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# DISCUSSION PAPER ON THE RESPONSIBLE DEVELOPMENT AND USE OF GENERATIVE AI IN ASEAN



# Table of Contents

List of Tables.....	iii
List of Case Studies .....	iii
List of Boxes .....	iii
Acronyms .....	iv
Executive Summary .....	1
Project Context and Objectives .....	1
What is Generative AI and its Risks?.....	2
ASEAN, AI and Gen AI.....	3
Toward Responsible Development and Use of Generative AI in ASEAN .....	4
<b>Chapter 1: Introduction and Context.....</b>	<b>7</b>
1.1 The Project Context .....	7
1.2 Definitions .....	9
<b>Chapter 2: Global Generative AI Trends .....</b>	<b>10</b>
2.1 What is Unique about Gen AI?.....	10
2.2 High-Level Benefits of Generative AI for Industry, Governments and Academia .....	11
2.3 The Risks of Generative AI .....	18
2.4 Initial International Responses to Gen AI .....	21
<b>Chapter 3: Generative AI Developments in ASEAN.....</b>	<b>23</b>
3.1 Overview of the ASEAN AI Landscape.....	23
3.2 Generative AI Developments and Challenges in ASEAN.....	30
3.3 Summary of Key Lessons Learned in ASEAN .....	32
<b>Chapter 4: On the Responsible Development and Use of Generative AI in ASEAN .....</b>	<b>34</b>
4.1 The Genesis, Context, and Framework .....	34
4.2 Toward Generative AI Adaptations to the ASEAN AI Principles .....	34
4.3 Toward Generative AI Adaptations to the ASEAN AI Governance Framework.....	39
4.4 Regional- and National-level Recommendations on Generative AI .....	42
4.5 Building the ASEAN AI Ecosystem: From Concept to Action .....	48

4.6 Conclusions .....	50
<b>Annex 1: AI and Gen AI Development in ASEAN Member States (and Timor-Leste) .....</b>	<b>51</b>
<b>Annex 2: Overview of Leading Global Governance Empires.....</b>	<b>71</b>
<b>Annex 3: Overview of Expert Stakeholder Engagement.....</b>	<b>74</b>

## List of Tables

Table 1: Traditional AI vs Gen AI .....	11
Table 2: Input—Risks and Challenges .....	19
Table 3: Models—Risks and Challenges .....	20
Table 4: Outputs—Risks and Challenges.....	21
Table 5: Government AI Readiness Index 2023, Scores for ASEAN (out of 100) .....	24
Table 6: Summary of AI Strategies and Policies in ASEAN .....	25
Table 7: Critical AI Regulatory Building Blocks in ASEAN .....	29
Table 8: Proposed Adaptations to the ASEAN AI Principles.....	35
Table 9: Proposed Adaptations to the ASEAN AI Governance Framework .....	39
Table 10: Proposed Adaptations on Gen AI Development and Use .....	40

## List of Case Studies

Case Study 1: AI Kaku.....	12
Case Study 2: Ngee Ann Polytechnic.....	13
Case Study 3: Ask Melon.....	14
Case Study 4: Insilico Medicine.....	14
Case Study 5: Tomorrow.io.....	15
Case Study 6: Morgan Stanley Wealth Management .....	16
Case Study 7: Uber.....	16

## List of Boxes

Box 1: A Simple Way to Think about Gen AI .....	8
Box 2: The Meaning of Responsibility.....	17
Box 3: Singapore AI Interoperability .....	28
Box 4: Enhancing Digital Literacy in Singapore .....	45
Box 5: Coordinated Efforts to Harness the Benefits and Address the Risks of AI in ASEAN.....	49

# Acronyms

<b>Acronym</b>	<b>Full Form</b>
4IR	Industrial Revolution 4.0 (Malaysia)
AI	Artificial Intelligence
AIAPI	AI Asia Pacific Institute
AISG	AI Singapore
APRU	Association of Pacific Rim Universities
ASEAN	Association of Southeast Asian Nations
COSTI	ASEAN Committee on Science, Technology and Innovation
DOLE	Department of Labor and Employment (Philippines)
EDIC	The European Digital Infrastructure Consortium
EU	European Union
GDP	Gross Domestic Product
Gen AI	Generative AI
GLS	Global Learning Solutions
ICT	Information and Communication Technology
IMDA	Infocomm Media Development Authority (Singapore)
IoT	Internet of Things
LLM	Large Language Models
MAS	Monetary Authority of Singapore
MDEC	Malaysia Digital Economy Corporation
MDES	Digital Economy and Society Ministry
MIC	Ministry of Information and Communication (Vietnam)
MoU	Memorandum of Understanding
MyFinB	My Financial Buddy
NAIS	National Artificial Intelligence Strategy (Singapore)
NSTDA	National Science and Technology Development Agency (Thailand)
ProICT	Promoting American Approaches to ICT Policy and Regulation
R&D	Research and Development
SCMIT	Sub-Committee on Microelectronics and Information Technology
SMEs	Small and Medium Enterprises
TEF	Testing and Experimentation Facilities
TESDA	Technical Education and Skills Development Authority
USAID	United States Agency for International Development

# Executive Summary

## Project Context and Objectives

**Artificial intelligence** (AI) has emerged as a critical transformative force in ASEAN and elsewhere, promising to revolutionize industries, augment decision making, and enhance societal well-being. However, as the deployment of AI technologies accelerates, so do the risks associated with their development and use. The risks posed by AI, including invasion of personal privacy, violations of copyright and other intellectual property rights, and other breaches of ethical boundaries, have led to increased momentum in developing approaches to mitigate the risks.

Within ASEAN, the **ASEAN Digital Masterplan 2025** explicitly included an enabling action to “adopt regional policy to deliver best practice guidance on AI governance and ethics, IoT [Internet of Things] spectrum and technology.” The meeting of ASEAN’s digital senior officials subsequently started to prepare the **ASEAN Guide on AI Governance and Ethics**, which was endorsed in February 2024. The **ASEAN Guide on AI Governance and Ethics** includes seven guiding principles for AI development, a voluntary AI governance framework, and a series of national and regional recommendations.

In addition, in August 2023, ASEAN economic ministers endorsed nine provisions of an **ASEAN Digital Economy Framework Agreement** to be negotiated among its member states from December 2023 through to the end of 2025. The seventh provision “aims to establish mechanisms for regulatory cooperation for relevant standards and regulations to keep up with technological innovations in emerging topics such as AI.” Particularly relevant to AI, the fifth provision, Cross-border Data Flows and Data Protections, “aims to facilitate cross-border data flow and establish frameworks to protect data privacy.”

Over the past year, **generative AI** (Gen AI) received global attention following the launch of ChatGPT in late 2022. The attention has been mirrored by a regional surge in interest in Gen AI in Southeast Asia with some frontier initiatives undertaken by Singapore. However, while there are increasing policy and regulatory developments in Southeast Asia to respond to the risks associated with traditional AI, few initiatives are currently responding to the unique risks inherent to Gen AI. In addition, most initiatives remain fragmented and overly specific, while Gen AI requires a coordinated and holistic approach.

Accordingly, the ASEAN Committee on Science, Technology and Innovation (COSTI), working through the ASEAN Secretariat, launched an initiative in September 2023 to produce this report, **The Discussion Paper on the Responsible Development and Use of Generative AI in ASEAN**, which identifies the most urgent policy, legal and regulatory gaps in Gen AI implementation within ASEAN, provides recommendations on how to address them and enhance the governance and adoption of Gen AI, and encourages multi-stakeholder participation in Gen AI policymaking within ASEAN<sup>1</sup>.

The discussion paper examines the existing policy gaps and identifies the Gen AI opportunities for ASEAN. It proposes high-level recommendations on broad policy areas where ASEAN may want to focus attention on further sector work. It also aims **to complement and enhance the ASEAN Guide on AI Governance and**

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<sup>1</sup> The discussion paper built on extensive desk research on global and regional Gen AI developments and consultations with ASEAN stakeholders, international agencies, business leaders, and AI experts. It also drew insights from two innovative workshops held in December 2023—one bringing together ASEAN stakeholders, and another, more broadly based event including recognized regional and international participants. See <https://aiasiapacific.org/2023/12/19/asean-initiates-regional-discussion-on-generative-ai-policy/>.

**Ethics**, which itself recognizes that the principles and components of AI governance defined in this guide may need to be adapted to ensure responsible development and deployment of Gen AI.

The paper also seeks to assist ASEAN member states in thinking about what needs to be included and prioritized in Gen AI governance and policy. It explains in plain language what Gen AI is, why it is essential, and how the region can leverage the technology to benefit ASEAN populations and foster an environment where Gen AI applications have a positive societal impact while being on the cutting-edge.

## What is Generative AI and its Risks?

**Gen AI is a subset of artificial intelligence** capable of generating text, images, or other media in response to prompts by using, for instance, pre-trained transformer models<sup>2</sup>, typically based on large amounts of data. Gen AI took the world by storm in late 2022 with the release of ChatGPT, followed by other similar forms of large language models (LLMs). The technological developments widened the gap between innovation and governance. Suddenly, AI sparked substantial interest partly due to its impressive capabilities and partly because its risks became more evident, demanding an immediate response from regulators and policymakers. Globally, three dominant digital powers—the United States, China, and the European Union—crafted unique governance models tailored to their domestic digital economies and reflecting their diverse ideological stances.<sup>3</sup>

While traditional AI can analyze data and provide observations, Gen AI has the capability to leverage the same data to create something entirely new. What makes Gen AI unique is that it allows the use of any kind of data for model learning, permitting the model to focus on the most relevant aspects of the data inputs and enabling the model to produce outputs for many different applications. It can create images, text, or video, combined together, instead of being confined to only one application.

Gen AI can be likened to an artist who creates beautiful paintings. In the end, just as an artist uses tools and learned knowledge to create a unique painting, Gen AI uses its training and algorithms to produce new, often unexpected, creations or outputs. Just like in art, the results can be breathtaking, peculiar, and sometimes disturbing.

Gen AI therefore has the potential to deliver a **wide range of high-level benefits**<sup>4</sup>. These include:

- **Enhancing accessibility:** Makes the technology more available, usable, and understandable to a broader range of users—including those with diverse backgrounds, expertise, needs, and budgets—and enables the technology to be integrated more easily in workflow across multiple applications.

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<sup>2</sup> For this and other technical terms, see the definitions section in Chapter 1.

<sup>3</sup> See EY 2024, The Artificial Intelligence (AI) Global Regulatory Landscape: Policy Trends and Considerations. [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_gl/topics/ai/ey-the-artificial-intelligence-ai-global-regulatory-landscape-v7.pdf?download](https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/ai/ey-the-artificial-intelligence-ai-global-regulatory-landscape-v7.pdf?download)”.

<sup>4</sup> See for example: 1. Interplex. How the Rise of Generative AI is Impacting Data Centers and Network Infrastructures. <https://interplex.com/trends/how-the-rise-of-generative-ai-is-impacting-data-centers-and-network-infrastructures/>; 2. McKinsey & Company, 2023. The Economic Potential of Generative AI: The Next Productivity Frontier. <https://www.mckinsey.com/~media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/the%20economic%20potential%20of%20generative%20ai%20the%20next%20productivity%20frontier/the-economic-potential-of-generative-ai-the-next-productivity-frontier>; 3. Journal of Business Research, Volume 175, March 2024. Generative Artificial Intelligence In Innovation Management: A Preview of Future Research Developments. <https://www.sciencedirect.com/science/article/pii/S0148296324000468>.

- **Developing and consolidating infrastructure:** Contributes to scalability, efficiency, security, and adaptability, and enables organizations to effectively harness the benefits in their operations, reducing costs and required expertise.
- **Consolidating research and development:** Permits exploration and sharing of technological foundations, resulting in an exponential acceleration in developing new applications, improving quality, and enhancing safety measures.

For ASEAN, which is set to become the world's fourth-largest economy by 2030, Gen AI applications open the door to a range of possibilities, albeit with accompanying risks, and offer cost-effective, high-end benefits. They act as a bridge, narrowing the technological and developmental divides and empowering sectors across the board. This paper reviews the ***potential benefits of Gen AI*** for sectors with limited budgets such as education, climate issues, small businesses, and health services, in addition to well-resourced sectors such as the military, financial services, and large corporations.

The paper highlights ***the risks and challenges posed by Gen AI models*** in three distinct phases of the AI life cycle. Overall, such risks arise mainly due to the complexity of these models and the nature of the data they are trained on.

First, in the input phase, data inputs need to be carefully selected to effectively train the model. At this stage, privacy and data governance pose major risks. Second, in the model phase, the AI system's inner workings become paramount, in particular the ways in which the features and parameters of the model are activated and used to produce a given output. Here, major risks relating to explainability and transparency arise. Finally, the output phase, where new content is generated in response to a prompt, raises questions about the intricate layers of the AI model and how they collectively result in the final output. In this phase, the major emerging risks include mistakes and so-called hallucinations; privacy, copyright and confidentiality concerns; disinformation, toxicity, deepfakes, and cyber-threats; embedded biases; and dependence issues.

## ASEAN, AI and Gen AI

ASEAN member states are at very different stages of digital development and AI readiness. This is an important factor underpinning the responsible development and use of AI and related technologies. Six of the 10 ASEAN states—Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam—have adopted explicit AI strategies. The remaining four, along with Timor-Leste, are presently limited to digital policies and strategies with little or no reference to AI. While varying significantly in coverage from country to country, the AI strategies commonly focus on the development and use of AI as a tool to accelerate economic growth and innovation, on building the human capacities required to implement AI initiatives, and, to a somewhat lesser extent, on strengthening the regulatory ecosystem to underpin the responsible use of AI. While sporadic efforts have been made to promote the rapid rollout of Gen AI across ASEAN, Gen AI development at the regional level is at a relatively early stage.

This discussion paper highlights five key lessons learned in the ASEAN AI experience to date:

1. ***The potential and urgent need to bridge the digital and cultural divides*** by harnessing the development potential of digital technologies, including AI and Gen AI, and quickly addressing the emerging policy and regulatory challenges, including strengthening the critical legislative framework to handle the emerging risks.

2. **The depth of the coordination challenges in ASEAN.** The diverse nature of the political and economic structures of ASEAN poses coordination challenges. This is certainly the case for digital and AI development. The paper builds on the recommended activities of the *ASEAN Guide on AI Governance and Ethics* as key elements for promoting more regional coordination.
3. **Weak awareness and understanding of AI/Gen AI** (especially in key sectors). Considerable efforts are required to raise awareness of accompanying the commercial use of AI with rigorous governance and ethics frameworks to manage the risks. This must be accompanied by efforts to educate the population at large about the risks and benefits of AI, as well as to implement proactive measures to meet the new demands on labor forces created by AI.
4. **The challenges for ASEAN of fitting into the global frameworks of AI digital powers.** ASEAN will likely be able to benefit from balancing the various approaches of the three so-called digital empires<sup>5</sup>—the United States, the European Union, and China—potentially drawing interoperability and innovation elements from the U.S., regulatory experiences from the EU, and technical aspects from China. In addition, lessons can be drawn from other regional players such as Singapore, Japan, and South Korea, as well as from other regions such as Latin America and Africa.
5. **Considerable opportunities along the AI life cycle:** These opportunities can benefit developed countries while spurring growth in developing countries. More developed digital economies can develop AI products that can be marketed in less-developed economies to support economic growth, and developing countries can participate in the AI life cycle in line with their resource bases, creating data centers for example, and undertaking activities related to the development of Gen AI products.

## Toward Responsible Development and Use of Generative AI in ASEAN

In order to progress toward a policy and regulatory framework to govern the responsible development and use of Gen AI, the paper proposes adaptations to the principles and governance framework of the *ASEAN Guide on AI Governance and Ethics* as well as enhanced national and regional policy recommendations.

**Adaptations to AI Principles:** Adaptations for the seven AI principles are proposed to respond to the Gen AI-specific challenges and guide risk assessments of Gen AI applications. The proposed adaptations include key action items related to the underlying content of each respective principle in order to tangibly indicate what private organizations and member states need to do to adhere to each principle in the context of Gen AI. For example, the introduction of Gen AI challenges existing regulations on copyright and related laws and such regulations will need to adapt to Gen AI risks.

**Adaptations to the AI Framework:** The *ASEAN Guide on AI Governance and Ethics* sets out four key components for the AI governance framework:

1. Internal governance structures and measures;
2. Determining the level of human involvement in AI augmented decision making;
3. Operations management; and
4. Stakeholder interaction and communication.

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<sup>5</sup> Bradford, Anu, *Digital Empires: The Global Battle to Regulate Technology*. (New York, 2023). Oxford Academic. See <https://doi.org/10.1093/oso/9780197649268.001.0001>.



For these components, the paper outlines the critical adaptations needed to promote the responsible development and use of Gen AI. And for the five stages of the AI model life cycle—pre-input phase, input phase, model phase, output phase, and post-output phase—the key aspects of moving a Gen AI model through the various stages are fleshed out.

