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Idealization of knowledge communication ecosystem among AI development stakeholders: A project adaptation of shared mental model theory

* Faudyan Eka Satria
Universitas Gadjah Mada, Indonesia
faudyan.eka.s@mail.ugm.ac.id

Dzikri Abdillah Adzimat Sukmayadi
Universitas Gadjah Mada, Indonesia

Albertus Fani Prasetyawan
Universitas Gadjah Mada, Indonesia

Rahayu
Universitas Gadjah Mada, Indonesia

ABSTRACT

A knowledge communication ecosystem is essential to resolving paradigm differences between AI development stakeholders and unifying their project orientations. For this purpose, this study aims to answer the question of how to build a knowledge communication ecosystem between stakeholders/AI developers in order to develop the AI products interdisciplinary. This question is the basis for our next analysis objective, namely to compare the steps taken by the government of Republic of Indonesian as well as the European Union in building the AI development communication ecosystem. To answer the initial question question, we applied conceptual analysis to scrutinize three things, namely: (1) the urgency of ethical AI development, (2) the urgency of regulation in ethical AI development projects, and (3) a brief review of the Shared Mental Model theory. Subsequently, we analyzed the strategic documents of the two regions to find out how far they have gone in implementing the project. The results of this study reveal that the Indonesian government has not comprehensively elaborated and developed the management of AI developers' synergy, even in its strategic document regarding AI development called Stranas KA 2020. This is different from the European Union action, which has followed up the formation of the ecosystem further by initiating the AI Act as well as the AI Pact.

Keywords: ***AI development stakeholders, AI, knowledge communication ecosystem, shared mental model theory***

* Corresponding author

INTRODUCTION

In recent years, artificial intelligence (AI) has experienced rapid and significant development, including in Indonesia. This is evidenced by the adoption of AI technology in various sectors to increase productivity and efficiency (Hastungkara & Triastuti, 2019; Hidayat et al., 2024; Kit et al., 2023; Machmud et al., 2020; Maulina et al., 2020; Silitonga & Isbah, 2023). This development is supported by the synergy of society elements to develop that technology, as it is believed to be the key to break through innovation and economic growth in Indonesia (Gunkel, 2012; Nugroho-Tasya, 2023; Yusriardi et al., 2022).

In considering this potential, Indonesia needs an effective governance framework to ensure that the development of AI can be still ethical. To fulfill that objective, currently, the Indonesian government has initiated a national strategic planning document called National Strategy for AI (Stranas KA) 2020 to answer that target. Generally, Stranas KA 2020 serves as a guideline for ministries, institutions, local governments and other stakeholders in Indonesia to adopt and develop AI in daily life (Sekretariat Nasional Kecerdasan Artifisial Indonesia, 2020). The strategies include improving the quality of education and establishing collaboration between elements of academia, industry and government for AI development talent. Therefore, it is hoped that the talents will have the similar ethical orientation towards AI development.

The advancement of AI development talents itself seems to be inseparable from the fact that AI development faces a number of ethical issues. Moreover, in Stranas KA 2020, ethics is also considered one of the crucial aspects that needs to be addressed. This is to ensure that the development and application of AI can be carried out responsibly without harming society (Sekretariat Nasional Kecerdasan Artifisial Indonesia, 2020). The correlation between proper AI development talents and ethical issues management is reinforced by Brynjolfsson and McAfee's research (as cited in Rizal et al., 2022). Their work underlined that AI development requires creativity, empathy, and emotional intelligence among its talents. As such, Rizal et al. (2022) highlighted the importance of nurturing these human-centred attributes alongside technical competencies to drive the innovation and resilience of talents.

In this context, we believe developing a knowledge communication ecosystem could be a specific project to successfully cultivate humanistic AI talent. This is supported by Erstad et al. (2024) who suggested that knowledge communication in the digital age is a useful tool for enhancing not only the cognitive abilities of human resources but also their social, emotional, and humanistic abilities. This is because they recognize the concept that knowledge is ultimately the result of inter-perspective dialogue. To achieve this, everyone at least needs the optimization of those three capacities.

