for the user, rather than carried out by the user itself.[71] In the personalization process, the AI system proposes several alternative choices or options that were previously chosen by other users in the past, after adjusting to the current user profile. This means that, rather than providing broad and free personalization space, the AI system actually offers several choices to other

[67] Elkin-Koren and Chagal-Feferkorn, 920, 939.
[68] John Dickinson, 'Legislation and The Effectiveness of Law', *American Bar Association Journal* 17, no. 10 (1931): 645–50.
[69] Glen H. Elder Jr and Glen H. Elder Jr., 'Time, Human Agency, and Social Change: Perspectives on the Life Course', *Social Psychology Quarterly* 57, no. 1 (March 1994): 4, https://doi.org/10.2307/2786971.
[70] Adi Sagi and Nehemia Friedland, 'The Cost of Richness: The Effect of the Size and Diversity of Decision Sets on Post-Decision Regret', *Journal of Personality and Social Psychology* 93, no. 4 (2007): 515–24, https://doi.org/10.1037/0022-3514.93.4.515.
[71] Elkin-Koren and Chagal-Feferkorn, 'Lex AI: Revisiting Private Ordering By Design', 921.

users who the system estimates have similar preferences to the current user based on a path-dependent mechanism.

In simple terms, it can be illustrated by the use of navigation systems such as *Google Maps* or *Waze*. Even though it is the user who inputs the destination location in the form of indicating the destination point or input via text, it turns out that in practice it is the user who is guided through a certain route that is arranged by the AI system. The alternative routes are a compilation of decision data from other users in the past that has been collected by the AI system. Even though it appears that the user is being given a solution that suits his preferences, in fact the AI system only provides suggestions based on the consensus of other users regarding a chosen route rather than actually providing full and free personalization to the current user. Therefore, it often happens that users then find themselves having to take a route that passes through alternative roads that are much too narrow and difficult to pass through, even though the user actually prefers or chooses the main roads.

If you look more closely, it is actually the user who is then regulated by the AI system, to follow the route as presented by the AI system which is based on a *path-dependent mechanism* and also the application of *an optimization approach* or *exploration/exploitation trade-off* for the decision-making mechanism. This can also be seen in other AI-based applications, so that humans then become dependent on considerations developed by AI algorithms rather than human cognitive abilities. The same condition can also be seen in film recommendations for users to watch on the *Netflix's mobile application*. The recommendations provided are based on consensus from other users who have similar profiles or databases. The user, thus, becomes governed by the AI system rather than being the user of the AI system in control. Therefore a new habit emerged that "*the system knows best*".[72]

Paying attention to the obstacles in AI governance which seem ambiguous to be placed in the realm of *public ordering* or *private ordering* clearly and firmly, then we really need to deterimine in which realm if AI governance or *lex AI* should fall into. In this case, the researcher agrees with Elkin-Koren and Chagal-Feferkorn's view that *lex AI* must be a *sui generis* governance that does not include *public ordering* or *private ordering e*xclusively, but because of the uniqueness of these two categories of governance, then *lex AI* should be a type of governance that is its own or a *sui generis* governance.[73] This is considering the nature of AI as a technology product that is very unique and has never existed before.

In general, some of the main reasons why *lex AI* must become a *sui generis governance system* are as follows:

(1) That although AI governance can be freely determined or formed by the parties involved in the formation and use of AI systems, AI governance must also pay attention to public order and the common good because it is closely related to the life of society at large.
(2) That, although AI governance can be personalized according to user preferences, it turns out that in practice the user does not truly control the AI system or the choices that are then developed by the AI system.
(3) That, in an AI system, the decision-making process is actually regulated by the algorithms in the AI system. The AI work system is based on past data, and the decision-making process is assisted by optimization mechanisms.
(4) In practice, AI systems cannot actually be controlled by their creators. This is because the AI system has the ability to adapt according to the estimated results and data it obtains during its operational period.

[72] Nizan Geslevich Packin and Nizan Packin Geslevich, 'Consumer Finance and AI: The Death of Second Opinions?', *New York University Journal of Legislation and Public Policy*, 15 April 2019.
[73] Elkin-Koren and Chagal-Feferkorn, 'Lex AI: Revisiting Private Ordering By Design', 958.

Simply put, the uniqueness and novelty of AI makes it difficult to regulate using existing conventional laws. Although in practice there are several regulations that might be used to regulate AI, for example the Information and Electronic Transactions Law, the Personal Data Protection Law, and the Intellectual Property Laws. These regulations do not definitively regulate AI. If these regulations are then forced to be applied on regulating AI, there is a risk of multiple interpretations due to the legal ambiguity.