**Recommendations:** To foster a strong ecosystem for the responsible development and use of Gen AI in ASEAN, a number of key action items at both the regional and national levels need to be implemented to ensure the efficacy of the AI principles and governance framework in the *ASEAN Guide on AI Governance and Ethics*:

- **Building the institutional and regulatory foundations.** A critical element of the basic ecosystem to support AI and Gen AI development and governance in ASEAN involves consistent and well-implemented institutional and regulatory frameworks across ASEAN, aligned with international standards and suited to the risks and benefits of AI and Gen AI. In order to facilitate and operationalize the enhancement of AI governance across ASEAN, it is proposed that an **AI Technical Assistance Facility** be established and funded under the proposed Working Group on AI Governance to provide technical and financial support to member-state initiatives to develop and implement AI strategies and address emerging Gen AI challenges.
- **Supporting data development and flows.** In the context of Gen AI, a solid foundation requires special attention to data in two areas. The first relates to data flows throughout the different stages of the AI life cycle. The second issue relates to the regional or international flows of data that are directly linked to Gen AI development and use. Investment in data center infrastructure is one way this can be achieved.
- **Enhancing digital literacy and awareness.** ASEAN’s success in the transition to an AI-equipped region is highly dependent on how well its population and workforce can thrive and adapt to the new technology. The rapid developments in Gen AI have added significant urgency to this task. A further critical reality is the impact of the new technologies on the workforce. This issue should be a priority for the proposed Working Group on AI Governance, and ASEAN should start working on a regional plan to address the foreseeable disruption to labor markets. On a more practical level, training and education on Gen AI and related risks must be made much more accessible.
- **Strengthening regional cooperation.** The emerging risks of Gen AI have reinforced AI’s transnational character and accelerated the need for new efforts on how member states will cooperate, both to increase innovation and to mitigate risks. In addition to the possibilities of fostering agreements to solve critical problems, such as data transfers, member states can explore the development of AI value chains across countries that allow all to participate in aspects of the AI life cycle that are suited to their respective resource bases. Member states should foster new ways to collaborate on data flows by way of bilateral, multilateral, or regional agreements. The proposed Working Group on AI Governance is likely to play a vital role in facilitating regional cooperation, particularly in staying connected with rapidly moving technological developments, including Gen AI.
- **Driving interoperability.** Interoperability is a strategic imperative for ASEAN nations, enabling them to enhance collaboration, optimize resources, improve service delivery, and address complex challenges more effectively. Specifically, the following interoperability measures should be considered:
  - Develop cross-platform standards,
  - Foster collaboration for common frameworks,
  - Implement protocols for application programming interfaces and data exchange,

- Encourage the use of open standards,
  - Carry out regular testing for compatibility and update accordingly.
- **Supporting practical implementation through cross-cutting measures.** It is essential to consider selected cross-cutting actions to facilitate the smooth and practical implementation of the overall program for the responsible development and use of Gen AI in ASEAN:
    - **Establishing sandboxes.** In the evolving AI industry, sandboxes can play a crucial role across ASEAN by offering a controlled environment where developers and researchers can experiment, test, and refine their AI models, algorithms, and applications.
    - **Compiling a compendium of use cases.** The compendium would explicitly include AI and Gen AI failures. This builds on the recommendation for a compendium from the *ASEAN Guide on AI Governance and Ethics* that would demonstrate the practical implementation of the guide by ASEAN organizations.
    - **Mandating a two-step quality control process.** A systematic approach is needed to for evaluate and certify Gen AI models comprising both assessment and certification processes. This responds to the unique challenges that Gen AI imposes on the implementation of principles and ensures that Gen AI models meet specific performance criteria and adhere to the AI principles.

**Building the ASEAN AI Ecosystem: From Concept to Action.** The discussion paper concludes with a summary of ASEAN’s AI-related initiatives that, if effectively implemented and coordinated, will ensure the responsible development and use of AI and Gen AI in ASEAN. These include:

- The endorsement of the *ASEAN Guide on AI Governance and Ethics* at the ASEAN digital ministers meeting in early February 2024;
- The adoption of this *Discussion Paper on the Responsible Development and Use of Generative AI* by the ASEAN COSTI/SCMIT;
- The formation of the ASEAN Working Group on AI Governance, to be constituted following the endorsement of the *ASEAN Guide on AI Governance and Ethics*;
- The formation and resourcing of the ASEAN AI Technical Assistance Facility; and
- The implementation of all aspects of AI promotion and strategy under the *ASEAN Guide on AI Governance and Ethics* and the Gen AI adaptations outlined in the discussion paper.

# Chapter 1: Introduction and Context

## 1.1 The Project Context

In the rapidly changing social and economic landscape of Southeast Asia, artificial intelligence (AI) has emerged as a critical transformative force, promising to revolutionize industries, augment decision making, and enhance societal well-being. However, as the deployment of AI technologies accelerates, so too do the risks associated with their development and implementation. Understanding the intricate journey from AI creation to end-user interaction is crucial in mitigating these risks and ensuring responsible and trustworthy AI adoption.

The risks posed by AI, covering breaches of ethical boundaries, invasion of personal privacy, and violations of copyright and other intellectual property rights have led to increased momentum in developing frameworks to mitigate the risks. The *EU AI Act* is nearing final adoption, and the *ASEAN Guide on AI Governance and Ethics*, including seven guiding principles for AI development,<sup>6</sup> was endorsed in February 2024 by the fourth meeting of ASEAN digital ministers.<sup>7</sup>

In recent months, generative AI (Gen AI) in particular has received global attention with the launch of the G7 Hiroshima Process on Gen AI in May 2023, a *U.S. Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence*<sup>8</sup>, and the release of numerous other reports. The attention has contributed to a regional surge in interest and investment in Gen AI in ASEAN. However, while there are increasing policy and regulatory developments in the region to respond to the risks associated with traditional AI, few specific initiatives currently respond to the unique risks inherent to Gen AI. In addition, most initiatives tend to be fragmented and overly specific, while Gen AI requires a coordinated and holistic approach.

Accordingly, the ASEAN Committee on Science, Technology and Innovation (COSTI)<sup>9</sup>, working through the ASEAN Secretariat, launched an initiative<sup>10</sup> in September 2023 to produce this *Discussion Paper on the Responsible Development and Use of Generative AI in ASEAN*. The paper identifies the most urgent policy, legal and regulatory gaps in Gen AI implementation within ASEAN, provides recommendations on how to address them, encourages multi-stakeholder participation in Gen AI policymaking within ASEAN, and enhances the governance and adoption of Gen AI. The AI Asia Pacific Institute was contracted to prepare the discussion paper.<sup>11</sup>

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<sup>6</sup> Principles serve as the basis on which the responsible practice of AI can thrive. They serve as an ethical compass steering the course of AI development away from potential hazards. Additionally, in the era of Gen AI, where models can autonomously create content, these principles gain newfound relevance in safeguarding against unforeseen consequences.

<sup>7</sup> The ASEAN Guide on AI Governance and Ethics lays out seven key AI guiding principles, proposes an AI governance framework, and presents national and regional policy recommendations. It specifically calls for the establishment of an ASEAN Working Group on AI Governance and highlights specific concerns posed by Generative AI. See <https://asean.org/book/asean-guide-on-ai-governance-and-ethics/>

<sup>8</sup> The White House. (2023, October 30). Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence. See <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-use-of-artificial-intelligence/>.

<sup>9</sup> ASEAN COSTI is responsible for operationalizing the key elements of the ASEAN Plan of Action on Science, Technology and Innovation 2016–2025 and focuses on creating public awareness of regional science and technology activities and their contribution to economic development. It maintains close relations with ASEAN Dialogue Partners and other collaborators.

<sup>10</sup> The project is financed by the ASEAN-USAID IGNITE Project. IGNITE worked closely with the Sub-Committee on Microelectronics and Information Technology (SCMIT), a component subcommittee of COSTI, in project implementation.

<sup>11</sup> The AI Asia Pacific Institute, which addresses the social, legal and ethical risks of AI through international cooperation (See <https://aiasiapacific.org/>), prepared the discussion paper and built on extensive desk research on global and regional Gen AI developments and consultations with ASEAN stakeholders, international agencies, business leaders, and AI experts. It also drew

The paper is intended to complement and enhance the *ASEAN Guide on AI Governance and Ethics*, indicating where Gen AI developments call for adaptations to the elements of the guide, and assisting ASEAN member states in thinking about what needs to be included and prioritized in Gen AI governance and policy. The paper aims to explain in plain language what Gen AI is, why it is essential and how the region can potentially leverage the technology to benefit the people of ASEAN by fostering an environment where Gen AI is not only cutting-edge but carries a positive societal impact. The paper concludes with recommendations to support the responsible development and use of Gen AI in ASEAN, along with specific ideas on how to move from concept to implementation.

### Box 1: A Simple Way to Think about Gen AI

Essentially, Gen AI is a type of artificial intelligence capable of generating text, images, or other media in response to prompts. It can be likened to an artist who creates beautiful paintings. The artist first needs to learn different styles, techniques, and study various artworks before creating a masterpiece.

Now imagine that Gen AI is like an artist attending art school. Gen AI will need to go through a couple of stages. First is the Training Phase, where Gen AI studies lots of data (training data) to learn patterns, styles, and features. It can accomplish this using neural networks—think of them as brain cells that allow Gen AI to process the data.

The Generation Phase occurs once Gen AI has learned enough. Just like an artist, Gen AI will start creating new works. It doesn't just copy what it has seen but mixes and matches styles to produce unique outputs. Gen AI builds on tools called algorithms, which are mathematical constructs that help it decide how to blend and choose from patterns—think of the algorithms as the brushes, paint, and canvases that an artist uses.

In the end, just as an artist uses learned knowledge and tools to create a unique painting, Gen AI uses its training and algorithms to produce new, often unexpected, creations or outputs. And just as in art, the results can be breathtaking, peculiar, and sometimes disturbing.

Similarly to an artist, if you ask Gen AI how it created a particular piece of work, it won't have all the answers. An artist would rely on "inspiration" to explain creativity, but likely would not be able to pinpoint the exact moment of inspiration or the specific data collected to accomplish such work over the years. While this is an admirable characteristic of artists, when it relates to technology, it creates new implications—both benefits and risks not previously anticipated.



In the AI industry, the above scenario can be seen as a black-box, and the complexity of attempting to explain how these systems work challenges researchers, the broader public, and regulators to understand what the impacts of these tools on society will be. To understand better how Gen AI makes decisions is the topic of ongoing research and product development which, when available, will greatly assist in improving the value of Gen AI. In particular, understanding the impact of Gen AI—and making governance decisions around it—requires a new approach to regulations and policies.

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insights and comments from two innovative workshops in December 2023—one bringing together ASEAN stakeholders and one a broader-based event, including recognized regional and international participants. See <https://aiasiapacific.org/2023/12/19/asean-initiates-regional-discussion-on-generative-ai-policy/>.

## 1.2 Definitions

The definitions of several key terms used in this discussion paper are set out below.<sup>12</sup>

- **AI Actors:** Individuals involved in the design, development, testing, validation, and deployment of AI solutions.
- **AI Solution Providers:** Vendors that develop or deploy AI solutions for other organizations, including device manufacturers that have AI-powered features integrated in their products.
- **Artificial General Intelligence:** The ability of an AI system to perform a variety of tasks in different contexts and environments at or above human levels of proficiency.
- **Artificial Intelligence:** A set of technologies that mimic human capabilities through a variety of applications to autonomously perform complex tasks.
- **ASEAN:** The Association of Southeast Asian Nations is a union of 10 member states in Southeast Asia that promotes intergovernmental cooperation and facilitates economic, political, security, military, educational, and sociocultural integration between its members and countries in the Asia-Pacific.
- **Deep Learning:** A subset of machine learning that attempts to mimic the human brain, enabling systems to cluster data and make predictions with incredible accuracy.
- **Explainability:** A way to assess how an AI system creates an output and thereby help resolve when it is not doing what it's supposed to do.
- **Federated Learning:** A machine learning technique that trains an algorithm via multiple independent sessions, each using its own dataset.
- **Foundation Models:** A special case of generative AI that is trained on a broad corpus of data and acts as a foundation for more task-specific models.
- **Generative Artificial Intelligence:** A subset of artificial intelligence capable of generating text, images, or other media in response to prompts by using, for instance, pre-trained transformer models, typically with massive amounts of data.
- **Governments:** refers to organized systems or institutions that have the authority to formulate and enforce AI rules, regulations, and policies within a specific territory or jurisdiction.
- **Hallucinations:** a word commonly used to describe mistakes made by Gen AI.
- **Interoperability:** The ability of different standards, systems, or products to work together effectively without special effort on the part of the user or industry.
- **Large Language Models:** Advanced computer programs that can understand and generate human-like text based on vast amounts of data they have been trained on.
- **Machine Learning:** A branch of AI and computer science that focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving accuracy.
- **Multi-head Attention:** A module for attention mechanisms that runs through an attention mechanism several times in parallel.
- **Responsible AI:** Is meant to result in technology that is also equitable and accountable.
- **Traditional AI:** Refers to AI systems before generative AI systems were introduced.
- **Transformers:** A transformer is a **deep learning architecture** that relies on the parallel multi-head attention mechanism.
- **User:** An entity or person (internal or external) that interacts with an AI system or an AI-enabled service and can be affected by its decisions.

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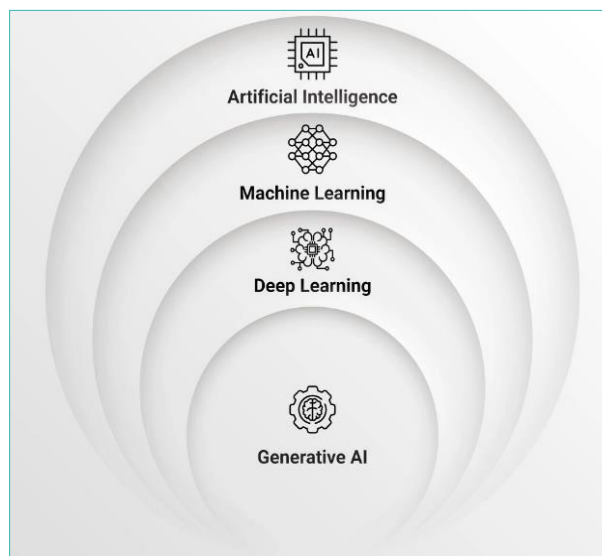
<sup>12</sup> The definitions align for the most part with the definitions in the ASEAN Guide on AI Governance and Ethics.

## Chapter 2: Global Generative AI Trends

### 2.1 What is Unique about Gen AI?

Before embarking on a specific study of Gen AI, it is important to take a step back and examine AI, look at how Gen AI is unique and how it fits within the broader category of AI.

Gen AI fits within the subset of AI known as deep learning. The term “deep” signifies the technology's power derived from multiple layers. This depth captures more information from massive datasets, makes the system more efficient due to its hierarchical nature, and allows the output layer to be tailored for different domains, producing decisions, images, text, audio, and video. Overall, this has made the technology unique, leading to many of the recent breakthroughs in AI. While traditional AI can analyze data and tell you what it sees, Gen AI can use that same data to create something entirely new.<sup>13</sup>



The invention of transformers in 2017 enabled a broader adoption of AI, subsequently leading to Gen AI, which involves the mass integration of generative, pre-trained transformers. The integration of transformers enhanced deep learning systems through:

- **More data availability:** Data used for learning can be of any kind—video or text, for example—while the model infers logical connections between new inputs and everything it has learned so far. That allows Gen AI to be trained on a much broader array of information.
- **Better knowledge aggregation:** Attention algorithms inside transformer models help the system focus on the most relevant aspects of the inputs and map how they are connected to infer greater knowledge about the data.
- **Broader application:** Gen AI can produce outputs for many different applications, as it can create images, text, or video, for example, and combine them together instead of being confined to only one application.

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<sup>13</sup> Marr, B. (2023, July 24). The Difference Between Generative AI And Traditional AI: An Easy Explanation For Anyone. Forbes. <https://www.forbes.com/sites/bernardmarr/2023/07/24/the-difference-between-generative-ai-and-traditional-ai-an-easy-explanation-for-anyone/?sh=27f177a5508a>

**Table 1: Traditional AI vs Gen AI**

What Happens When	Traditional AI	Gen AI
What happens during preparation (the input phase):	<p><b>Specialized and targeted data:</b></p> <ul style="list-style-type: none"> <li>• Constrained by the amount and diversity of data it can effectively utilize.</li> </ul>	<p><b>High-data availability:</b></p> <ul style="list-style-type: none"> <li>• Presence of large datasets that are accessible for training and fine-tuning. High-data availability is a significant advantage for Gen AI, as it allows the model to learn patterns, representations, and nuances from a broad range of examples.</li> </ul>
What happens inside the model phase:	<p><b>Different models for different tasks:</b></p> <ul style="list-style-type: none"> <li>• Potentially faster to train,</li> <li>• Subject to the specific type of traditional AI model and the complexity of the task, it might be easier to understand decision making.</li> </ul>	<p><b>One model that adapts to various tasks:</b></p> <ul style="list-style-type: none"> <li>• Requires significant computational resources and large datasets,</li> <li>• Limited ability to understand and explain how a model makes decisions or generates specific outputs.</li> </ul>
What goes out—the output phase:	<p><b>Targeted for a specific application:</b></p> <ul style="list-style-type: none"> <li>• Potentially more reliable due to application focus.</li> </ul>	<p><b>Used for a combined and wide variety of applications including images, text, and video:</b></p> <ul style="list-style-type: none"> <li>• Possesses the ability to deduce or derive knowledge from different domains or areas of expertise, providing additional understanding or insight beyond its initial training scope.</li> <li>• Prone to information infringement and hallucinations due to several factors inherent in its training and functioning.</li> </ul>

Source: Discussion Paper on the Responsible Development and Use of Generative AI In ASEAN

## 2.2 High-Level Benefits of Generative AI for Industry, Governments and Academia

Gen AI holds the potential to deliver a wide range of high-level benefits:

- **Enhancing accessibility:** The technology is more available, usable and understandable to a broader range of users—especially organizations with limited budgets or users with diverse backgrounds, expertise, and needs—and the technology can be integrated more easily in workflow across multiple applications. For example, with non-Gen AI, an academic institution wanting to implement AI would have to hire an AI Actor, for which budgets would likely not exist. With Gen AI, in most cases and with adequate fine-tuning and training, schools can leverage a single system to support dynamic student learning, test creation, evaluation, or tailored feedback.