Based on this background, this research seeks to answer the following question: how can a knowledge communication ecosystem be built among AI stakeholders/developers to create ethical AI products that are needed by the public? This question is the basis for our next analysis objective, namely to compare the steps taken by the government of Republic of Indonesian as well as the European Union in building the AI development communication ecosystem. This serves as our starting point to help understand and formulate strategies for building a

knowledge communication ecosystem in AI development projects, particularly for the Indonesian government.

LITERATURE REVIEW

In this section, we intend to review previous studies regarding the penetration of ethics and regulation for AI development as well as its talents. This relevant to our research, as the foundation of a knowledge communication ecosystem is to realize ethical AI development projects. In this context, we will examine conceptual proposals from previous research to realize this project—and whether they have begun to address the urgency of a knowledge communication ecosystem. The review will include an analysis of research objectives, methods used, as well as the results and recommendations put forward by these studies.

Ethical and regulatory perspectives on AI development and its talents: A review of recent literatures

Patil et al. (2024) examined the regulatory approaches currently used in AI development (particularly in coding) and proposed a comprehensive strategy that integrates ethical principles into AI regulation. Through the critical analysis method, Patil et al. (2024) successfully identified gaps and challenges in policy implementation around AI. Their findings highlighted the urgency of a strong regulatory framework to ensure ethical AI development, address issues such as bias, transparency, and responsibility, and prevent potential misuse of AI to protect social values and individual rights.

Similarly, Swaminathan and Danks (2024) directed their research on how the organizational structure of AI companies that have functions such as model development, testing, and cybersecurity can create ethical gaps. They proposed the concept of "Joint Accountability Agreements" as a solution to ensure that ethical obligations are not overlooked. Through a critical review of AI company structures, they found that without this accountability mechanism, ethical responsibilities are often assumed by others, threatening the ethical integrity of the AI systems developed (Swaminathan & Danks, 2024).

In line with the focus on developing tools that support the integration of ethics in AI, Olson (2024) worked on developing a custom Generative Pre-trained Transformer (GPT) designed to assist AI developers in facing and resolving ethical issues. Olson's (2024) research provided developers with a practical understanding of how they can comply with legal frameworks such as the EU AI Act and GDPR while introducing diverse ethical perspectives. Through a conversational agent development method, the results revealed that the tool is effective in helping developers deal with ethical issues and encouraging them to integrate diverse moral viewpoints into their AI solutions.

Finally, in a more conceptual manner, Adah et al. (2023) explored the deeper ethical dimensions of advanced artificial general intelligence (AGI) with the aim of building a strong ethical framework to guide the development and application of AGI. Adah used methods that emphasize the importance of accountability and transparency mechanisms in the AI decision-making process, as well as the need for AGI programming that is aligned with human values. Their findings demonstrated that to overcome ethical

challenges and reduce bias in AGI development, a comprehensive ethical framework and international cooperation are needed to ensure that AGI development is carried out responsibly and with due regard to its impact on society at large (Adah et al., 2023).

Developing next steps: Recommendations for future research on ethics in AI

In providing recommendations for future research, the four studies mentioned above seem to offer diverse and valuable perspectives that can be used to deepen the study of ethics in AI development. For example, Patil et al. (2024) recommended that future research focus on two things: first, measuring the effectiveness of the current regulatory framework in addressing issues such as bias, transparency, and accountability in AI development. Second, exploring the impact of collaboration between policymakers, industry leaders, and ethicists in developing a comprehensive and adaptive regulatory framework for ethical AI. This recommendation emphasizes the need for a cross-sectoral approach to strengthening AI regulation to remain relevant and responsive to technological developments (Patil et al., 2024).

Similarly, Swaminathan and Danks (2024) directed the research focus for future studies on two main aspects. First, examining the effectiveness of the concept of "Joint Accountability Agreements" that can ensure ethical obligations are met in AI development. Second, exploring the potential of applying the NIST AI Risk Management Framework in other AI companies to address ethical and regulatory gaps. These recommendations highlight the importance of a framework that can be customized and widely applied in various corporate contexts to ensure ethical integrity in AI development (Swaminathan & Danks, 2024).