Likewise, if AI regulation must follow the conventional law pattern of establishing laws based on public ordering practices, there are chances that the resulting laws and regulations will be ineffective for AI regulation. The decision for not involving the AI industry in the design and implementation of laws as shown in the National Strategy, potentially create regulations that do not fulfill their legal objectives and legal functions.

Another thing to consider is time, in which public ordering often spend a lot of time discussing and drafting. It could happen that the development of AI has already reached a different stage than what was previously intended to be regulated, or there have been several cases of the use of AI that are detrimental to society, the government, and even the state.

Considering these matters, it would then be necessary to form a *sui generis lex AI* governance for Indonesia which has the following characteristics:

(1) A governance that allows for calibration and reconfirmation of existing choices from time to time, to ensure that the solutions produced by AI systems truly reflect the purpose for which they were created, meet the needs of their users, and maintain the common *good*.
(2) *Lex AI* governance needs to ensure that intervention methods are available for AI systems, so that control remains with humans.
(3) The need to view AI as an independent data ecosystem, rather than a stand-alone system. This is based on the idea that AI is a system that is adaptive to data and its changes. Whatever data is entered into the AI ecosystem will be the determining factor for subsequent decision making. Therefore, the government and other *stakeholders* must jointly monitor the data entering the AI system. This means that AI governance must be carried out collectively and simultaneously by stakeholders *related* to AI.
(4) That the implementation of *lex AI* governance must be implemented *ex ante*, that is, before any potential problems occur, and that the implementation of this governance must started at the AI system design stage. At the design stage, it is determined how the optimization functions will work, including determining what parameters need to be prioritized compared to other parameters.
(5) Related to point (4), AI governance in Indonesia must involve industry players and industry associations, right from the governance design stage. Without involving these parties, there is a risk that AI governance established by the government and other bodies will not be effective.
(6) Lastly, and most importantly in the context of AI governance in Indonesia, governance is based on the values of Pancasila.

In the "National Strategy for Artificial Intelligence Indonesia 2020-2045" several other things have also been mentioned such as the need for complementary principles such as respect for traditional knowledge and local wisdom, as well as state sovereignty.[74]

Furthermore, AI governance or *lex AI*, specifically in Indonesia still requires in-depth discussions among stakeholders, those who are *directly* related to AI in Indonesia as in point (4) above. In the point D of the "Indonesia's National Strategy for Artificial Intelligence 2020-2045" it is stated that there is a need for synergy between the government, society and business actors in the field of AI.[75] However, it turns out that the formation of legal regulations and

[74] Badan Pengkajian dan Penerapan Teknologi, *Strategi Nasional Untuk Kecerdasan Artificial*, 41–42.
[75] Badan Pengkajian dan Penerapan Teknologi, 41.

policies for science and technology as a separate *genus (sui generis*) does not appear to have involved parties outside government agencies and educational bodies at large. From the institutions mentioned in the National Strategy [76] not a single AI industry player or association was involved. For this reason, researchers suggest that before a Presidential Regulation or other statutory regulation is formed that will regulate AI governance, it is necessary to revise the "Indonesian Artificial Intelligence National Strategy 2020-2045" especially in relation to the plan to establish AI regulations which still seem to be biased towards to public ordering based on conventional law. Ultimately, AI needs to be understood as a distinct technological product that has unique characteristics that other technological products do not have. Therefore, *sui generis* governance is needed to regulate AI governance in an effective manner.

4. Conclusion

AI is a technological product that was designed from the start to help humans, and even replace humans in making some decisions. Decisions taken by AI systems can have direct consequences for their users, as well as the general public. Therefore, it is necessary to establish AI governance that can ensure that the use of AI does not result in problems that can harm or endanger users, including problems that can disrupt public order and national security.

AI governance needs to be formed according to the nature and characteristics of AI itself, without which it could result in ineffective AI governance. AI is an independent system built on large amounts of data, and is able to learn from past data based on algorithms designed and trained by AI developers. Furthermore, the AI system is able to make decisions based on certain optimization methods without requiring human intervention. Therefore, arrangements based on conventional governance will not be able to regulate AI. It requires a different and unique setting, which can be called *lex AI. Lex AI is sui generis* governance that stands between *public ordering* and *private ordering*, by taking important elements of governance from both and producing a hybrid governance. To be effective and achieve the goals of its formation, *lex AI* or *AI governance* requires active participation from stakeholders in formulating it and implementing it from the system design stage and throughout the life of the AI system.

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[76] Badan Pengkajian dan Penerapan Teknologi, 42.

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