- **Developing and consolidating infrastructure:** Improved scalability, efficiency, security, and adaptability enables organizations to effectively harness the benefits of Gen AI in their operations, thus reducing costs and required expertise.
- **Consolidating research and development:** The technology permits the exploration and sharing of technological foundations, resulting in an exponential acceleration in the development of new applications, improvements in quality, and enhanced safety measures. By pooling resources and expertise, these centralized hubs tap into vast repositories of cross-domain knowledge. This collaborative approach fosters innovation and cultivates new perspectives and insights in problem-solving.

Gen AI has facilitated the convergence of the benefits mentioned above, fostering a collaborative synergy that was previously unattainable.

## Potential Sector-Specific Benefits

### ***Sectors with Limited Budgets—Education, Climate, Small Businesses, Health Services***

Organizations with limited resources can use Gen AI to accomplish a range of tasks with less funding. Writing speeches, memos, or grant applications can likely be accomplished in a fraction of the time previously required.

#### **EDUCATION:**

##### **Case Study 1: AI Kaku**

AI Kaku, a Gen AI tool based on the GPT-2 language model, was implemented in English language lessons with Japanese students. It was seen as easy to use and able to assist students to express themselves in English. Preliminary results of a study that recruited adult students in English as a Foreign Language indicated that this is a potentially useful tool for English language learners who need more structured assistance than traditional word processors.<sup>14</sup>

- **Personalized Learning:** Gen AI can facilitate the creation of personalized learning environments based on each student's unique abilities and learning pace.
- **Interactive Content:** Through the generation of interactive and engaging educational content, Gen AI can enrich the learning experience, making education more captivating and effective.
- **Administrative Efficiency:** By automating routine administrative tasks, Gen AI can liberate educators from mundane chores, allowing them to focus more on teaching and less on paperwork.

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<sup>14</sup> Gayed, J., Carlon, M. K., Oriola, A., & Cross, J. (2022). Exploring an AI-based Writing Assistant's Impact on English Language Learners. *Computers and Education: Artificial Intelligence*, 3, 100055. <https://doi.org/10.1016/j.caeai.2022.100055>.



## Case Study 2: Ngee Ann Polytechnic

In July 2019, Ngee Ann Polytechnic, an institute of higher learning in Singapore, initiated a trial of an AI-driven platform called the Early Admissions Exercise Virtual Assistant to automate and improve the early admissions selection process for three schools: the School of Business and Accountancy, the School of Film and Media Studies, and School of Health Sciences. The virtual assistant integrates predictive analytics and a chatbot function. The polytechnic established a framework for the responsible use of AI, ensuring a streamlined and equitable approach in conducting the admissions selection.<sup>15</sup>

Leveraging advanced technologies such as AI has enabled the polytechnic to automate previously manual processes and enhance student engagement. The scalability potential for admissions selection and alleviating administrative burdens became evident with implementation. During the pilot launch, the polytechnic recognized the advantages of incorporating responsible practices in establishing the virtual assistant as a trustworthy and efficient AI model. This involved employing checks and balances to rigorously evaluate the technology's effectiveness.

### SMALL BUSINESSES:

- **Market Insights:** Gen AI can provide small enterprises with deep market insights previously accessible only to large corporations, leveling the playing field and enhancing competitiveness. A survey by Boston Consulting Group revealed that 70 percent of chief marketing officers are already using Gen AI, with over 90 percent reporting a positive impact. The findings suggest that Gen AI might offer productivity gains up to 30 percent and handle a wide range of operational tasks more efficiently.<sup>16</sup>
- **Expedited Operations:** By expediting various operational tasks, Gen AI can significantly reduce the time and effort required to manage routine business activities, allowing for more focus on strategic growth initiatives.
- **Customer Engagement:** By leveraging Gen AI in customer engagement, small businesses can offer personalized experiences, build stronger relationships, and foster customer loyalty.

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<sup>15</sup> Info-communications Media Development Authority (IMDA) and Personal Data Protection Commission Singapore. (2020). Compendium of Use Cases: Practical Illustrations of the Model AI Governance Framework. Retrieved from <https://www.pdpc.gov.sg/-/media/files/pdpc/pdf-files/resource-for-organisation/ai/sgaigovusecases.pdf>.

<sup>16</sup> Boston Consulting Group. (2023, June 15). How CMOs Are Succeeding with Generative AI. See <https://www.bcg.com/publications/2023/generative-ai-in-marketing>.

## HEALTH SERVICES:

### Case Study 3: Ask Melon

James Zhong from Ask Melon, an online marketplace for plastic surgery, uses AI tools, particularly Dall-E, to create marketing content. The primary application involves generating stock images for the website and blog. Additionally, James occasionally employs ChatGPT to assist in formulating prompts for Dall-E. Despite rapid advancements, he acknowledges that the tools are not flawless and emphasizes the importance of vigilance regarding the quality of output. James says Dall-E produces usable content about 50 percent of the time, highlighting the evolving nature of generative AI tools.<sup>17</sup>

- **Diagnostic Aid:** Gen AI can enhance reading medical images, X-rays and scans, akin to how it aids in market analysis for large corporations but focused on diagnosing medical problems and developing treatment plans.
- **Operational Efficiency:** By automating routine administrative tasks, Gen AI can improve operational efficiency, allowing medical professionals to devote more time to patient care.
- **Research Acceleration:** Gen AI can expedite medical research by analyzing vast datasets, uncovering patterns and insights that can lead to the development of new treatments and medical innovations.

### Case Study 4: Insilico Medicine

A Hong Kong-based biotech startup arguably created the first fully AI-generated drug to enter clinical trials with human patients. The drug will be used as a treatment for idiopathic pulmonary fibrosis, a chronic lung disease.<sup>18</sup>

## CLIMATE ISSUES:

- **Resource Optimization:** Gen AI can help optimize the allocation of limited resources in climate mitigation and adaptation efforts, ensuring effective interventions with minimal waste.
- **Public Awareness:** Through the generation of informative and engaging content, Gen AI can aid in raising public awareness about climate issues and promoting sustainable practices.
- **Predictive Analysis:** Similar to its application in financial risk management, Gen AI can assist in better understanding and tackling climate challenges by offering precise predictions and actionable insights derived from a vast array of environmental data.

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<sup>17</sup> Prospa. (2023, July 10). 5 ways small businesses are using generative AI. See <https://www.prospa.com/blog/5-ways-small-businesses-are-using-generative-ai>.

<sup>18</sup> CNBC (2023, June 29). The first fully A.I.-generated drug enters clinical trials in human patients. <https://www.cnbc.com/2023/06/29/ai-generated-drug-begins-clinical-trials-in-human-patients.html>.

## Case Study 5: Tomorrow.io

Tomorrow.io is working with countries and businesses in addressing challenges related to climate change by revolutionizing the conventions of weather forecasting. Leveraging cutting-edge modeling with Gen AI, the company delivers highly accurate location-specific forecasts. By collaborating with industries such as aviation, logistics, agriculture, and renewable energy, Tomorrow.io aims to optimize operations and proactively mitigate risks associated with varying weather conditions.<sup>19</sup>

### ***Affluent Sectors—The Military, Financial Services, Large Corporations, Governments***

With their substantial resources, the affluent sectors find Gen AI to be a formidable ally that not only complements but significantly augments their already advanced technological infrastructures.

#### **THE MILITARY:**

- **Strategic Planning:** Gen AI facilitates the creation of highly realistic simulations for strategic planning and training, akin to a virtual war room, enabling real-time scenario analysis and decision making similar to tailored learning in education.
- **Intelligence Analysis:** Through its capability to process and analyze vast amounts of data, Gen AI provides enhanced situational awareness, similar to how it helps understand climate challenges, but with a focus on security and strategic insights.
- **Autonomous Systems:** Gen AI drives the development of advanced autonomous systems, enhancing precision and operational efficiency similar to how automation aids small businesses but on a significantly more extensive and more complex scale.

#### **FINANCIAL SERVICES:**

- **Risk Management:** Gen AI aids in the sophisticated analysis of financial markets, predicting potential risks with accuracy and foresight akin to the precise predictions it offers for climate challenges.
- **Fraud Detection:** By analyzing patterns in large datasets, Gen AI enhances fraud detection mechanisms, safeguarding assets and ensuring the integrity of financial transactions.
- **Personalized Services:** Gen AI provides personalized financial advice, products, and services tailored to individual clients' needs and preferences.

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<sup>19</sup> <https://fastcompany.com/impact/weather-forecasts-are-broken-this-startup-is-going-to-space-to-fix-them/>.

## Case Study 6: Morgan Stanley Wealth Management

Morgan Stanley intends to use OpenAI's technology to access, process, and synthesize information, bringing together a diverse range of intellectual capital within the company. This includes insights into companies, sectors, asset classes, capital markets, and regions across the globe. Tailored specifically for Morgan Stanley, the platform incorporates appropriate controls. Financial advisers and their teams can use this internal capability to pose inquiries and analyze substantial amounts of content and data. The responses are presented in a user-friendly format, exclusively generated from Morgan Stanley's content, accompanied by links to the source documents. The continuous flow of interactions and feedback resulting from these queries serves to enhance the offering, aiding financial advisers in better catering to the needs of their clients.<sup>20</sup>

### LARGE CORPORATIONS:

- **Market Analysis:** Gen AI provides in-depth market analysis by processing vast amounts of data, enabling corporations to stay ahead of market trends.
- **Product Development:** By analyzing consumer feedback and market trends, Gen AI accelerates the product development cycle, ensuring that products meet evolving consumer needs.
- **Operational Efficiency:** Much as it enhances efficiency in health services, Gen AI optimizes operations in large corporations, automating routine tasks and freeing up human resources for more strategic initiatives.

## Case Study 7: Uber

One of the ways Uber is attempting to adopt Gen AI is in revolutionizing software documentation. A project team successfully developed a prototype tool designed to autonomously produce current documentation based on pull requests, encompassing dependencies and offering comprehensive overviews. The methodology used Gen AI to generate succinct summaries for individual documents, subsequently aggregating these summaries at higher levels to encapsulate the entire project. The objective is to enhance the efficiency of documentation, enabling developers to concentrate on more important tasks while ensuring precise documentation that accurately mirrors the existing codebase.<sup>21</sup>

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<sup>20</sup> Shabsign, G., Ghiath, & Boukherouaa, E. (2023). Generative Artificial Intelligence in Finance: Risk Considerations. IMF Fintech Note 2023/006. International Monetary Fund, Washington, DC.

<sup>21</sup> Uber Blog. (2023, Aug. 3). The Transformative Power of Generative AI in Software Development: Lessons from Uber's Tech-Wide Hackathon. See <https://www.uber.com/en-CA/blog/the-transformative-power-of-generative-ai/>.

## ***A Closer Look: Balancing Quality and Utility***

There is a caveat to all this. While the versatility of Gen AI is its strength, it can sometimes be a weakness. Think of it as a jack-of-all-trades but a master of none. In scenarios where specialized skills are needed, Gen AI might fall short.

- **Specific Needs:** Gen AI's potential should be assessed on a sectoral basis. While certain sectors could derive significant benefits from its use, others should exercise caution when considering adoption. In the military, for instance, understanding why and how an AI reaches a conclusion can be as critical as the decision itself. Here, a tailored AI model built for a specific purpose might be more appropriate as current advances in Gen AI make it challenging to infer why a decision has been made.
- **Responsible Development and Use:** As AI becomes more accessible, its misuse and its potential for biased decisions also rise. It's crucial to have safeguards to ensure these technologies are used responsibly (See the box below). Current research and development aims to provide methods for more trustworthy Gen AI. However, methods to validate trustworthiness have not progressed at the same speed as the applications. **The responsible development and use of Gen AI enables the genuine advantages that the technology presents. In other words, it is the responsible development and use that unlocks these benefits.**

### **Box 2: The Meaning of Responsibility**

Responsible use of Gen AI means following best practices such as the principles and frameworks referred to below in Sections 4.2 and 4.3 when considering:

- The use of Gen AI,
- When designing and developing Gen AI tools,
- When piloting and implementing Gen AI across full AI life cycle.<sup>22</sup>

In a nutshell, as we embrace the potential of Gen AI, a balanced approach is vital to harness its benefits fully and responsibly. That means taking into account the specific sectoral needs, ethical implications, human oversight, and the quality of outputs.

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<sup>22</sup> USAID. (2022, May). Artificial Intelligence Action Plan: Charting the Course for Responsible AI in USAID Programming. See [https://www.usaid.gov/sites/default/files/2022-05/USAID\\_Artificial\\_Intelligence\\_Action\\_Plan.pdf](https://www.usaid.gov/sites/default/files/2022-05/USAID_Artificial_Intelligence_Action_Plan.pdf).

## 2.3 The Risks of Generative AI

### A Simple Explanation of Generative AI Life cycles

To understand the risks of Gen AI, the three major and distinct phases of AI life cycles must be considered: the input, model, and output phases.

In the input phase, data plays a pivotal role. To train the model effectively, it is essential to carefully select data inputs that are diverse and representative of the problem domain.

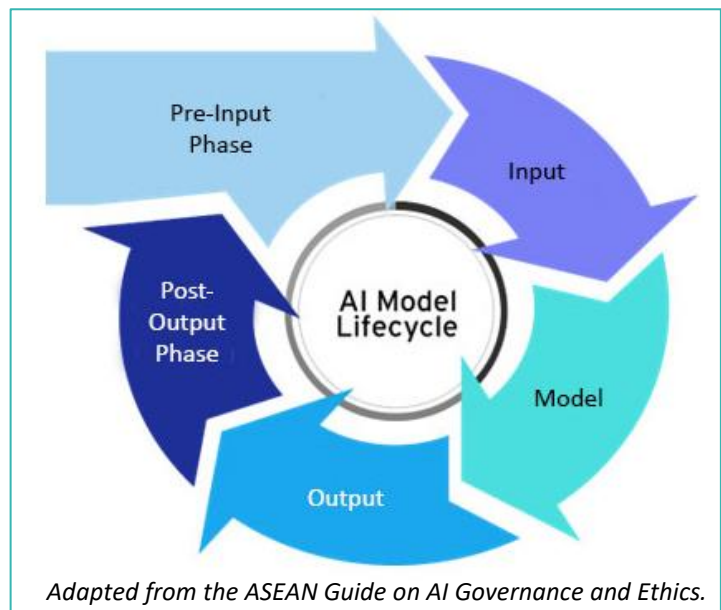
Then, in the model phase, the Gen AI system's inner workings become paramount. This involves understanding what features and parameters of the model are activated and utilized to produce a given output.

Finally, the output phase, where new content is generated in response to a prompt, delves into the intricate layers of the Gen AI model and how they collectively result in the system's final output. In the artist's context, it encompasses the final stage of producing new, often unexpected creations or art.

In addition to these three phases, two additional phases also play important roles: a pre-input phase, where project governance and problem statement definition are established; and a post-output phase, where deployment and monitoring occurs.

As detailed in the three tables below, Gen AI introduces new challenges throughout the input, model, and output phases of AI systems, mainly due to the complexity of these models and the nature of the data they are trained on. The guiding questions are drawn from the *ASEAN Guide on AI Governance and Ethics*.

The *AI Risk Management Framework* from the National Institute of Standards and Technology (NIST) states that: "Measuring risk at an earlier stage in the AI life cycle may yield different results than measuring risk at a later stage; some risks may be latent at a given point in time and may increase as AI systems adapt and evolve."<sup>23</sup>



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<sup>23</sup> National Institute of Standards and Technology. (2022). NIST AI Risk Management Framework: NISTIR 100-1. Retrieved from <https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf>.