Olson (2024), on the other hand, recommended that future research focus on further developing his custom conversational agent by integrating more advanced AI technologies, such as reinforcement learning, to enhance its ability to provide a more nuanced ethical perspective. In addition, Olson (2024) also suggested testing the effectiveness of this custom GPT in real-life scenarios by conducting developer evaluations to assess its impact on the decision-making process regarding ethical AI solutions.

Finally, Adah et al. (2023) recommended that future research focus on developing a strong ethical framework to guide the development and application of advanced artificial general intelligence (AGI). This research is expected to ensure fair benefit sharing and support for those affected by technological advancements. In addition, Adah et al. (2023) encouraged the exploration of collaborative governance models and international cooperation mechanisms to establish ethical guidelines, regulations, and decision-making processes that are inclusive and involve various stakeholders in the development and application of AGI. Overall, the recommendations from these four studies highlight various aspects that can be expanded upon in future research, both in terms of strengthening the regulatory framework, developing more advanced AI technologies, as well as cross-sector and cross-country collaboration to ensure ethical and responsible AI development.

Based on the review of these previous studies, we identified an urgent need to integrate ethical principles in AI development through various approaches, ranging from strong regulations, responsible organizational structures, ethics-enforcing technological tools, and a comprehensive ethical framework for further AI development. Each study

seemed to underscore the urgency of collaboration and shared responsibility among developers, stakeholders, and policymakers in ensuring that AI is developed with due regard for societal values, individual rights, and complex ethical challenges.

However, the research findings mentioned above did not look at how a knowledge communication ecosystem can be amplified by AI development stakeholders to create ethical AI products needed by the Indonesian public. Therefore, through this research, we aim to fill this gap. The next section will look at the technical details of the project.

METHODS

As previously mentioned, in this study, we aim to explore how a knowledge communication ecosystem can be amplified by AI development stakeholders to create ethical AI products that are needed by society. We will further relate this to the Indonesian government's manoeuvring attempts on this issue to understand their current perspective on the development and management of the AI development ecosystem.

Using the conceptual-document analysis method, we will start by dissecting three concepts successively. First, the urgency of ethical AI development. Second, the urgency of regulation in ethical AI development projects, and a brief review of the Shared Mental Model theory. The first discussion is intended to provide a solid definition of what is meant by "ethical" in the AI development project. Furthermore, through the second discussion, we will present our arguments regarding why the existence of regulation is important in terms of being a tool for consistent enforcement of ethical AI development projects. In the last discussion, we will present an ideal concept about the operationalization of the knowledge communication ecosystem between stakeholders, as well as explain why the formation of the ecosystem is important in implementing ethical AI development projects.

To strengthen the embodiment of the above series of concepts, as well as an agenda for policy development proposals to the Government of Indonesia, we will next present an analysis of the AI policy document entitled National Strategy for Indonesian AI 2020-2045 (Stranas KA 2020). By adapting Neuendorf's (2017) approach, we will interpret the document's content with the previous concept. Specifically, this document review will be based on the third chapter of the document, which discusses Indonesia's AI ethics and policies, and the next chapter on developing Indonesian AI talent. These two chapters in the national strategy were chosen because they focus on the ethics and human resources elements compared to other sections.

In order to characterize the efforts of building a knowledge communication ecosystem—especially from the Government of Indonesia—we will try to compare the Stranas KA 2020 document with the European Union's strategy document in AI development called AI Act. In this segment, we intend to unveil the EU's latest steps in implementing its commitment to build an ethical AI development project, especially in the realm of knowledge communication ecosystems between stakeholders/developers. We will explore this by initially summarizing the purpose of the AI Act for the European Union.