**Table 2: Input—Risks and Challenges**

<b>Guiding Questions (Applicable to Traditional AI Models)</b>	<b>Gen AI-Specific Risks and Challenges</b>
<p>What is the source of the training and validation data used to train the AI system?</p>	<p><b>Privacy and Data Governance:</b></p> <p>Gen AI models often rely on vast and diverse datasets, including the internet. This can lead to less clarity on precisely what data has been used to train a model. Unlike traditional datasets that can be carefully curated, web data can contain a wide range of information from various sources, making it challenging to pinpoint specific training data or determine where it has used false information that has not been fact-checked. Further, copyright breaches can occur when collecting mass information from the internet without necessary oversight.</p>
<p>Is there a risk that the training data may not be representative of the population for one or more meaningful attributes?</p>	<p><b>Fairness and Equity:</b></p> <p>The input data for Gen AI may exhibit noise resulting from the inclusion of diverse and unfiltered data in training sets encompassing a wide range of sources and perspectives. This can result in inaccuracies, distortions, and irregularities, which could potentially introduce biases derived from online content. Assessing and mitigating these biases in such extensive and varied datasets can be challenging.</p>
<p>Is personally identifiable or sensitive data used to make decisions or generate output?</p>	<p><b>Security and Safety:</b></p> <p>Due to Gen AI's the use of vast and diverse datasets, minimal controls exist to prevent the model from inadvertently revealing sensitive information, aggravating the potential threat to the security and privacy of individuals and raising cybersecurity concerns.</p>

**Table 3: Models–Risks and Challenges**

<b>Guiding Questions (Applicable To Traditional AI Models)</b>	<b>Gen AI-Specific Risks and Challenges</b>
<p>Does a regulator require that the organization explain how the AI system arrived at its outcomes?</p>	<p><b>Transparency and Explainability:</b> Gen AI models are highly complex, with millions or even billions of parameters. Understanding what parameters are activated during processing and how they contribute to a particular output can be extremely difficult, making transparency and interpretability a challenge.</p>
<p>Does the AI system produce repeatable and reproducible results?</p>	<p><b>Robustness and Reliability:</b> Small changes in how the system is used, for example, making a change in input text, may result in a very different output, resulting in lower reliability and replicability. Further, it is difficult to rely on a system with limited transparency. For example, if a wrong decision during testing occurs—if an autonomous car hits a wall, for example—it can be challenging to determine how to avoid such a mistake in the future.</p>
<p>Is there proper documentation to track the AI model training and selection process?</p>	<p><b>Accountability and Integrity:</b> The vast scale and complexity of these models can challenge the maintenance of comprehensive and transparent documentation.</p>



**Table 4: Outputs—Risks and Challenges**

Guiding Questions (Applicable to Traditional AI Models)	Gen AI-Specific Risks and Challenges
How does the organization determine if the AI system developed is fit-for-purpose?	<p><b>Robustness and Reliability:</b> A few critical issues can arise in the output phase:</p> <ul style="list-style-type: none"> <li>• <b>Mistakes and Hallucinations:</b> Despite its impressive output, Gen AI isn't entirely reliable in terms of accuracy.</li> <li>• <b>Privacy and confidentiality:</b> Gen AI tends to exhibit memorization, indicating the machine learning model's capacity to remember and reproduce specific examples from its training data.</li> <li>• <b>Disinformation, toxicity, and cyber-threats:</b> Gen AI can produce realistic but entirely manufactured content. The deepfakes are in videos, audio, and even text. This type of content can spread misinformation at a rate not previously anticipated and poses security threats and reputational harm.</li> <li>• <b>Copyright:</b> New content created by Gen AI blurs the lines of authorship. It becomes a challenge to determine originality, leading to potential copyright infringements or disputes over intellectual property.</li> <li>• <b>Embedded bias:</b> These models might produce content that is culturally insensitive or inappropriate, especially if they're not adequately regulated or if their training data contains such examples.</li> <li>• <b>Dependence issues:</b> Over-reliance on Gen AI content might reduce the value of human creativity, leading to potential economic and societal shifts in fields such as journalism, art, and music. In most cases, any errors made by Gen AI may go unnoticed unless the user possesses a strong knowledge of the subject at hand.</li> </ul>
How does the performance of the AI system compare to industry standards?	<p><b>Accountability and integrity:</b> Industry standards are still in their infancy challenging the governance of these models</p>

## 2.4 Initial International Responses to Gen AI

Gen AI took the world by storm with the release of ChatGPT, followed by other similar forms of LLMs. The technological developments widened the existing gap between innovation and governance. Suddenly, AI garnered increased interest partly due to its impressive capabilities and partly due to the fact that the above risks became tangible, thus demanding an immediate response from regulators and policymakers. Globally, three dominant digital powers—the United States, China, and the European Union—crafted unique governance models tailored to their domestic digital economies and reflecting their diverse ideological stances (see Annex 2)

U.S. efforts to encourage public assessments of Gen AI, and the creation of a working group build on the considerable steps the government has taken to promote responsible innovation. These steps include the launch of the landmark *Blueprint for an AI Bill of Rights*<sup>24</sup> and related executive actions announced in October 2023, as well as an *AI Risk Management Framework* and a roadmap for setting up a National AI

<sup>24</sup> The White House. (2022). *Blueprint for an AI Bill of Rights*. Retrieved from <https://www.whitehouse.gov/wp-content/uploads/2022/10/Blueprint-for-an-AI-Bill-of-Rights.pdf>.

Research Resource<sup>25</sup> that was released earlier in 2023. More recently, the new *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence* demonstrates that the Biden Administration is prioritizing responsibility to harness and govern AI.<sup>26</sup>

China, recognizing the above risks as potential threats to its political structure, moral values, and social and economic order, was at the forefront of regulation with the regulatory framework, *Measures for the Management of Generative Artificial Intelligence Services*.<sup>27</sup> This was followed by regulations on internet information services using “deep-synthesis” technology to address technologies that automatically generate audio, visual, and textual content. These measures aim to exercise accountability over content management, transparency, data privacy, and security, and require the providers or users of Gen AI services to uphold the core values of socialism as well as a more traditional set of governance principles.

The European Union has strengthened its reputation since 2018 as a leader in regulatory measures with the *General Data Protection Regulation* and more recently a proposed AI Act. In May 2023, the EU reassessed its initial draft AI Act with an amendment to cover Gen AI considerations. However, highlighting the fragmented European approaches to governing the technology, Italy became the first Western country to block ChatGPT in late March 2023. The country lifted its temporary ban a few weeks later following data privacy improvements. The EU’s draft legislation has been criticized by AI supporters who feel it imposes excessive regulatory burdens and stifles innovation, making it harder for Europe to compete in the AI space. On February 2nd, all 27 EU Member States approved the pre-final text. The next steps involve the European Parliament’s Internal Market and Civil Liberties Committees, who will consider adopting the pre-final text. A plenary vote is provisionally scheduled for April 10th – 11th.

Internationally, the above developments were followed by a call from experts and industry leaders to pause the development of those AI-based applications more powerful than ChatGPT 4. While this call failed to stop development, it did underline widely felt concerns about the possible risks of AI generally and Gen AI specifically, and stimulated policymakers at the highest levels to react to the emerging challenges. On October 30, 2023, G7 Leaders issued a statement on the Hiroshima AI Process outlining efforts to maximize the benefits of Gen AI technology while mitigating its risks.<sup>28</sup> A more recent and significant development was the AI Safety Summit in the United Kingdom in November 2023 that brought together representatives from across the globe and resulted in the *Bletchley Declaration*. The declaration demonstrated an international consensus that frontier AI systems represent significant risks if safety is not made a priority.<sup>29</sup> China was notably a signatory.

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<sup>25</sup> The White House. (2023). National Artificial Intelligence Research and Development Strategic Plan: 2023 Update. Retrieved from <https://www.whitehouse.gov/wp-content/uploads/2023/05/National-Artificial-Intelligence-Research-and-Development-Strategic-Plan-2023-Update.pdf>.

<sup>26</sup> The White House. (2023, October 30). Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence. White House. <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/>.

<sup>27</sup> Baker McKenzie. (2023). China: New interim measures to regulate generative AI. Retrieved from <https://insightplus.bakermckenzie.com/bm/>.

<sup>28</sup> Ministry of Foreign affairs of Japan (2023, October 30). Retrieved from [https://www.mofa.go.jp/ecm/ec/page5e\\_000076.html](https://www.mofa.go.jp/ecm/ec/page5e_000076.html).

<sup>29</sup> Chair’s summary of the AI Safety Summit 2023, Bletchley Park. (2023, November 2). GOV.UK. <https://www.gov.uk/government/publications/ai-safety-summit-2023-chairs-statement-2-november/chairs-summary-of-the-ai-safety-summit-2023-bletchley-park>.

# Chapter 3: Generative AI Developments in ASEAN

## 3.1 Overview of the ASEAN AI Landscape

ASEAN member states are at different stages of digital development as stressed in the *ASEAN Digital Masterplan 2025*<sup>30</sup> launched in 2021 and in subsequent reports. These large digital gaps pose an important part of the context underpinning the development and use of AI and related technologies. Importantly, the *ASEAN Digital Masterplan 2025* explicitly included an enabling action to: “adopt regional policy to deliver best practice guidance on AI governance and ethics, IoT [Internet of Things] spectrum and technology.” The meeting of ASEAN’s digital senior officials subsequently commenced preparation of the *ASEAN Guide on AI Governance and Ethics*, which was endorsed in February 2024.<sup>31</sup> The masterplan is complemented by a *Digital Economy Framework Agreement*,<sup>32</sup> presently being negotiated and covering a number of key enabling actions. It is further complemented by the *ASEAN Digital Integration Index*,<sup>33</sup> which facilitates the measurement of digital developments and provides policy advice.

The *Oxford Insights Government Readiness Index 2023* report provides an interesting perspective on ASEAN’s capacity to fully access the potential of AI. Singapore performs well, ranking second overall, and builds on a proactive government approach and comprehensive programs to strengthen the capacity of public sector officials. Malaysia, Thailand, Indonesia, Philippines and Viet Nam are grouped relatively closely. They score relatively well on their government’s approach and the existence of data and infrastructure, while lagging behind on the level of technology. The remaining four member states, plus Timor-Leste, fall considerably further behind. As shown in Table 5, the wide range of scores for ASEAN countries essentially reflects the extent of the digital divide as it directly affects AI readiness. In particular, within the government pillar, it can be noted that ASEAN countries score poorly on the specific indicator for governance and ethics.

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<sup>30</sup> The Association of Southeast Asian Nations (2021). Asean Digital Masterplan 2025. www.Asean.org. <https://asean.org/wp-content/uploads/2021/08/ASEAN-Digital-Masterplan-2025.pdf>.

<sup>31</sup> See the ASEAN Guide on AI Governance and Ethics, 2024. [https://asean.org/wp-content/uploads/2024/02/ASEAN-Guide-on-AI-Governance-and-Ethics\\_beautified\\_201223\\_v2.pdf](https://asean.org/wp-content/uploads/2024/02/ASEAN-Guide-on-AI-Governance-and-Ethics_beautified_201223_v2.pdf).

<sup>32</sup> See <https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/>.

<sup>33</sup> See <https://asean.org/wp-content/uploads/2021/09/ADII-Report-2021.pdf>.

**Table 5: Government AI Readiness Index 2023, Scores for ASEAN (out of 100)**

Economy	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar	Global Rankings
Singapore	81.97	90.40	66.19	89.32	2
Malaysia	68.71	79.99	54.13	72.00	23
Thailand	63.03	77.21	41.33	70.55	37
Indonesia	61.03	76.24	43.48	63.38	42
Philippines	51.98	65.43	34.38	56.13	65
Viet Nam	54.48	69.04	37.82	56.58	59
Brunei Darussalam	48.10	39.57	41.86	62.87	74
Lao PDR	33.05	28.39	25.81	44.96	136
Cambodia	31.88	27.93	22.53	45.17	145
Myanmar	30.91	21.63	27.98	43.14	149
Timor-Leste	29.77	24.24	21.32	43.75	157
<b>Average Score</b>	50.45	54.55	37.89	58.90	

Source: Oxford Insights (2023) *Government AI Readiness Index 2023*, <https://oxfordinsights.com/ai-readiness/ai-readiness-index/>.

As was the case worldwide, interest in AI among ASEAN nations was stimulated by the rapid adoption of ChatGPT and other examples of LLMs since their launch in late 2022. Consequently, most ASEAN governments are increasingly focused on AI governance and promotion, as illustrated in Table 6. Indeed, six of the 10 member states—Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam—have adopted explicit AI strategies but, as shown in the AI readiness rankings above, significant scope still remains to improve the various elements of the ecosystem to support more effective AI implementation. In contrast, the remaining four states, along with Timor-Leste, are presently limited to digital policies and strategies, with minimal or no reference to AI.

**Table 6: Summary of AI Strategies and Policies in ASEAN<sup>34</sup>**

Country	Plan	Timeline	Responsible Governmental Body	Strategic Initiatives
Brunei	No AI-specific policy. The <i>Digital Economy Masterplan 2025</i> does not explicitly mention AI.			
Cambodia	No AI-specific policy, but the <i>Cambodia Digital Economy and Society Policy Framework 2021–2035</i> notes the importance of applying AI in more activities, enhancing investments in AI, and building a data-driven governance system.			
Indonesia	<i>Strategi Nasional Kecerdasan Artifisial (Stranas KA):</i>	2020–2045	Ministry of Research and Technology, National Research and Innovation Agency.	<ul style="list-style-type: none"> <li>• Transform Indonesia into an innovation-based country,</li> <li>• Encourage AI research and industrial innovation,</li> <li>• Improve data and data-related infrastructure,</li> <li>• Establish ethical and relevant policies,</li> <li>• Develop AI-related talents in the population.</li> </ul>
Lao PDR	No AI-specific policy. The <i>Digital Economy Strategy 2021–2030</i> and the <i>National Digital Economy Development Plan 2021–2025</i> do not indicate AI-specific initiatives.			
Malaysia	<i>Malaysia National Artificial Intelligence Roadmap:</i>	2021–2025	Ministry of Science, Technology and Innovation.	<ul style="list-style-type: none"> <li>• Establishing AI governance,</li> <li>• Advancing AI research and development,</li> <li>• <i>Escalating Digital Infrastructure to Enable AI,</i></li> <li>• Fostering AI Talent,</li> <li>• Acculturating AI,</li> <li>• Kick-starting a National AI Innovation Ecosystem.</li> </ul>
Myanmar	No AI-specific policy. The <i>Myanmar Digital Economy Roadmap 2018–2025</i> does not indicate any AI-specific initiatives.			
Philippines	<i>National Artificial Intelligence Strategy Roadmap:</i>	2021–2028	Department of Trade and Industry.	<ul style="list-style-type: none"> <li>• Digitization and Infrastructure: build a robust and networked environment and improve data access,</li> <li>• Research and Development: master AI and accelerate innovation with AI,</li> </ul>

<sup>34</sup> See the ProICT: Technical and Policy Advisory Support for Southeast Asia – AI Research Brief and Roadmap (Draft, 2023), Appendix 1, for a complete list of AI and Digital laws, policies, regulations, plans, roadmaps, and frameworks in ASEAN.

Country	Plan	Timeline	Responsible Governmental Body	Strategic Initiatives
				<ul style="list-style-type: none"> <li>• Workforce and Development: transform education to nurture future AI talents and upskill workforce,</li> <li>• Regulation: build an AI ecosystem "conscience."</li> </ul>
Singapore	<i>National Artificial Intelligence Strategy:</i>	2022–2030	Smart Nation and Digital Government Office, National AI Office.	<ul style="list-style-type: none"> <li>• Partnerships between the research community, industry and government,</li> <li>• Talent and education,</li> <li>• Data architecture,</li> <li>• A progressive and trusted environment,</li> <li>• International collaborations to drive and support sustainable development of AI.</li> </ul>
Thailand	<i>National AI Strategy and Action Plan:</i>	2022–2027	National Science and Technology Development Agency (NSTDA), Ministry of Higher Education, Science, Research and Innovation (MHESI), Office of the National Digital Economy and Society Commission (ONDE), Ministry of Digital Economy and Society (MDES).	<ul style="list-style-type: none"> <li>• Prepare readiness in the social, ethical, legal and regulatory environments for AI application,</li> <li>• Develop infrastructure for sustainable AI development,</li> <li>• Increase human capability and improve AI education,</li> <li>• Drive AI technology and innovation development,</li> <li>• Promote the use of AI in public and private sectors.</li> </ul>
Timor-Leste	No specific AI policy. Timor <i>Digital 2032 Strategy</i> was launched in 2023.			
Vietnam	<i>National Strategy on R&amp;D and the Application of AI:</i>	2021–2030	Ministry of Science and Technology.	<ul style="list-style-type: none"> <li>• Establish a legal and regulatory environment related to AI,</li> <li>• Build the needed data and computing infrastructure for AI research, development and applications,</li> <li>• Develop the AI ecosystem,</li> <li>• Promote the application of AI,</li> <li>• Promote international cooperation in AI.</li> </ul>

Source: Updated from ISEAS, 2023, *ASEAN's New Dilemma: Managing the Artificial Intelligence (AI) Space*.

Generally, while there is significant variation in coverage from country to country, the six more advanced AI economies commonly focus on the development and use of AI as a tool to accelerate economic growth and innovation and on building the human capacities required to implement AI initiatives. To a somewhat lesser extent, they focus on strengthening the regulatory ecosystem to underpin the responsible use of AI. Relating to this, the 2023 draft of the *AI Research Brief and Roadmap* concludes “that the major barrier to operationalizing responsible AI in ASEAN is the fact that AI is still largely seen and used as a cost-savings tool to maximize productivity and efficiency in profit-driven activities as opposed to a multi-faceted agent of change that can drive and deliver a wide range of long-term, non-monetary benefits over time.”<sup>35</sup>

For all ASEAN countries, the key challenge is not the design of AI strategies and policies per se,<sup>36</sup> but the implementation of AI governance and ethics frameworks. Governments must move beyond the initial adoption of principles and frameworks and play an active role in supporting government bodies responsible for AI issues to promote and support the implementation of AI solutions in vital sectors like the public service, healthcare, climate change, education, finance, and entrepreneurship.

Singapore’s approach to AI governance and development offers useful lessons to other member states that can complement the experiences of other innovative developed economies in Africa and Latin America. Singapore developed a *Model AI Governance Framework*<sup>37</sup> based on key governance principles of transparency, accountability, fairness, explainability, and robustness. In order to ensure the successful implementation of these principles, practical guidelines and specific sectoral interventions were established based on risk profiles in order to assist organizations in implementing AI responsibly.

Building on this framework, Singapore launched the AI Verify<sup>38</sup> testing framework and toolkit as a minimum viable product to allow organizations to certify that their AI initiatives are trustworthy. This lays a foundation for ASEAN in the field of AI governance, encouraging additional efforts to build international cooperation (See Box 3 below). In a more recent effort and acknowledging that Gen AI has reinforced some of the same AI risks and introduced new ones, Singapore announced its proposed *Model AI Governance Framework for Gen AI*.<sup>39</sup>

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<sup>35</sup> See ProICT: Technical and Policy Advisory Support for Southeast Asia, *AI Research Brief and Roadmap* (Draft, 2023), presented in <https://accesspartnership.com/ai-in-sea/>. When complete, the roadmap can serve as a useful tool to monitor and evaluate initiatives designed to promote Responsible AI in ASEAN.