In the next step, we will connect it with the urgency of establishing an AI Office in order to assist the EU Committee in realizing a project that intends to be a knowledge

communication ecosystem between AI stakeholders/developers. After that, we discuss the existence of the AI Pact and its components—which we interpret as an example of a community/state in building a knowledge communication ecosystem between AI stakeholders/developers in the future.

FINDINGS AND DISCUSSION

The urgency of ethical AI development

UNESCO, in November 2021, had proposed a recommendation on the Ethics of AI in Paris. In its recommendation, UNESCO first stated that while AI can bring great benefits to humanity, it can also raise fundamental ethical issues, such as the various social injustice issues that exist in the world (Díaz-Rodríguez, 2023). For this purpose, the recommendation presented 10 principles for ethical AI management. These include (1) Proportionality and harmlessness; (2) Security and safety; (3) Fairness and non-discrimination; (4) Sustainability; (5) Right to privacy and data protection; (6) Human oversight and determination; (7) Transparency and clarity; (8) Responsibility and accountability; (9) Awareness and literacy; (10) Adaptive multi-stakeholder governance and collaboration (Díaz-Rodríguez, 2023).

In the context of this discussion, the tenth aspect is something we need to explore further. This is necessary for an inclusive approach to AI governance, allowing the benefits to be shared equally by all parties and contributing to sustainable development (Díaz-Rodríguez, 2023) while mitigating potential ethical risks to the AI system architecture. A multidisciplinary approach, then, is essential to address the diverse challenges and considerations inherent from the design and implementation aspects to the deployment and maintenance of AI itself (Olorunfemi et al., 2024).

The question remains, what is the benchmark for successful ethical AI development? Olorunfemi et al. (2024) boiled it down to optimizing the point of transparency. Essentially, this means that there is an emphasis on the importance of making AI algorithms and decision-making processes understandable and explainable for stakeholders to understand and scrutinize AI systems, thus promoting responsible development and use (Ehsan et al., 2021). This, therefore, needs to involve providing insights into how AI systems operate, the data they use, and the reasoning behind their decisions (Olorunfemi et al., 2024).

Furthermore, from the developer's point of view, the fulfilment of this aspect of transparency sets the stage for the optimization of other aspects, which can also become subsequent success factors for ethical AI development. These include a sense of responsibility of each member of the AI technology development team, the fairness paradigm that the AI system 'adopts' in producing output, and the seriousness in taking into account the privacy and security of users' data (Olorunfemi et al., 2024).

The urgency of regulation in ethical AI development projects

Regarding the implementation of ethical AI development, especially among its developers/talents themselves, regulation can be an important thing to develop first. This is because regulation can be a more concrete output in consolidating and supporting consensus on the benefits and limitations of AI technological progress. Moreover,

according to Díaz-Rodríguez (2023), the development of AI systems must, in any case, be based on efforts to empower humans; allowing them to make the right decisions and supporting their basic rights. In other words, AI-based systems must support human autonomy and decision-making (Díaz-Rodríguez, 2023).

According to Wheeler (as cited in Alfiani & Santiago, 2024), there are three main reasons for the urgency of AI regulations in general. First, along with the extraordinary speed of AI development, agile regulations are needed to prevent negative impacts related to privacy, market concentration, user manipulation, and the spread of disinformation. Second, AI development needs to be balanced with regulations to address the complexity of AI work in dealing with heterogeneous and dynamic inputs. In this case, AI regulations also demand obligations for care, transparency, and safety of AI content for every AI developer/talent. Third, with AI regulations, a community/country can easily identify the structure of the AI development team and how to implement it (Alfiani & Santiago, 2024). This is based on the fact that until now, in several countries, there have often been overlapping positions between various stakeholders, creating conflicts of interest in AI development projects.

Regarding the dynamics of the structure/ecosystem of AI development stakeholders, what are the essential components that must be embedded in the framework of thought of each stakeholder—in order to realize ethical AI products? To answer this problem, we can refer to the three recommendation documents offered by the Center of AI Safety (Díaz-Rodríguez, 2023). The recommendations are intended to ensure that authorized organizations/institutions in AI regulations are able to determine the aspects that must be jointly recognized by each AI development stakeholder. As such, in the end, there is coherence in developing AI that is oriented for users' safety and satisfaction. The contents of the recommendations, according to Díaz-Rodríguez (2023) research, include:

1. **Legal liability for AI harms**
   In this component, the Center for AI Safety advises organizations/institutions that are authorized to manage AI development to build a better legal liability framework. This is in order to guarantee the accountability for any harm caused by the implementation of AI systems. Furthermore, it is also intended to avoid shifting the entire burden of responsibility from large stakeholders/companies developing AI to smaller actors, users, and communities that do not have the resources, access, and capabilities needed to address and mitigate all risks effectively.

2. **Increased regulatory oversight**
   In the centre's view, more stringent regulatory oversight activities during the development of AI systems are essential and need to extend beyond the application layer to encompass the entire product lifecycle. This would allow an authoritative organization/institution to hold each AI developer company/stakeholder accountable for the data and design choices they make when developing their AI models. To some extent, this could be useful for increasing transparency and regulation of training data to address algorithmic bias and unfair use of copyrighted material.

3. **Human oversight of automated systems**
   Through the existence of this component, authorized organizations/institutions can supervise each AI developer company/stakeholder. This will encourage the companies/stakeholders to reduce potential concerns regarding bias and the spread of false or misleading information through the outputs produced by their AI systems.

A brief review of shared mental models as a basis for building knowledge communication ecosystem

After we understand the main points of the framework above, we have to understand the concept for communicating the diversity of paradigms in an AI development ecosystem. In this context, we can adopt a concept that is called the Shared Mental Model (SMM) Theory. According to Cannon-Bowers et al. (as cited in Mathieu et al., 2000), SMM is able to help explain how teams are able to overcome difficult communication conditions—due to excessive workload, time pressure, or the dynamism of team task orientation. The theory of shared mental model furthermore offers an explanation on the mechanism of adaptability—that is, how teams can quickly and efficiently adjust their strategies "on the fly" (Mathieu et al., 2000). It is beneficial for team members to predict the information and resource needs of their teammates. Therefore, the members can act based on their understanding of task demands and how this will affect their team's response (Mathieu et al., 2000).

Furthermore, the operationalization of SMM in a knowledge communication ecosystem to develop AI can be anchored to Yu and Petter's concept (2014). According to Yu & Petter (2014), there are at least six performance indicators that must be trained and owned by a team/ecosystem (see Table 1). The six indicators bring their benefits, which can also be a reference for the successful implementation of the three essential components of the AI development framework for each stakeholder—according to the Center of AI Safety—which we have presented previously.

Table 1. Operational guidelines for SMM for the AI development knowledge communication ecosystem

Shared mental model-based performance indicators	Description	Benefit(s)
Planning	A practice that is implemented at the beginning of a team project. A team leader or facilitator guides the team in clarifying the team's goals and team tasks. This practice also requires the team to discuss possible actions when unexpected events occur.	• Increase the commonality of information shared among team members • Develop more efficient communication strategies to prepare the team when the team's workload increases
Reflexivity	A practice that requires teams to review completed tasks and to reflect on the task completion process in terms of how well the task was performed and whether there is scope for improving task performance.	• Increase commonality of team interaction models • Create more efficient team interaction strategies by developing a shared understanding of the role of the leader in coordinating the team

Table 1. (con't)

Shared mental model-based performance indicators	Description	Benefit(s)
Leader's briefing	A practice used by a team leader when they announce the task objectives and prioritizes the steps to complete the task.	Help team members translate the benefits of heterogeneity, such as diverse professional backgrounds, knowledge, skills, and abilities, into meaningful questioning, reviewing, and exploring processes.
Team interaction training	A practice to utilize task information embedded in teamwork skills necessary for effective team task execution.	• Increase commonality of team interaction mental models • Increase commonality of team members' knowledge organization
Self-correction training	A practice that requires each team member to reflect on the tasks they have accomplished. Reflection is guided by a facilitator.	Develop more accurate mental models of teamwork and greater shared task expectations.
Cross training	A practice that consists of three agenda (i.e., position clarification, position modelling, and position rotation) that aim to enable trainees to have a shared sense of their teammates' work.	• Obtain an accurate and collaborative model of task and teamwork • Obtain a more accurate model of team interactions