<sup>36</sup> Although clearly for the five nations yet to adopt an AI strategy, there exists significant potential to learn from experiences to date to make the process more effective.

<sup>37</sup> Infocomm Media Development Authority (2020). *Model Artificial Intelligence Governance Framework Second Edition*. Personal Data Protection Commission Singapore. <https://www.pdpc.gov.sg/-/media/files/pdpc/pdf-files/resource-for-organisation/ai/sgmodelaigovframework2.pdf>.

<sup>38</sup> AI Verify Foundation (2023). *Make AI safe & beneficial for humanity*. <https://aiverifyfoundation.sg/>.

<sup>39</sup> Infocomm Media Development Authority and AI Verify Foundation (2024). *Proposed Model AI Governance Framework for Generative AI*. <https://www.pdpc.gov.sg/-/media/files/pdpc/pdf-files/resource-for-organisation/ai/sgmodelaigovframework2.pdf>

### Box 3: Singapore AI Interoperability

In October 2023, at the Critical and Emerging Technology meeting, Singapore and the United States made their AI governance frameworks interoperable—a pioneering announcement in AI international cooperation.

This followed successful completion of a joint mapping exercise between the Singapore Infocomm Media Development Authority’s AI Verify and the *AI Risk Management Framework* of the NIST in the United States to align international frameworks for the promotion of trustworthy and responsible AI innovation and advance shared principles internationally.

The cooperation is expected to support organizations in both countries meet the requirements within both frameworks to reduce compliance costs and foster a more conducive environment for AI deployment and innovation.

Lastly, it is essential to pay significant attention to the fundamental regulations and legislation that underpin the development and use of Responsible AI practices in the ASEAN region. These regulations encompass key areas such as data protection and privacy, cybersecurity, consumer protection, and copyright and intellectual property. It is worth noting that all member states either already have or will soon have legislation in place to address these areas (See Table 7). However, there remain notable variations in the extent and comprehensiveness of these legislative frameworks, particularly regarding the inclusion of specific provisions related to AI and Gen AI. The approach adopted by South Korea in this regard is instructive: the government acknowledged the need to systematically adapt the existing regulatory system to apply to new technologies, including introducing new regulations where necessary. In this way, it established a future-oriented legal system conducive to the era of AI.<sup>40</sup>

Considering the nature of AI, it is not appropriate to address its implications solely through a domestic lens. When minimum levels of harmonization are not present, the potential for noncompliance and risk increases. This adds pressure on member states to tackle the increasingly important task of addressing the existing gap between the six states with AI strategies and the four, along with Timor-Leste, without. It also requires an urgent focus on developing foundational regulations aligned with international standards and injecting more explicit AI elements into them.

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<sup>40</sup> Republic of Korea, Ministry of Science and ICT. (2019). National Strategy for Artificial Intelligence. [https://wp.oecd.ai/app/uploads/2021/12/Korea\\_National\\_Strategy\\_for\\_Artificial\\_Intelligence\\_2019.pdf](https://wp.oecd.ai/app/uploads/2021/12/Korea_National_Strategy_for_Artificial_Intelligence_2019.pdf).



**Table 7: Critical AI Regulatory Building Blocks in ASEAN**

Country	Data Protection and Privacy	Cybersecurity	Copyright and Intellectual Property	Consumer Protection
Brunei	Personal Data Protection Order ( <i>forthcoming</i> )	Computer Misuse Act (2007)	The Copyright Order (2013)	Consumer Protection (Fair Trading) Order (2011)
Cambodia	Law on Electronic Commerce (2019), Article 32	Cybercrime Law ( <i>forthcoming</i> )	Law on Copyright and Related Rights (2013)	Law on Consumer Protection (2019), Law on Electronic Commerce (2019)
Indonesia	Law 27 on Protection of Personal Data (2022)	Law 11 on Information and Electronic Transactions (2008)	Law 28 on Copyright (2014)	Law 11 on Information and Electronic Transactions (2008)
Lao PDR	Law on Electronic Data Protection (2017)	Law on Prevention and Combating Cyber Crime (2015)	Copyright Law (2017)	Consumer Protection Decree on e-Commerce ( <i>forthcoming</i> )
Malaysia	Personal Data Protection Act (2010)	Computer Crimes Act (1997)	Copyright Act (1987)	Consumer Protection Act (1999)
Myanmar	Cyber Security Law and Privacy and Data Protection ( <i>forthcoming</i> )	Cyber Security Law and Privacy and Data Protection ( <i>forthcoming</i> )	Copyright Law (2019)	Consumer Protection Law (2019)
Philippines	Data Privacy Act (2012)	Cybercrime Prevention Act (2012)	Republic Act 8293 (Intellectual Property Code) (1997)	Electronic Commerce Act (2000)
Singapore	Personal Data Protection Act (2012)	Cybersecurity Act (2018)	Copyright Act (2021)	Consumer Protection (Fair Trading) Act (2003)

Country	Data Protection and Privacy	Cybersecurity	Copyright and Intellectual Property	Consumer Protection
Thailand	Personal Data Protection Act (2019)	Cybersecurity Act (2019)	Copyright Act (1994)	Consumer Protection Act (1979), Civil and Commercial Code Unfair Contract Terms Act (1997), Penal Code
Vietnam	Law on Information Technology (2006), Law on Protection of Consumers' Rights (2010)	Law on Cyber Information Security (2015), Law on Network Information Security (2015)	Intellectual Property Law (2005)	Law on Protection of Consumers' Rights (2010)
Timor-Leste	Constitution of the Democratic Republic of Timor-Leste	No specific law exists.	Constitution of the Democratic Republic of Timor-Leste	Law No. 8/2016 on Consumer Protection

Source: Updated from ISEAS, 2023, *ASEAN's New Dilemma: Managing the Artificial Intelligence (AI) Space*.

## 3.2 Generative AI Developments and Challenges in ASEAN

Sporadic efforts have been made in ASEAN to adapt to the rapid rollout of Gen AI but regional levels of Gen AI development and use are at an early stage. So far, no specific national strategies covering the development and use of Gen AI have been put in place by ASEAN governments.

In general, many computer-literate individuals with access to IT resources have downloaded and casually used LLMs such as ChatGPT, but there hasn't been significant progress in the development of Gen AI-based business applications.

Although universities have expressed interest in using Gen AI for academic purposes, there have been few tangible instances where Gen AI has been practically applied to improve the learning and teaching process. It has in fact added new layers of concern and challenge for universities due to academic integrity issues while the integration of Gen AI in the education system has been seen as a secondary concern.

At the regional level, the *ASEAN Guide on AI Governance and Ethics* clearly recognizes that, "Generative AI brings with it unique risks and the principles and components of AI governance defined in this Guide may need to be adapted to ensure responsible development and deployment of Generative AI." Similar to the risks outlined above in Chapter 2, the guide identifies key Gen AI risks as:

1. Mistakes and anthropomorphism,
2. Factually inaccurate responses and disinformation,
3. Deepfakes, impersonation, fraudulent and malicious activities,
4. Infringement of intellectual property rights,
5. Privacy and confidentiality, and
6. Propagation of embedded biases.

The guide stresses that as Gen AI models develop and become more ubiquitous, guidelines need to be provided on how countries and organizations can manage and mitigate the growing risks. The measures proposed in this discussion paper can do this by strengthening risk management procedures, improving understanding of Gen AI, and proactively implementing risk mitigation measures.

Singapore, faced with fraudulent transactions relating to the advent of Gen AI, responded with the publication of a discussion paper, *Generative AI: Implications for Trust and Governance*.<sup>41</sup> Its discussion paper identified six emerging Gen AI risks and six Gen AI governance dimensions and builds on Singapore's existing *Model AI Governance Framework*, while proposing new approaches to account for the emerging risks of Gen AI. With the key risks and harms of Gen AI identified in its discussion paper, Singapore unveiled the Gen AI Evaluation Sandbox on October 30, 2023 to bring together global ecosystem players through concrete use cases to enable the evaluation of trusted AI products.<sup>42</sup> As mentioned earlier, Singapore has also recently issued a proposed *Model AI Governance Framework for Gen AI*.<sup>43</sup>

In Indonesia, Malaysia and the Philippines, a series of research reports, produced by Access Partnership and national partners, examine the impact of Gen AI and the future of work, identifying three main channels through which GenAI can have an impact: unleashing creativity, accelerating discovery, and enhancing efficiency.

In Indonesia, the report estimates that Gen AI can unlock US\$243.5 billion in productive capacity—equivalent to 18 percent of 2022 GDP—with almost 50 percent coming from the manufacturing and construction sectors.<sup>44</sup> In Malaysia, the report estimates that Gen AI can unlock US\$113.4 billion in productive capacity—equivalent to 28 percent of 2022 GDP—with almost half accounted for from manufacturing sector.<sup>45</sup> In the Philippines, the report estimates that Gen AI can unlock US\$79.3 billion in productive capacity—20 percent of 2022 GDP—with more than half accounted for by the manufacturing, wholesale and retail trade sectors.<sup>46</sup> The reports also consider the transformational effects of Gen AI on the labor force and provide valuable insights to guide policy and regulatory work on Gen AI in ASEAN.

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<sup>41</sup> Infocomm Media Development Authority & Aicadium (2023). *Generative AI: Implications for Trust and Governance*. AI Verify Foundation. [https://aiverifyfoundation.sg/downloads/Discussion\\_Paper.pdf](https://aiverifyfoundation.sg/downloads/Discussion_Paper.pdf).

<sup>42</sup> Singapore Government Agency Website (2023, October 31). *First of its kind Generative AI Evaluation Sandbox for Trusted AI by AI Verify Foundation and IMDA*. Infocomm Media Development Authority. <https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/generative-ai-evaluation-sandbox>.

<sup>43</sup> Infocomm Media Development Authority and AI Verify Foundation (2024). *Proposed Model AI Governance Framework for Generative AI*. <https://www.pdpc.gov.sg/-/media/files/pdpc/pdf-files/resource-for-organisation/ai/sgmodelaigovframework2.pdf>.

<sup>44</sup> Access Partnership and the Institute for Community Studies and Advocacy (ELSAM). August 2023. *The Economic Impact of Generative AI: The Future of Work in Indonesia*.

<sup>45</sup> Access Partnership and the Malaysia Centre4IR. September 2023. *The Economic Impact of Generative AI: The Future of Work in Malaysia*.

<sup>46</sup> Access Partnership and the Analytics Association of the Philippines (AAP). May 2023. *The Economic Impact of Generative AI: The Future of Work in the Philippines*.

Lastly, at the model level, AI Singapore has developed an LLM called SEA-LION,<sup>47</sup> which provides an AI model to all ASEAN member states specifically pre-trained and tuned for ASEAN. SEA-LION is a freely available open-source model focused on Southeast Asian languages and cultures. Initial results from extensive collaboration with regional partners on data and use cases are positive and confirm that it can serve as a valuable tool to understand the challenges associated with adopting Gen AI models in the ASEAN region.

### 3.3 Summary of Key Lessons Learned in ASEAN

This section draws together a set of key lessons learned within ASEAN to guide the development of policy recommendations in the next chapter.

#### 1. The potential and urgent need to bridge the digital and cultural divides:

ASEAN is a region with a relatively young and tech-savvy population with a strong desire to improve their well-being through digital development. However, it is hampered by a range of disparities including income, health, education, and opportunity. The digital divide runs the risk of further deepening as a result of the rapid rollout of AI and Gen AI unless further steps are made to address the AI readiness-divide outlined above. In addition, the situation is challenging as most member states include large population groups with vastly different values, cultures, and understanding of ethical principles. ASEAN must work to harness the developmental potential of digital technologies, including AI and Gen AI, and quickly address the emerging policy and regulatory challenges required to bridge the region's digital and cultural divide, including strengthening the critical legislative infrastructure to handle the emerging risks of AI and Gen AI.

#### 2. The depth of the coordination challenges in ASEAN:

The diverse nature of the political and economic structures of ASEAN poses challenges of coordination—this is certainly the case for digital and AI development. The *ASEAN Guide on AI Governance and Ethics* provides critical guidance for promoting ASEAN regional cooperation in developing measures to build awareness of responsible approaches to AI and a strong regional AI ecosystem. Carefully tailored financial and technical support will likely need to be considered in order to ensure that each member state is able to align fully with the requirements of the AI governance framework, implement the ambitious national recommendations, and participate in the ongoing cooperative and oversight activities of the AI Working Group on AI Governance.<sup>48</sup>

#### 3. Weak awareness and understanding of AI and Gen AI, especially in key sectors:

ASEAN nations must urgently address several aspects of this issue. There is a need to be aware of and understand the importance of accompanying the commercial use of AI with rigorous governance and ethics frameworks to manage the risks. They must undertake activities to educate the population at large about the risks and benefits of AI. They must provide access to best practice information on the responsible use of AI and Gen AI in supporting a wide range of key sectors, likely through an information platform with a database of use cases. There is finally a need to meet the new demands created by AI on the labor force by searching for and developing suitable solutions to the AI skills gap. This will involve facilitating training activities in data and AI skills, introducing AI courses in

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<sup>47</sup> See <https://aisingapore.org/aiproducts/sea-lion/> for more details.

<sup>48</sup> The ASEAN Guide on AI Governance and Ethics calls for setting up an ASEAN Working Group on AI Governance to drive and oversee AI governance initiatives.

schools and universities, and assisting workers to upskill and work alongside AI systems. All these activities will benefit greatly from regional cooperation and education-related Gen AI applications.

**4. The challenges of fitting into the global framework of AI digital powers:**

Singapore’s recent experience of promoting interoperability with the United States provides insight into the AI geopolitical forces facing ASEAN. ASEAN will likely be able to benefit from balancing the various approaches of the three so-called digital powers—the United States, the European Union, and China—perhaps drawing interoperability and innovation elements from the United States, regulatory experiences from the EU, and technical aspects from China. Participants in the project workshops specifically called for adopting the principle of ASEAN centrality and highlighted the need to account for ASEAN’s distinct risk perception, values, and cultural considerations in its approach to AI governance. In addition, lessons can be drawn from other regional players such as Singapore, Japan, and South Korea, as well as other regions such as Latin America and Africa.

**5. Considerable opportunities along the AI life cycle:**

How can developed countries benefit from and fast-track growth for developing countries? That is an important question and, for ASEAN as a regional grouping, there is significant potential for all member states to benefit from the availability of the new technologies and work together to raise the digital bar for all. The fact that Gen AI is relatively new provides great opportunities for cooperation in managing the development and use of these technologies. More developed digital economies such as Singapore can develop AI products that can be marketed in less-developed economies to support the economic growth process. In that process, AI awareness and skills in developing economies will grow and allow them to participate in the parts of the AI life cycle of the developed nations that are more suited to their resource bases such as data centers and various activities related to the development of Gen AI products themselves.

# Chapter 4: On the Responsible Development and Use of Generative AI in ASEAN

## 4.1 The Genesis, Context, and Framework

The *ASEAN Guide on AI Governance and Ethics* marks a significant advancement in efforts to govern AI in ASEAN. It addresses one of the critical aims of the *ASEAN Digital Masterplan 2025*, namely to adopt a regional policy to deliver best practice guidance on AI governance and ethics.

The *ASEAN Digital Masterplan 2025* was drafted when there seemed to be no foreseeable Gen AI breakthroughs. But considering the current pace of these technological developments, policy efforts must function under a higher degree of flexibility, adapting to the new context and risks. As stated in the *ASEAN Guide on AI Governance and Ethics*: “Gen AI brings with it unique risks and the principles and components of AI Governance defined in this Guide may need to be adapted to ensure responsible development and deployment of Gen AI.”

ASEAN is set to become the world’s fourth-largest economy by 2030 and, given the potential benefits of Gen AI, it is critical for member states to build foundations for the development and use of the technology. In particular, by embracing the nascent phase of Gen AI, and correctly adapting and building adequate governance while integrating Southeast Asian consumers and businesses, ASEAN can harness tremendous benefits from the new era.

## 4.2 Toward Generative AI Adaptations to the ASEAN AI Principles

Table 8 reviews the seven principles under the *ASEAN Guide on AI Governance and Ethics*, recognizing Gen AI-specific challenges and proposing adaptations for both governments and entities using AI. As shown under Section 4.3, the importance of each principle, as well as its application to identify key risks, varies according to the sector and use case of the application.

**Table 8: Proposed Adaptations to the ASEAN AI Principles**

Principle	Description	Gen AI Challenges <sup>49</sup>	Proposed Adaptations for Governments <sup>50</sup>	Proposed Adaptations for Entities Using AI
<b>Transparency and Explainability</b>	<p>Transparency refers to providing disclosure on when an AI system is being used and the involvement of an AI system in decision making, what kind of data it uses, and its purpose.</p> <p>Explainability is the ability to communicate the reasoning behind an AI system’s decision in a way that is understandable to a range of people, as it is not always clear how an AI system has arrived at a conclusion.</p>	Limited understanding how outputs are made, specifically on what factors affect the outputs.	<ul style="list-style-type: none"> <li>• Introduce techniques that can increase transparency and enable people or machines to distinguish AI-generated from human-generated content.</li> <li>• Adopt the two-step process:               <ol style="list-style-type: none"> <li>1. Assessment: an internal risk assessment framework to document an organization’s efforts to explain the model and mitigate key risks, including efforts to minimize Hallucinations.<sup>51</sup></li> <li>2. Certification: external certifiers to assess Gen AI models.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Introduction and advancement of techniques that make AI models explain the reasoning behind their outputs, such as Chain of Thoughts (i.e., through a step by step prompt) or techniques such as Retrieval-Augmented Generation.</li> </ul>

<sup>49</sup> In accordance with the tables in sections 2.3.2, 2.3.3 and 2.3.4 in Chapter 2.

<sup>50</sup> The proposed adaptations include key action items related to the content of the respective principle that tangibly indicates what organizations need to do to accomplish each principle in the context of Gen AI.

<sup>51</sup> The risk assessment should include: (i) model capabilities, limitations and evaluation outcomes, including areas where there is uncertainty, (ii) datasets used for training, (iii) mitigation measures already implemented within model design, and (iv) intended and restricted use.

Principle	Description	Gen AI Challenges <sup>49</sup>	Proposed Adaptations for Governments <sup>50</sup>	Proposed Adaptations for Entities Using AI
<b>Fairness and Equity</b>	Deployers should have safeguards in place to ensure that algorithmic decisions do not further exacerbate or amplify existing discriminatory or unjust impacts across different demographics and the design, development, and deployment of AI systems should not result in unfair biases or discrimination.	Limited curbs on biases due to extensive and varied datasets that may contain widespread, possibly subtle, biases.	<ul style="list-style-type: none"> <li>• Selection of training datasets is to be disclosed. Trusted data repositories are encouraged as a mechanism to improve pre-trained models that may contain bias. Adopt the two-step process:               <ol style="list-style-type: none"> <li>1. Assessment: an internal risk assessment framework should document the user’s practices.</li> <li>2. Certification: external certifiers to assess Gen AI models.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate that sufficient alignment has been performed to minimize racist, sexist and other biases.</li> <li>• Diverse and representative training datasets are a priority.</li> </ul>
<b>Security and Safety</b>	AI systems should be safe and sufficiently secure against malicious attacks.	Limited constraints on inappropriate and harmful content that is present in the training data, that poses cybersecurity risks and that is generally harder to manage such as poisoning attacks.	<ul style="list-style-type: none"> <li>• AI testing should be adopted as an ongoing monitoring mechanism and risks should be disclosed.</li> <li>• Adopt the two-step process:               <ol style="list-style-type: none"> <li>1. Assessment: an internal risk assessment framework should document the user’s practices.</li> <li>2. Certification: external certifiers to assess Gen AI models.</li> </ol> </li> <li>• Investment in additional resources to accelerate research in safety and alignment R&amp;D.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstration that sufficient safety alignment has been performed to minimize harmful outputs such as those, for example, promoting suicidal thoughts.</li> <li>• Introduction of new tools such as input filters or digital forensic tools for Gen AI.</li> </ul>



Principle	Description	Gen AI Challenges <sup>49</sup>	Proposed Adaptations for Governments <sup>50</sup>	Proposed Adaptations for Entities Using AI
<b>Human Centricity</b>	AI systems should respect human-centered values and pursue benefits for human beings' well-being, nutrition, happiness, etc.	The phenomenon of "emergence" often observed in very large language models (i.e., above 70 billion parameters) causes unpredictable AI behaviors that can potentially be non-aligned with or undermining human values.	<ul style="list-style-type: none"> <li>Stakeholders to demonstrate appropriate knowledge of Gen AI-specific risks and disclose due diligence.<sup>52</sup></li> <li>Alignment with local context and values should be prioritized when exporting a system.<sup>53</sup></li> <li>Adopt the two-step process:               <ol style="list-style-type: none"> <li>Assessment: an internal risk assessment framework should document the user's practices.</li> <li>Certification: external certifiers to assess Gen AI models.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Document how a safety alignment and guardrails have been put in place to sway the AI models away from behaviors that are misaligned with human values.</li> <li>Adoption of common safety practices and techniques such as Reinforcement Learning from Human Feedback to ensure alignment with human values.</li> </ul>
<b>Privacy and Data Governance</b>	AI systems should have proper mechanisms in place to ensure data privacy and protection and maintain and protect the quality and integrity of data throughout the entire life cycle.	The way vast and diverse data is collected, stored, and generated means that existing data safeguards do not apply to Gen AI, e.g., copyright laws. <sup>54</sup>	<ul style="list-style-type: none"> <li>The user should disclose datasets used for training Gen AI.</li> <li>Adopt the two-step process:               <ol style="list-style-type: none"> <li>Assessment—an internal risk assessment framework should document the user's privacy and data challenges.<sup>55</sup></li> <li>Certification—external certifiers to assess Gen AI models.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Consider removing personally identifiable information from data or adopting techniques such as Federated Learning and Privacy Enhancing Technologies.</li> <li>Ensure data quality control measures.</li> </ul>

<sup>52</sup> For example, organizations developing or using Gen AI are required to demonstrate one of the following: 1. Evidence of AI governance and oversight within the company, including clear responsibility on the board level to oversee Gen AI-related issues; 2. Evidence of public commitment to trust the Gen AI; and 3. Evidence of how the company is operationalizing these ethical principles.

<sup>53</sup> Alignment with local context and values should be prioritized when exporting a system.

<sup>54</sup> Acknowledging this, OpenAI has recently updated their policy to recognize its liability for copyright breaches. See: <https://www.forbes.com/sites/billrosenblatt/2023/11/07/openais-copyright-shield-is-business-as-usual-for-enterprise-it/amp/>

<sup>55</sup> For example, the introduction of Gen AI challenges existing regulations and policies on copyright, as there is often not enough clarity on whether the output of models is generated based on content of other original creators. While these laws will need to evolve and adapt to Gen AI, stakeholders in the practical sense have a role to go back to their data and seek transparency with datasets as much as possible and document potential challenges.

Principle	Description	Gen AI Challenges <sup>49</sup>	Proposed Adaptations for Governments <sup>50</sup>	Proposed Adaptations for Entities Using AI
<b>Accountability and Integrity</b>	There needs to be human accountability and control in the design, development, and deployment of AI systems.	Assurance mechanisms significantly increase in difficulty due to the more autonomous behavior of advanced AI models.	<ul style="list-style-type: none"> <li>• An external, objective, two-step assurance process composed of risk assessment and certification of Gen AI tools is needed to ensure they are of high quality and are used ethically.</li> <li>• Setting up an <b>AI Technical Assistance Facility</b> as described under Chapter 4.4 will facilitate the two-step validation noted above.</li> <li>• Accountability and integrity should extend to any user.</li> </ul>	<ul style="list-style-type: none"> <li>• Correctly acknowledging shared responsibility and underwriting certain risks.</li> <li>• Clear documentation of the responsibility of human agents in the operational workflows of AI models, especially the human agents responsible to take action when AI models behave inappropriately or harmfully.</li> </ul>
<b>Robustness and Reliability</b>	AI systems should be sufficiently robust to cope with errors during execution and unexpected or erroneous input, and cope with stressful environmental conditions. They should also perform consistently. AI systems should, where possible, work reliably and have consistent results for a range of inputs and situations.	<p>Mistakes and hallucinations, privacy and confidentiality, disinformation, toxicity, copyright, cyber-threats, embedded biases, and dependence issues.</p> <p>Gen AI as a universal model makes it harder to evaluate robustness comprehensively because its capabilities are more wide-ranging than traditional AI models.</p>	<ul style="list-style-type: none"> <li>• Introduction of a compendium of use cases reporting model behavior, limitations, and failures to improve safety and alignment of models.<sup>56</sup></li> <li>• Adopt the two-step process: <ol style="list-style-type: none"> <li>1. Assessment: an internal risk assessment framework should document the user’s practices.</li> <li>2. Certification: external certifiers to assess Gen AI models.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Conduct ongoing robustness and accuracy tests to measure and report outputs.</li> <li>• The need to demonstrate and document that a thorough performance, safety and robustness benchmarking exercise has been performed, including clear indications of areas where evaluations have not been performed systematically (e.g., in non-English languages).</li> </ul>

<sup>56</sup> As detailed under Chapter 4.4., for ASEAN, this needs to build on a regional safety and alignment research ecosystem.

## 4.3 Toward Generative AI Adaptations to the ASEAN AI Governance Framework

Table 9 reviews the four key components of AI governance put forward under the *ASEAN Guide on AI Governance and Ethics* and proposes key adaptations to reflect the development and use of Gen AI.

**Table 9: Proposed Adaptations to the ASEAN AI Governance Framework**

Component	ASEAN Guide on AI Governance and Ethics	Proposed Gen AI Adaptations for Governments	Proposed Gen AI Adaptations for Entities Using AI
<b>1. Internal governance structures and measures</b>	Internal governance structures need to be put in place for companies to have oversight of how AI systems are designed, developed, and deployed across the organization.	<ul style="list-style-type: none"> <li>• The proposed AI Ethics Advisory Board should include a Gen AI technical specialist.</li> <li>• One of the objectives of the proposed Working Group on AI Governance is to develop the first group of certified people who can correctly assess the risk framework.</li> </ul>	<ul style="list-style-type: none"> <li>• Create or adapt the existing risk frameworks to Gen AI considerations. This should be in line with the ASEAN AI Governance Framework and the Gen AI Discussion Paper.</li> </ul>
<b>2. Determining the level of human involvement in AI augmented decision making.</b>	As new AI systems are introduced and existing models are iterated, the identification of commercial objectives, risks and appropriate level of human involvement is a process that needs to be continually reviewed and improved.	<ul style="list-style-type: none"> <li>• Adequate upskilling of individuals responsible for human control must involve a person with understanding of AI certification.</li> </ul>	<ul style="list-style-type: none"> <li>• Human control throughout the AI life cycle.</li> </ul>
<b>3. Operations management.</b>	Ensuring that AI governance is a key consideration in every stage of the model life cycle (design, development, and deployment).	<ul style="list-style-type: none"> <li>• Introduction and enforcement of the two-step process:               <ol style="list-style-type: none"> <li>1. Assessment: an internal risk assessment framework should document the user’s practices.</li> <li>2. Certification: external certifiers to assess Gen AI models.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Prioritizing Transparency, Explainability and Interoperability.</li> </ul>

<p><b>4. Stakeholder interaction and communication</b></p>	<p>It is important that appropriate steps are taken to develop trust with stakeholders throughout the design, development, and deployment of AI.</p>	<ul style="list-style-type: none"> <li>• Organizational risk frameworks must include clear plans for automation and upskilling of existing employees. These internal plans are to be disclosed periodically to responsible government agencies that can then account for national job disruption and develop national responses in accordance.</li> </ul>	<ul style="list-style-type: none"> <li>• Disclose the risks (eg., generation of factually inaccurate responses and disinformation) associated with its use to consumers, providing them the option to opt-out.</li> </ul>
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Table 10 fleshes out the key aspects of running an AI model through the five phases of the AI Model life cycle and proposes key adaptations to reflect the development and use of Gen AI. These key adaptations are to be considered action items that member states should consider in order to develop and use Gen AI in alignment with the recommended efforts under the *Draft ASEAN AI Guide*.

**Table 10: Proposed Adaptations on Gen AI Development and Use**

<p><b>Stage of the AI Model Life cycle</b></p>	<p><b>ASEAN Guide on AI Governance and Ethics</b></p>	<p><b>Proposed Gen AI Adaptations for Governments</b></p>	<p><b>Proposed Gen AI Adaptations for Entities Using AI</b></p>
<p><b>Pre-Input Phase</b></p>	<p>AI governance needs to be built into AI models by design. The intended purpose of the AI model must be clear. Risk assessments should be conducted before proceeding to data collection or model development.<sup>57</sup> All stakeholders should be aware of role and adequately qualified.</p>	<ul style="list-style-type: none"> <li>• Develop specific Gen AI governance frameworks focusing on ethical considerations, potential biases, and misuse.</li> <li>• Implement comprehensive stakeholder strategies to ensure a clear understanding of Gen AI's impacts and responsibilities.</li> <li>• Identify and consider banning AI applications that do not align with national interest.</li> </ul>	

<sup>57</sup> One key implication for Gen AI is that the analysis may be more complex, and the risk mitigation measures more difficult.

<b>Input Phase</b>	Data must be representative and unbiased.		<ul style="list-style-type: none"> <li>• Ensure diverse, inclusive datasets to prevent bias and validate data for accuracy and ethics.</li> <li>• Introduce rigorous data quality checks and validation processes for Gen AI model training.</li> </ul>
<b>Model Phase</b>	AI Models must be explainable and robust.		<ul style="list-style-type: none"> <li>• Enhance explainability and transparency of Gen AI models using advanced techniques.</li> <li>• Establish robustness checks against manipulations and adversarial attacks to maintain reliable, unbiased outputs.</li> </ul>
<b>Output Phase</b>	Outputs must be fit-for-purpose, precise enough, and aligned with ethical, lawful, and fair design criteria.		<ul style="list-style-type: none"> <li>• Implement evaluation criteria for ethical implications and societal impacts of Gen AI outputs.</li> <li>• Ensure outcomes are not only precise and fit-for-purpose, but are also ethically and socially responsible.</li> </ul>
<b>Post-output Phase</b>	Mechanisms must be put in place to ensure that AI solutions can be appropriately deployed, and the performance monitored.		<ul style="list-style-type: none"> <li>• Develop continuous monitoring frameworks for real-time assessment of performance, ethics, and societal impacts;</li> <li>• Establish rapid response mechanisms for model adjustments in case of unintended consequences or misuse detection.</li> </ul>

## 4.4 Regional- and National-level Recommendations on Generative AI

In order to develop a strong ecosystem for Gen AI in ASEAN, a number of key actions at both the regional and national levels need to be considered by ASEAN and its member states and, where suitable, implemented to handle the emerging risks and challenges of Gen AI and ensure the efficacy of the AI principles and governance framework outlined in the *ASEAN Guide on AI Governance and Ethics*:

1. Building institutional and regulatory foundations,
2. Supporting data development and flows,
3. Enhancing digital literacy and awareness,
4. Strengthening regional cooperation,
5. Driving interoperability,
6. Supporting practical implementation through cross-cutting measures.

### 1. BUILDING THE INSTITUTIONAL AND REGULATORY FOUNDATIONS

A critical element of the basic ecosystem to support AI and Gen AI development and governance involves consistent and well-implemented institutional and regulatory frameworks across ASEAN, frameworks aligned with international standards and suited to the risks and benefits of AI and Gen AI.

First, the six member states with AI strategies in place need to carefully review their AI policies and approaches—especially governance and ethics frameworks—and ensure that the overall national frameworks in place align both with the *ASEAN Guide on AI Governance and Ethics* and the requirements demanded by Gen AI developments.

Second, efforts must be made to address the existing gap between the six member states with AI strategies and the four, along with Timor-Leste, without. For these five nations, significant potential exists to develop enlightened approaches to AI policies and governance, building on the *ASEAN Guide on AI Governance and Ethics* and on global and regional experiences to date with AI and Gen AI.

Third, all member states need to focus urgently on developing foundational regulations to underpin AI and Gen AI governance that are more closely aligned with regional and international standards, incorporating more explicit AI and Gen AI considerations into these regulations.

In order to facilitate and operationalize these three activities, as well as the following recommendations, it is proposed that an **AI Technical Assistance Facility** be funded and established under the proposed Working Group on AI Governance to provide technical and financial support to member-state initiatives to develop and implement AI strategies and to address emerging Gen AI challenges. In addition to supporting the general responsibilities of the Working Group on AI Governance at the member-state level, the facility should explicitly focus on the emerging risk management concerns of Gen AI as outlined in this discussion paper.<sup>58</sup>

To identify the priority regional and national AI projects and activities for facility support, a comprehensive diagnostic of existing AI frameworks and ecosystems should be undertaken in each member state, building

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<sup>58</sup> Participants in the project workshops stressed the importance of the proposed ASEAN AI Technical Assistance Facility to: (a) provide both financial and technical assistance; (b) to serve as a tool to implement and monitor AI reform across ASEAN; and (c) to build on detailed diagnostics on the status of institutional and regulatory gaps across the ASEAN member states and how to close those gaps.

on the existing work in this area.<sup>59</sup> This effort should focus on identifying gaps, remaining weaknesses, and inconsistencies in the overall national AI regulatory and policy frameworks and in specific major AI and Gen AI support activities. During the diagnostic exercise, a database of AI and Gen AI initiatives in member states will be developed in coordination with governments, development partners, academia, research institutions, civil society, and the private sector, and a pipeline of regional and national projects will be compiled and then implemented to steadily close identified gaps.

The proposed pipeline of projects is expected to comprise a mix of regional and national approaches. National projects will strengthen the AI ecosystems in member states by building the capacity of national policymakers and the awareness of the general population, and undertaking projects to enhance the rollout of the *ASEAN Guide on AI Governance and Ethics* as well as the discussion paper's recommendations on handling Gen AI challenges and other identified AI-related gaps and weaknesses. Regional projects through the ASEAN Secretariat and respective working groups could include:

1. Guidelines on developing harmonized AI regulatory standards;
2. Regional AI-related targets to guide member states;
3. Information sharing of best practices among member states, including the compendium of use cases discussed below and AI meetings and workshops;
4. Initiative templates or practical guides on undertaking key reforms such as a guide to set up a Gen AI sandbox; and
5. Capacity-building guides to support AI literacy programs, complemented by regional AI training and bootcamp activities.

The AI Technical Assistance Facility will enhance ASEAN-wide awareness and implementation of Responsible AI ecosystems through a blend of regional coordination and national activities that address local challenges and contexts. This will contribute to addressing the digital divide across ASEAN and creating an environment that will allow ASEAN to harness the immense potential of AI to promote social and economic development.