The establishment of AI development knowledge communication ecosystem in Indonesia

As argued by Alfiani and Santiago (2024), Indonesia still needs to have specific regulations on the application of AI technology. However, in 2020, the Indonesian government released the Indonesian National Strategy for AI (Stranas KA) on ethics and policies, talent development, data ecosystems, and AI development infrastructure. Even so, the nature of Stranas KA is still limited to national policy directions. This document, even until now, has not produced a more binding legal product, such as the Circular Letter Number 9 of 2023 concerning AI Ethics.

However, the Indonesian government has at least begun to create a provision for the formation of a knowledge communication ecosystem to develop AI in Indonesia in Stranas KA. This was done by conceptualizing the quadruple-helix stakeholders, which denotes the types of substantial stakeholders in AI development. They consist of the government, industry, academics, and society (Chua et al., 2023).

Furthermore, every stakeholder of AI development are encouraged to adhere to the "AI Ethical Values" in Stranas KA which includes five points:

1. **Orientation for humanity**
   Through this urgency point, there is an emphasis that AI is developed and utilized with the aim of positive interests for humanity. This orientation is expected to create public trust in AI, especially in its positive impacts on various sectors, from social to economic.

2. **Ensuring AI as a reliable, safe and accountable entity**
   By understanding that AI is a national development component that seeks to satisfy the expectations of public trust, AI must be able to be held accountable for its performance. In this context, AI products should concern the safety and protection of human rights of Indonesian citizens. In addition, its development must be transparent and known by the government and the public to ensure that AI is safe to use and, ultimately, can be trusted.

3. **Synergize the stakeholders in developing AI**
   In the AI development project, it is imperative to synergise the paradigms of government, society, and business actors. This is to ensure that the implementation of policies at the government level can be relevantly implemented in society. Regarding this, the synergy is expected to also help develop AI research and grow the level of business activity related to AI, which can be assisted by technological and business innovations from business actors.

4. **Implementation of the principles of Law No. 11/2019 into AI development**
   As a complement to the ethical values above, the principles contained in Indonesian Law No. 11/2019 are encouraged to be used as the ethical basis for AI policies. These principles are: (1) Faith and devotion to God; (2) Humanity; (3) Justice; (4) Public interest; (5) Security and safety; (6) Scientific truth; (7) Transparency; (8) Accessibility; (9) Respect for traditional knowledge and local wisdom; and (10) State sovereignty. Furthermore, by adapting these principles, the AI development ecosystem is incorporating the Pancasila values, the common life order for Indonesians.

From these points, it can be concluded that the Indonesian government, through Stranas KA 2020, has actually understood the unification of AI development orientation for stakeholders. In this way, AI can become a product that is trusted and safe for public use to develop the country ethically and accountably, according to Binns (2018). Unfortunately, the operationalization of the knowledge communication ecosystem concept between AI developers has not been elaborated more comprehensively in this document.

Learning from the European Union: A working comparison towards an ideal AI development knowledge communication ecosystem

The European Union (EU) is currently known as the first community in the world to formulate and apply AI regulation called the AI Act. This regulation strongly underscores that every stakeholder in AI development must guarantee security against the risks that arise from the existence of AI for society/users—in addition to providing legal certainty for the business or the stakeholders themselves. In order to run optimally, the ethical AI development supervision agenda is managed by an agency formed by the EU called the AI Office. Its supervision agenda consists of evaluating the general objectives of the AI product model, requesting the availability of technical documentation for the product, ensuring cybersecurity protection for users, and implementing sanctions.

In addition, to support the coherence in AI development in accordance with the values contained in the AI Act, the EU through its commission also assists by promoting

an innovative AI ecosystem—which at some point can increase the level of public trust as well as economic benefits for the stakeholders of AI development. The existence of this ecosystem is enabled by implementing a cooperation agenda with various scientific communities, industries, and civil society through a project called the AI Pact.

In this context, the commission is promoting the AI Pact to obtain voluntary commitments from the industry to implement the AI Act. To gather participants, a first call for interest was launched on May 6, 2024 until mid-October 2024. In this phase, or what the AI Pact calls Pillar I, participants contribute to the creation of a collaborative community by sharing their experiences and knowledge. This includes workshops organized by the AI Office that provide participants with a better understanding of the AI Act, their responsibilities and how to prepare for its implementation. Furthermore, the AI Office can gather insights on best practices and challenges faced by participants. In this context, participants can share best practices and internal policies that may be useful to others in their compliance journey. Depending on the preferences of the participants, these best practices can also be published online on a platform where the AI Office will share information about the AI Act implementation process.

The next phase, Pillar II, was held from the end of October 2024 to November 2024. In this phase, the EU Commission and the AI Office stimulated the provision of a framework for AI stakeholders to proactively disclose the processes and practices they implement in anticipation of compliance. Specifically, the companies providing or implementing AI systems can demonstrate and share their voluntary commitments to transparency and high-risk requirements and prepare early for their implementation. The commitments take the form of a "declaration of engagement" containing concrete actions (planned or ongoing) to meet the specific requirements of the AI Act and include a timetable for their implementation. Furthermore, AI stakeholders who commit to preparatory actions were asked to report on their commitments periodically. The commitments were collected and published by the AI Office to ensure visibility, increase accountability and credibility, and strengthen trust in the technologies developed by organizations that have committed to the pledge.

To summarize, through the knowledge communication ecosystem between AI developer stakeholders called AI Pact, the participants involved generally strive to fulfil the following aspects—as parameters for optimal knowledge/paradigm cooperation in developing AI:

1. Building a shared understanding of the goals of the AI Act
2. Taking concrete actions to understand, adapt, and prepare for future implementation of the AI Act (e.g. building internal processes, preparing staff, and conducting independent assessments of AI systems)
3. Sharing knowledge and increasing the visibility and credibility of safeguards implemented to demonstrate trustworthy AI
4. Building additional trust in AI technologies

However, what specific tasks need to be carried out by each party involved in the AI Pact? Regarding that, the AI Pact specified that there are two types of participants: (1) AI developers and, (2) AI users. For those who are categorized as the first type, there are several specific tasks they will need to carry out:

1. Implement processes to identify potential risks to health, safety and fundamental rights that may follow from the use of the relevant AI system throughout its life cycle

2. Develop policies to ensure high-quality training, validation and testing datasets for the relevant AI system
3. Implement logging features to enable traceability while developing all or certain AI systems
4. Inform deployers about how to properly use the relevant AI system, its capabilities, limitations and potential risks
5. Implement concrete measures to ensure human oversight of decisions recommended or taken by the relevant AI system
6. Implement policies and processes aimed at mitigating the risks associated with the use of the relevant AI system, in line with the relevant obligations and requirements envisaged in the AI Law, to the extent possible
7. Design the AI system intended to interact directly with individuals which allowing them to realize that they are facing the AI entity
8. Design generative AI systems so that AI-generated content is marked through technical solutions, such as watermarks and metadata identifiers
9. Provide the medium to clearly and distinctly label AI-generated content, including images, audio, or video that constitute deep fake, as well as AI-generated text published

Meanwhile, for those who are classified as users (implementing/using AI systems), there are several responsibilities that they fulfil:

1. Map potential risks to the fundamental rights of individuals and groups of individuals who may be affected by the use of relevant AI systems
2. Implement concrete measures that ensure human oversight of decisions recommended or taken by relevant AI systems
3. Clearly and distinguishably label deep fakes and AI-generated texts published to inform the public about matters of public interest, unless such texts have been reviewed by humans and a natural or legal person holds editorial responsibility for their publication
4. Ensure that individuals are informed, as appropriate, when they interact directly with AI systems
5. Inform individuals with clear and meaningful explanations when decisions made about them are prepared, recommended or taken by relevant AI systems
6. Inform workers' representatives and affected workers while implementing relevant AI systems in the workplace