## **2. SUPPORTING DATA DEVELOPMENT AND FLOWS**

A solid foundation of the Gen AI ecosystem requires special attention to data in two areas. The first relates to the flows of data throughout the different stages of the AI life cycle. These challenges have been discussed in Chapter 2, in particular how Gen AI poses significant additional challenges to data governance, privacy, security and safety. The above Sections 4.2 and 4.3 indicate approaches to address these challenges through adaptations of the proposed ASEAN AI principles and AI governance framework.

The second data-related topic to be considered by member states relates to the regional or international flows of data that are directly linked to Gen AI development and use. While micro, small and medium enterprises account for more than 96 percent of total establishments in ASEAN, member states need to dedicate resources to attract large technology companies whose presence can create local benefits ranging from technological innovation to a stronger job market and talent development. Investment in

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<sup>59</sup> This should include the Discussion Paper and the references included therein, the related diagnostics of IA-API, the ProICT: Technical and Policy Advisory Support for Southeast Asia – AI Research Brief and Roadmap (Draft, 2023), and relevant global reports (such as the Oxford Insights Government AI Readiness Index cited above).

data center infrastructure is one of the ways this can be achieved. Following Singapore's approach to data centers, Indonesia has unveiled plans to boost this infrastructure.<sup>60</sup>

The infrastructure needed to build adequate data centers should be contextualized against climate change and will likely challenge most member states to overcome two challenges: energy and connectivity, for which new data governance models can be explored. For example, it is entirely possible to host data in one country while processing or transforming it in another. This approach is often used due to regulatory requirements, cost efficiency, and the availability of specialized processing capabilities. It would be important for ASEAN to conduct due diligence and a thorough risk assessment when designing a data processing architecture that spans multiple jurisdictions.

While the creation of such data centers is needed to foster innovation, it also opens up new risks and highlights the urgent need to strengthen implementation of the aforementioned AI principles, such as data governance, privacy, security and safety.<sup>61</sup> This will be largely addressed through the measures outlined under item 1 in this section calling for enhancing the institutional and regulatory foundations to better respond to the new risks embodied in Gen AI.

As previously mentioned, preserving privacy in light of Gen AI developments is a major challenge when scraping mass data. Many individuals now use some form of LLM in their daily business, disclosing confidential information as input, which may later be used for retraining the Gen AI system. Several countries have recently adopted sandboxes for the practical control of data through encrypted techniques as well as the adoption of synthetic data as an alternative to real data.<sup>62</sup> This approach potentially addresses copyright challenges such as how infringements arise when LLMs scrape photos from the internet or literature under copyright.

### **3. ENHANCING DIGITAL LITERACY AND AWARENESS**

ASEAN's success in the transition to an AI-equipped region is highly dependent on how well its population and workforce can adapt and thrive with the new technology.

The *ASEAN Guide on AI Governance and Ethics* presents recommendations on the importance of nurturing AI talent, raising awareness of the risks and benefits of AI, introducing AI into the curriculum in schools and universities, and upskilling the workforce across major sectors where AI can play major roles such as education, manufacturing, finance, health, security, among others.

The rapid developments in Gen AI have added significant urgency to this task. The education system in particular has faced overnight challenges in adapting its existing policies and practices in response to the introduction of LLMs. Often, not fully understanding the implications, many schools and universities have chosen to ban the technology completely. This is unfortunate. If well-implemented, Gen AI can provide significant potential benefits to the education sector.

A further critical reality is the impact of the new technologies on the workforce. This particular issue should be included as a priority of the proposed Working Group, and ASEAN should start working on a regional plan to address the foreseeable disruption to labor markets. Overall, member states can be

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<sup>60</sup> The Diplomat. (2023, September). Southeast Asia's Data Center Boom. The Diplomat. <https://thediplomat.com/2023/09/southeast-asias-data-center-boom/>.

<sup>61</sup> In the project workshops, participants emphasized the importance of addressing risks associated with cross-border data flows and with personal data.

<sup>62</sup> Using synthetic data replaces sensitive information with similar-looking but non-sensitive data, excluding Personally Identifiable Information from the model.



guided by the experiences of Singapore, among other examples around the world, in developing and introducing initiatives to prepare the workforce for this transition. The resulting digital literacy initiatives can support ASEAN in fostering digitally literate societies and enhancing the domestic talent pool for Gen AI-related industries and R&D.

#### Box 4: Enhancing Digital Literacy in Singapore

In 2021, the Singapore Ministry of Education enhanced baseline digital competencies at the higher education level, including deepening digital and AI competencies under its National Digital Literacy Programme.<sup>63</sup> Separately, in May 2021, AI Singapore (AISG), a national AI program, launched LearnAI—a dedicated site for AI and data science learning for students, professionals and organizations. The site also offers a wide range of free and paid courses for the general population.<sup>64</sup> Additionally, AISG supports the AI Apprenticeship Programme, which seeks to develop Singaporean AI talent and enhance career opportunities in AI-related roles.<sup>65</sup> Singapore’s AI-related industries have greatly benefited from these carefully crafted programs and policies.

On a more practical level, to increase the implementation of principles proposed in Section 4.2, training and education on Gen AI and related risks must be made much more accessible. There are evolving certification and risk assessment training exercises that member states can consider adopting. They can also increase research on interpretability and performance monitoring of Gen AI models. These can ensure that AI operators gain a deeper understanding of Gen AI and know-how to take the appropriate troubleshooting or mitigating actions. Participants in project workshops highlighted the urgency of establishing a digital information literacy framework for ASEAN countries, covering both the science and application of Gen AI, along with essential digital skills.

#### 4. STRENGTHENING REGIONAL COOPERATION

The emerging risks of Gen AI have reinforced AI’s transnational character and accelerated the need for new efforts on how member states will cooperate, both to increase innovation and mitigate risks. Close cooperation involves observing near neighbors, sharing lessons learned and solving challenges together. In addition to the possibilities of working out agreements to solve critical problems such as data transfers, states can explore the development of AI value chains across countries that allow all to participate in aspects of the AI life cycle that are suited to their respective resource bases.

Member states should foster new collaborations for the flow of data by way of bilateral, multilateral or regional agreements. The Digital Economy Partnership Agreement, of which Singapore is a member, aims to facilitate end-to-end digital trade between countries by enabling secure data flows and building trust in digital systems. With regards to secure data flows, the partnership agreement considers data innovation and regulatory sandboxes across borders and open government data as a means to generate opportunities for businesses. It also covers cybersecurity cooperation, online consumer protection, and the adoption of ethical and inclusive AI frameworks. Other countries, such as South Korea and, subsequently, China, have recently expressed interest in joining Singapore, New Zealand and Chile in their partnership to cooperate on key emerging issues in the digital economy.

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<sup>63</sup> Singapore Ministry of Education. (2020). Infosheet on Strengthening Digital Literacy. <https://www.moe.gov.sg/news/press-releases/-/media/files/news/press/2020/infosheet-on-strengthening-digital-literacy.pdf>.

<sup>64</sup> AI Singapore. (2021). The Learn AI Portal Is Launched. <https://aisingapore.org/2021/05/the-learnai-portal-is-launched/>.

<sup>65</sup> AI Singapore. (2022). AI Apprenticeship Programme. <https://aisingapore.org/industryinnovation/aiap/>.

The Comprehensive and Progressive Agreement on the Transpacific Partnership is another example of international cooperation. It serves as a neutral venue to devise compatibility mechanisms to implement a more stratified approach to personal and non-personal data. Such an approach may persuade partnership members to enact data policies that operate on a more open and interoperable model rather than one that uses rigid data localization policies. In the region, Singapore, Vietnam, Brunei and Malaysia are already members and the Philippines and Thailand have previously demonstrated interest in joining.<sup>66</sup>

Finally, the commendable efforts of ASEAN, which recently launched negotiations on the *ASEAN Digital Economy Framework Agreement*,<sup>67</sup> promise a paradigm-shift, potentially overcoming the disparate data regulatory frameworks across member states. A core aspect of the agreement is the facilitation of seamless and secure data flows across ASEAN.

It is worth noting that Singapore has entered into a notably high number of free trade agreements that either have data-related clauses or introduce innovative ones. Singapore's role in global data governance is underscored by the significant number of groundbreaking provisions it has introduced in its agreements, establishing it as a key influencer in shaping the rules in this domain. Member states are encouraged to similarly consider involvement in new or existing bilateral, multilateral, or regional agreements to achieve a coherent data regulatory environment. These agreements need to be further assessed in light of the development and use of Gen AI.

The ASEAN Working Group on AI Governance proposed in the *ASEAN Guide on AI Governance and Ethics* will play a vital role in facilitating regional cooperation, particularly with the aim of staying connected with rapidly moving technological developments, including Gen AI.

## 5. DRIVING INTEROPERABILITY

Interoperability is a strategic imperative for member states, enabling them to enhance collaboration, optimize resources, improve service delivery, and address complex challenges more effectively. Participants in the project workshops identified language, culture and politics as key barriers for regional and international interoperability. They also recognized the importance of regional collaboration, harmonization, and increased data sharing across different cultural contexts as key enablers for interoperability.

Chapter 3 reviewed the recent efforts between Singapore and the United States to make their AI governance frameworks interoperable. ASEAN can gain advantages by assessing its position in the global context and taking steps toward achieving interoperability and the resulting enhanced levels of innovation jointly with selected AI partners.

Specifically, the following interoperability measures should be considered:

1. **Develop Cross-Platform Standards:** Establish universal standards and protocols that ensure Gen AI systems can communicate and exchange data seamlessly across different platforms, devices, and systems. This would facilitate the smoother integration of Gen AI technologies in diverse environments and applications.

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<sup>66</sup> Wikipedia contributors. (2023, November 22). Comprehensive and Progressive agreement for Trans-Pacific Partnership. Wikipedia. [https://en.wikipedia.org/wiki/Comprehensive\\_and\\_Progressive\\_Agreement\\_for\\_Trans-Pacific\\_Partnership](https://en.wikipedia.org/wiki/Comprehensive_and_Progressive_Agreement_for_Trans-Pacific_Partnership).

<sup>67</sup> ASEAN. (2023). Leaders' Statement: DIGITAL ECONOMY FRAMEWORK AGREEMENT. ASEAN. <https://asean.org/wp-content/uploads/2023/09/Leaders-Statement-DIGITAL-ECONOMY-FRAMEWORK-AGREEMENT.pdf>.

2. **Foster Collaboration for Common Frameworks:** Encourage collaboration among ASEAN members states, tech companies, and international bodies to develop common frameworks. This collaboration would be technical and address regulatory and ethical standards, ensuring Gen AI systems adhere to universally accepted norms while maintaining functional compatibility across borders and sectors.
3. **Implement API and Data-Exchange Protocols:** Focus on creating robust APIs (Application Programming Interfaces) and data exchange protocols that are secure, efficient, and capable of handling the complex data structures often associated with Gen AI. These protocols should prioritize data security and privacy while facilitating easy data sharing and integration.
4. **Encourage Use of Open Standards:** Promote the use of open standards and open-source technologies in the development of Gen AI. This approach can accelerate innovation, reduce costs, and increase the adaptability of Gen AI technologies across different platforms and applications.
5. **Regular Testing and Updates for Compatibility:** Implement regular testing and updates to ensure ongoing compatibility of Gen AI systems with evolving technologies and standards. This approach would help anticipate and mitigate potential interoperability issues as technology evolves.

## 6. SUPPORTING PRACTICAL IMPLEMENTATION THROUGH CROSS-CUTTING MEASURES

In addition to completing the above steps, it is crucial to consider additional essential cross-cutting actions to support overall implementation. While numerous frameworks and guidelines have been introduced to promote the responsible development and use of AI, practical implementation has been limited, leaving the industry uncertain. What follows are key suggestions to facilitate a smooth and practical implementation process for the recommendations in this discussion paper:

**Establishment of sandboxes:** Regulatory sandboxes aim to strike a balance between promoting innovation and ensuring consumer protection and regulatory compliance. In the context of AI, the proposed EU *Artificial Intelligence Act* has defined sandboxes as “a tool allowing businesses to explore and experiment with new and innovative products, services or businesses under a regulator’s supervision.”<sup>68</sup>

Sandboxes allow industry participants to test their Gen AI systems against risks and provide governments with oversight and standardized control. Especially when Gen AI start to scale, and many systems are adopted simultaneously, sandboxes can enable quality control without slowing innovation due to lengthy approval processes.

Singapore offers useful lessons from its efforts to foster innovation through its regulatory sandbox initiatives. The Monetary Authority of Singapore (MAS) introduced its fintech regulatory sandbox in 2016 and has expanded it to cover various sectors, including insurance, payments, and capital markets. Recently, the Infocomm Media Development Authority (IMDA) and the AI Verify Foundation unveiled a Gen AI Evaluation Sandbox to enable the evaluation of trusted AI products and share a common standard approach to assess Gen AI.

In the evolving AI industry, sandboxes can play a crucial role across ASEAN by offering a controlled environment or platform where developers and researchers can experiment, test, and refine their AI models, algorithms, or applications.

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<sup>68</sup> See Topical Digest: The EU's digital challenges, October 2023.  
[https://www.europarl.europa.eu/EPRS/TD\\_EUDigitalChallenges.pdf](https://www.europarl.europa.eu/EPRS/TD_EUDigitalChallenges.pdf).

Beyond their current use in financial and communication sectors, sandboxes can cover diverse sectors such as healthcare, education, and public services. This broadened scope allows for a more comprehensive understanding and handling of Gen AI applications in various critical domains. Additionally, cross-border sandbox initiatives within ASEAN could be established to promote regional collaboration, allowing for the sharing of insights and learning across different countries.

**Compiling a compendium of use cases.** Building on the recommendation from the *ASEAN Guide on AI Governance and Ethics* on compiling a compendium of use cases, demonstrating practical implementation of the guide by ASEAN organizations, we propose an extension of the scope to explicitly include AI and Gen AI failures. As more organizations adopt Gen AI technologies, governing Gen AI to build trust between humans and machines is critical. One way to promote trust is to make past failures known and better understood. The goal of such an initiative is to research the proper mechanisms and platforms for sharing relevant failures—big and small—in AI development and deployment, assisting industry in the learning process to address failures, and promoting collaboration between governments and commercial entities across ASEAN.<sup>69</sup>

**Mandating a two-step quality control process.** The proposed adaptation under Section 4.2. acknowledges the control challenge that Gen AI imposes on the implementation of principles. To respond to this challenge, it is necessary to introduce a systematic approach for evaluating and certifying Gen AI models which should consist of:

1. **Assessment:** the process involves examining the system’s performance and behavior to ensure its outputs reflect original intended outcomes.
2. **Certification:** documentation outlining the assessment results is disclosed and a certification may be issued by a third party.

The two-step process is a structured way to ensure that Gen AI models not only meet specific performance criteria but also adhere to the principles laid out in Section 4.2. It helps build trust in the models, especially in applications where the outputs are of high-risk and affect individuals or society. This would include content generation, decision making, and creative processes.

## 4.5 Building the ASEAN AI Ecosystem: From Concept to Action

The year 2024 will see implementation of a range of actions to build the ASEAN AI ecosystem which, if effectively implemented and coordinated, will ensure responsible development and use of AI and Gen AI in ASEAN. Two overarching and ongoing initiatives create the enabling environment for the development of the ASEAN AI ecosystem: the *ASEAN Digital Masterplan* and the *ASEAN Digital Economy Framework Agreement*, complemented by the *ASEAN Digital Integration Index*, which facilitates the measurement of digital development and provides policy advice.

Going forward, as illustrated in Box 5, the various steps in implementing the elements of the overall strategy to build the ASEAN AI ecosystem include:

- First, the endorsement of the *ASEAN Guide on AI Governance and Ethics* at the meeting in February 2024 of ASEAN digital ministers, followed by adoption of this the *Discussion Paper on the Responsible Development and Use of Generative AI* by ASEAN’s COSTI/SCMIT.

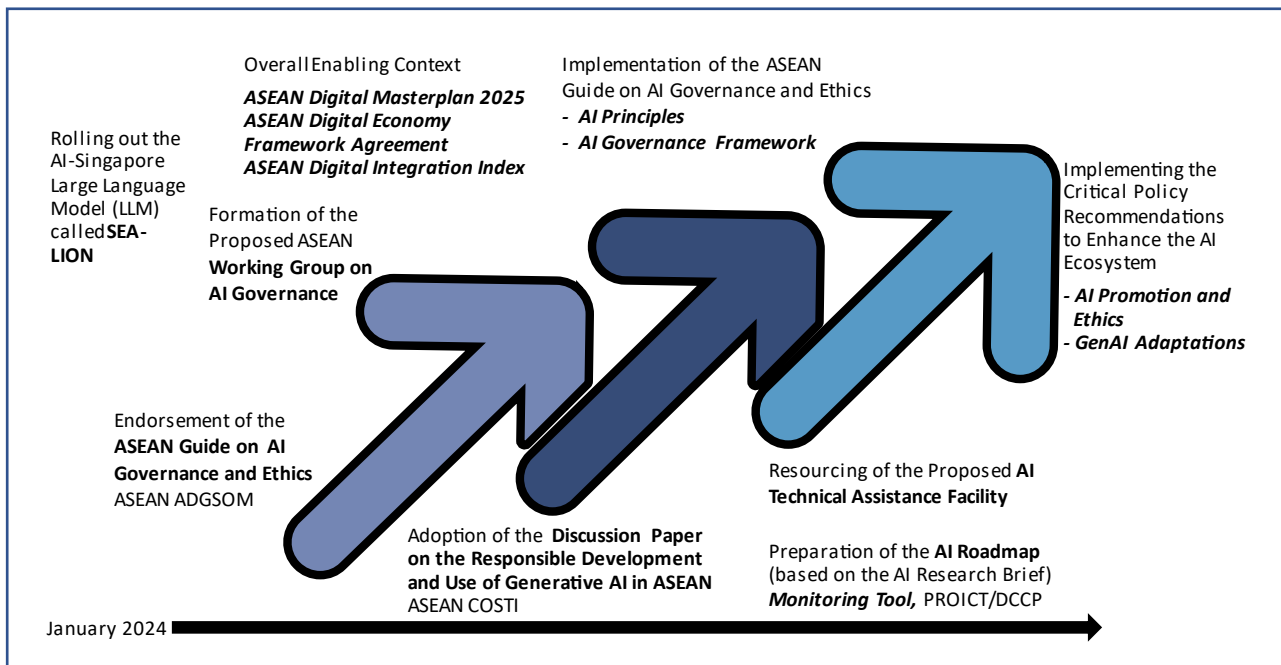
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<sup>69</sup> There are existing initiatives such as AI Incident Database (<https://incidentdatabase.ai/>) which shares similar goals, ASEAN is encouraged to design its own compendium of Gen AI use cases with different structures, information, and usages across member states.