Generally, compared to Indonesia, the European Union (EU) has begun to explore more sophisticated steps in advancing the ethics as well as knowledge communication ecosystem of AI development, especially for its stakeholders. However, its approaches mimic those concepts idealized in the Shared Mental Model (SMM). In this context, we can see how the EU introduced the AI Act to maintain the ethical values of AI development. Then, using this legal basis, the EU formed an AI regulatory supervisory body called the AI Office to guide the AI development direction in the EU region based on the AI Act ethical values. The EU, subsequently, tried to realize that regulation through the AI Pact. Through this endeavour, the EU encourages its countries members to realize one of their commitments in building an interdisciplinary and accountable AI development ecosystem.

CONCLUSION

This study examined how an ecosystem of knowledge communication between stakeholders/AI developers can be built in order to create ethical AI products that are needed by the community. It can be realized through three things. First, understanding the philosophy of ethical AI development. Second, understanding the urgency of regulations/legal basis in ethical AI development projects. Third, understanding the function of the ecosystem of knowledge communication between AI stakeholders/developers and the basics of its operationalization through the Shared Mental Model (SMM) theory.

Furthermore, the study also explored the understanding and implementation of ethical components in the development and management of the AI knowledge communication ecosystem in two regions, namely Indonesia and the European Union. In Indonesia, the efforts to follow up this matter are manifested in the policy of the Indonesian National AI Strategy 2020-2045 (Stranas KA 2020). Although the Stranas KA 2020 document is undeniably a fundamental step in realizing the commitment to build the ethics and knowledge communication ecosystem of AI development, especially for its stakeholders/developers, the document has yet to be categorized as legally binding. We are concerned that this could hinder the process of optimizing the interdisciplinary work of AI developers/agents.

Meanwhile, the European Union has taken further steps by ratifying the AI Act in mid-2024. Through the existence of this legal basis, the EU is able to manage the knowledge communication ecosystem between stakeholders/AI developers. It has recently been manifested through the existence of the AI Pact, which is run jointly by the AI Office and the European Union Commission. Although it is still in the process of being refined, AI Pact should be recognized by other communities or countries as a good pioneering project for developing the concept and basic components of the interdisciplinary ecosystem needed to develop AI products.

We hope that the insights of this study can be validated further through empirical studies. These studies can specifically explore further questions, such as recent work or actions by AI development stakeholders in Indonesia in building a balanced knowledge communication ecosystem for AI development. These studies can also foster balanced interdisciplinarity in AI development, especially in Indonesia.

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Faudyan Eka Satria

is currently a master student at the Department of Communication Science, Faculty of Social and Political Sciences, Universitas Gadjah Mada. He is specialising in digital media and communication studies. Previously, the author had studied at the Department of Anthropology, Faculty of Cultural Sciences, Universitas Gadjah Mada.

Dzikri Abdillah Adzimat Sukmayadi

is currently a master student at the Department of Communication Science, Faculty of Social and Political Sciences, Universitas Gadjah Mada. He is specialising in digital media and communication studies. Previously, the author had studied at the Department of Communication Science, Faculty of Social Science Education, Universitas Gadjah Mada.

Albertus Fani Prasetyawan

is currently a master student at the Department of Communication Science, Faculty of Social and Political Sciences, Universitas Gadjah Mada. He is specialising in digital media and communication studies. Previously, the author had studied at the Department of Accounting, Faculty of Economics and Business, Universitas Gadjah Mada.

Rahayu

is a lecturer in the master's program at the Department of Communication Science, Faculty of Social and Political Sciences, Universitas Gadjah Mada. The author is also currently the Head of the institution's master program. The author earned a doctorate from Universitas Gadjah Mada and has expertise in the fields of media policy and regulation, media literacy, and digital literacy.