- Second, the formation of the **ASEAN Working Group on AI Governance**, to be constituted as a key recommendation of the *ASEAN Guide on AI Governance and Ethics*, and its intention to immediately begin work to raise awareness on the proposed AI principles and AI governance framework.
- Third, the formation and resourcing of the **ASEAN AI Technical Assistance Facility**, a key recommendation of this discussion paper and a critical facilitator of all activities to support AI in ASEAN. An important input to this will be the completion of the *ProICT AI Roadmap* as a key diagnostic and monitoring tool, providing detailed diagnostics of where the AI ecosystem in each country is and where it needs to go.
- Fourth, the implementation of all aspects of **AI promotion and strategy** under the *ASEAN Guide on AI Governance and Ethics* and the Gen AI adaptations to the strategy of that guide outlined in this discussion paper.

A key initiative already underway that provides tremendous opportunities to feed into the AI and Gen AI initiatives outlined above is SEA-LION, the AI Singapore large language model, which provides an AI model specifically pre-trained and instruct-tuned for the Southeast Asian region.

**Box 5: Coordinated Efforts to Harness the Benefits and Address the Risks of AI in ASEAN**



## 4.6 Conclusions

Responding to the rapid development of Gen AI and a specific request from ASEAN's COSTI, this discussion paper identifies the most urgent policy, legal and regulatory gaps in Gen AI implementation within ASEAN. It is based on a review of what Gen AI is, why it is essential, what the key emerging risks and benefits are, and what the region has been doing to leverage the technology to benefit ASEAN populations. It aims to assist ASEAN member states in thinking about what needs to be included and prioritized in Gen AI governance and policy.

The discussion paper essentially complements and enhances the *ASEAN Guide on AI Governance and Ethics*, which itself recognizes the possible need to adapt the proposed AI principles and governance framework to ensure responsible development and deployment of Gen AI. For example, the introduction of Gen AI raises challenges to existing regulations on copyright and related laws and such regulations will need to evolve and adapt to Gen AI risk. Accordingly, the paper proposes detailed adaptations to the principles and governance framework of the *ASEAN Guide on AI Governance and Ethics* that account for the unique challenges posed by Gen AI. The paper thus lays out a series of enhanced national and regional recommendations on broad policy areas where ASEAN may want to focus its attention and consider further sectoral work.

The paper concludes with a roadmap of the most important ASEAN AI-related initiatives which, if effectively implemented and coordinated in 2024, will ensure responsible development and use of AI and Gen AI in ASEAN and create a foundation for ASEAN to exploit the tremendous benefits for social and economic development.

## Annex 1: AI and Gen AI Development in ASEAN Member States (and Timor-Leste)

The information in this annex is compiled from the *2023 Trustworthy AI Report* of the AI Asia Pacific Institute; the USAID project, *Technical and Policy Advisory Support for Southeast Asia*, and its 2023 draft; the *AI Research Brief and Roadmap*,<sup>70</sup> and extensive additional desk research. Updated information or other suggestions are welcome.

### **Brunei Darussalam**

Brunei is still in its early stages of governing and investing in AI. The Government of Brunei has yet to publicly announce a national AI strategy. However, its 2021 Economic Blueprint<sup>71</sup> articulates six aspirations that form part of the nation’s vision for institutional reforms and economic prosperity. A crucial aspiration is leveraging technology and innovation, enabling a productive business environment.

In line with encouraging national digital development, Brunei recognizes the importance of public-private partnerships. One notable initiative is Teens in AI, a collaboration between Darussalam Enterprise and U.K.-based Acorn Aspirations. This partnership aims to promote grassroots knowledge and skills related to AI, machine learning, and big data. Another collaboration is with MyFinB’s Centre for AI Innovation, a Singapore company that provides training and consultancy programs to improve the local integration of AI systems into business operations.<sup>72</sup>

While the Government of Brunei has not introduced specific AI regulations, it has introduced national policies aimed at enhancing the country's digital ecosystem.<sup>73</sup> The Digital Economy Masterplan 2025 seeks to transform Brunei into a Smart Nation, identifying four “strategic thrusts”: industry digitalization; government digitalization; a thriving digital industry; and talent development.<sup>74</sup> The masterplan explicitly recognizes that a “Whole of Nation” approach is needed, requiring participation from industry members, academia, and end-users of new technologies.<sup>75</sup>

During the pandemic, the government began launching AI-enabled applications to improve healthcare and public access to information, including an AI-enabled web application to assist the Ministry of Health mitigate COVID-19 as well as a health management mobile app originally used for contact tracing.<sup>76</sup>

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<sup>70</sup> The project is part of USAID’s Promoting American Approaches to ICT Policy and Regulation. See <https://accesspartnership.com/ai-in-sea/>, and also <https://www.usaid.gov/digital-development/pro-ict-factsheet>.

<sup>71</sup> Ministry of Finance and Economy. (2020). *Towards a Dynamic and Sustainable Economy: Economic Blueprint for Brunei Darussalam* (p. 6), [https://deps.mofe.gov.bn/DEPD%20Documents%20Library/NDP/BDEB/Econ\\_Blueprint.pdf](https://deps.mofe.gov.bn/DEPD%20Documents%20Library/NDP/BDEB/Econ_Blueprint.pdf).

<sup>72</sup> Wong, A. (2022, February 28). CEAI Looks to Help Brunei Businesses Integrate AI. Biz Brunei., <https://www.bizbrunei.com/2022/02/ceai-looks-to-help-brunei-businesses-integrate-ai/>. See also: Centre for AI Innovation at <https://ceaignlobal.com/>.

<sup>73</sup> OECD. (2022). Brunei Darussalam. In *Supporting Regulatory Reforms in Southeast Asia*, <https://www.oecd-ilibrary.org/sites/aa11a883-en/index.html?itemId=/content/component/aa11a883-en#chapter-d1e265>.

<sup>74</sup> Digital Economy Council, *Digital Economy Masterplan 2025* (2020) 29–31. <https://www.mtic.gov.bn/DE2025/documents/Digital%20Economy%20Masterplan%202025.pdf>.

<sup>75</sup> Ibid 19.

<sup>76</sup> The Scoop. (2020, September 25). BruHealth expands features with appointment bookings, access to medical records. <https://thescoop.co/2020/09/25/bruhealth-expands-features-with-access-to-medical-records/>

In March 2023, Microsoft assured Brunei of its commitment to collaborating on its plans to accelerate the shift to a digital economy, from providing essential services to improving infrastructure, sustainability, and more.<sup>77</sup>

The Authority for Info-Communications Technology Industry of Brunei Darussalam is in the process of formulating a new Personal Data Protection Law, which is intended to govern the “acquisition, utilization, and disclosure of personal data by private entities.”<sup>78</sup> The implementation of this law may shed light on the degree to which Brunei's regulatory standards align with those of other jurisdictions.

Brunei has been taking steps to encourage AI education among youth, building up its future AI and technology workforce. The Teens in AI program, for example, encourages Brunei youth to develop their skills in technology and AI outside the classroom through workshops and competitions.<sup>79</sup> Brunei startup InTurn Co. collaborated with the Authority for Info-communications Technology Industry and the Science Technology Environment Partnership Centre at the Ministry of Education in hosting the program. The program is also sponsored by large firms and organizations such as Brunei Shell Petroleum.<sup>80</sup>

In August 2023, Universiti Brunei Darussalam in collaboration with its Centre for Lifelong Learning and the Teaching and Learning Centre recently hosted a workshop on Harnessing Generative AI for Enhanced Productivity. The workshop tailored for the university's principal officers aimed to provide its core leadership team with a comprehensive introduction to generative artificial intelligence as part of its commitment to embrace technological innovation in education, research, and administration.<sup>81</sup>

## **Cambodia**

While Cambodia lacks specific regulations governing AI, it has various ongoing initiatives and policies aimed at promoting the adoption of emerging technologies.

The Cambodian ICT Masterplan 2014–20 (ICTopia Cambodia), the Telecom-ICT Development Policy 2020, the Policy and Strategies on Information and Communication Technology in Cambodia (2004), the E-government Master Plan (2017–22), and the National ICT Policy form some of Cambodia's recent policy developments relating to technology. In 2021, the Cambodian government released the Cambodia Digital Economy and Society Policy Framework 2021–2035. This framework outlines both short-term and long-term strategies aimed at boosting infrastructure investment and fostering the application of AI in data governance, particularly in the realms of data utilization and analysis.<sup>82</sup>

A significant recent development is the AI Landscape in Cambodia: Current Status and Future Trends report,<sup>83</sup> published by the Ministry of Industry, Science, Technology and Innovation in May 2023. This is the first report specific to the AI industry in Cambodia, written to grasp the development and use of AI

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<sup>77</sup> Microsoft Stories Asia. (2023, March 14). Brunei's digital transformation journey to be strengthened by Microsoft <https://news.microsoft.com/apac/2023/03/14/bruneis-digital-transformation-journey-to-be-strengthened-by-microsoft/>.

<sup>78</sup> Authority for Info-communications and Technology Industry. (2023, June 4). Personal Data Protection <https://www.aiti.gov.bn/regulatory/pdp/>.

<sup>79</sup> Devanesan, J. (2020, September 24). Brunei AI Hackathon Shows Potential for Building a 4IR-Ready Workforce. Tech Wire Asia, <https://techwireasia.com/2020/09/brunei-ai-hackathon-shows-potential-for-building-a-4ir-ready-workforce/>.

<sup>80</sup> Wong, A. (2020, September 19). Mental Health App Mindspace Wins Teens in AI Brunei Hackathon. Biz Brunei, <https://www.bizbrunei.com/2020/09/mental-health-app-mindspace-wins-teens-in-ai-brunei-hackathon/>

<sup>81</sup> Workshop provides introduction to Generative AI. (2023b, August 4). Workshop Provides Introduction to Generative AI. <https://borneobulletin.com.bn/workshop-provides-introduction-to-generative-ai/>

<sup>82</sup> Royal Government of Cambodia. (2021). Cambodia Digital Economy and Society Policy Framework 2021-2035. <https://mef.gov.kh/download-counter?post=7116>.

<sup>83</sup> Ministry of Industry, Science, Technology & Innovation. (2023, May). AI Landscape in Cambodia. <https://policypulse.org/wp-content/uploads/2023/06/AI-Landscape-in-Cambodia.pdf>.



technologies in the national context. In this way, the report could be viewed as a prelude to further developments in AI governance. The report notes the need for consensus on guiding principles for AI, listing various concerns for “any future policy or law governing the use of AI, such as privacy, accountability, and promotion of human values.”<sup>84</sup>

Cambodia is in the early stages of AI development; the government aims to strengthen AI infrastructure and readiness by introducing initiatives like open-source AI communities, university AI courses, and business digital platforms.<sup>85</sup> Local universities, including the Cambodia Academy of Digital Technology and the Institute of Technology of Cambodia, have begun to offer courses on AI to help develop local talent. The Ministry of Industry, Science, Technology and Innovation is leading efforts to define focus areas, establish regulations, develop infrastructure, promote research and education, nurture the AI ecosystem, and encourage international collaborations.<sup>86</sup>

On December 9–10, 2023, in partnership with the Institute of Digital Governance, the Cambodia Academy of Digital Technology, with support from various public and private institutions, held its first Mekong Tech Conference and Expo. The exhibition aimed to raise awareness, particularly among the youth, of tech and digital opportunities, as the use of AI is gaining momentum.<sup>87</sup> Now that the ASEAN Guide on AI Governance and Ethics has been approved, the guidelines could serve as a first step toward Cambodia's own AI regulations.<sup>88</sup>

In March 2023, the Ministry of Post and Telecommunications noted that the Digital Government Committee had been utilizing ChatGPT<sup>89</sup> to ease the ministry's workload over the past six months, including supporting administrative and translation tasks. The committee has also begun discussions with OpenAI about developing a Khmer language version of ChatGPT to be made available to the public.

## **Indonesia**

In 2020, Indonesia released the 2020–2045 Artificial Intelligence National Strategy, or Stranas KA. It outlines the country's plans to remain competitive in the AI landscape.<sup>90</sup> Aligned with the objectives of Vision Indonesia 2045, Stranas KA is designed to serve as a guiding framework for the long-term development and use of AI in Indonesia. There are three focus areas: ethics and policy talent development, infrastructure and data, and industrial research and innovation.<sup>91</sup>

While emphasizing ongoing work on regulations, Indonesia has issued Circular Letter Number 9 of 2023 on Artificial Intelligence Ethics. The circular was signed on December 19, 2023 and is directed toward electronic system providers engaged in advancing AI technology. While the guidelines maintain a focus on ethical values, including inclusivity, humanity, security, accessibility, transparency, credibility, and

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<sup>84</sup> Ibid, vii, 3.

<sup>85</sup> Ibid, 2.

<sup>86</sup> Ibid, 50–55.

<sup>87</sup> Cambodia hosts AI Fair as the use of technology expands. (n.d.). <https://cambodianess.com/article/cambodia-hosted-ai-fair-as-the-use-of-technology-expands>.

<sup>88</sup> Reuters. (2023, June 16). Exclusive: Southeast Asia to set 'guardrails' on AI with new governance code. Reuters. <https://www.reuters.com/technology/southeast-asia-set-guardrails-ai-with-new-governance-code-sources-2023-06-16/>.

<sup>89</sup> Phnom Penh Post. (n.d.). Ministry using ChatGPT AI to 'ease workload'; Khmer version planned. Phnom Penh Post. <https://www.phnompenhpost.com/national/ministry-using-chatgpt-ai-ease-workload-khmer-version-planned>.

<sup>90</sup> Neri, L. (2023, May 29). Indonesia Unveils National Strategy to Bolster AI Ecosystem. Chief of Staff Asia. <https://chiefstaff.asia/news-and-insights/indonesia-unveils-national-strategy-to-bolster-ai-ecosystem/>.

<sup>91</sup> Safenet Voice. (2022, May 10). Priorities and Challenges of Indonesia's Artificial Intelligence National Strategy (Stranas KA). Safenet Voice. <https://safenet.or.id/2022/05/priorities-and-challenges-of-indonesias-artificial-intelligence-national-strategy-stranas-ka/>.

accountability, a noteworthy addition pertains to intellectual property rights. The circular urges AI developers to align with relevant laws to prevent copyright infringements. Additionally, it underscores the importance of safeguarding personal data and encourages developers to assess the societal sustainability and welfare impacts of their AI products.<sup>92</sup>

This report, along with Indonesia's participation in global forums such as the Regional Comprehensive Economic Partnership and the AI standards subcommittee of the International Organization for Standardization and the International Electrotechnical Commission<sup>93</sup> demonstrate its commitment to embracing AI's economic and social benefits.<sup>94</sup> In 2022, Indonesia's National Research and Innovation Agency established an AI and Cybersecurity Research Centre to draft new AI regulations. Following that, the implementing regulations would be drafted and take effect by end-2025.<sup>95</sup>

Stranas KA recommended, among other things, the formation of a data ethics board and national regulations for AI innovation. However, since 2020, Indonesia has yet to implement these recommendations to ensure the responsible use of AI.<sup>96</sup> Additionally, a few risks related to AI are currently overseen by the Electronic Information and Transactions Law, considering that AI arguably falls within the scope of being a so-called "electronic agent"—that is, "an automated electronic means that is used to initiate an action to certain Electronic Information, which is operated by Persons."<sup>97</sup>

Key bodies within Indonesia's AI landscape include the National Research and Innovation Agency and the Artificial Intelligence Research and Innovation Collaboration center, known as KORIKA. In June 2023, KORIKA announced a partnership with OpenAI that aims to develop an AI system that aligns with Indonesian values. The announcement referred to principles of human centricity and fairness.<sup>98</sup> Based on Indonesia's commitment to human rights in its proposed privacy and data protection laws,<sup>99</sup> future proposals for AI governance and potential regulation can be expected. Under the Digital Indonesia Road Map (2021–2024), the Ministry of Communication and Informatics launched<sup>100</sup> several programs to close Indonesia's digital talent gap, including the Digital Talent Scholarship.

Indonesia and Singapore have also agreed to collaborate on the development of young talents in the technology sector, which would allow the two countries to share their experiences with each other in the industry.<sup>101</sup> The government has also launched the Indonesia AI Research Consortium and Artificial

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<sup>92</sup> Antara. (2023, December 22). Govt to prepare special AI regulation. <https://en.antaranews.com/news/301644/govt-to-prepare-special-ai-regulation>.

<sup>93</sup> The formal name is the subcommittee 42 on AI of the Joint Technical Committee of both organizations. It is also known as ISO/IEC JTC 1/SC 42 AI. See <https://www.iso.org/committee/6794475.html>.

<sup>94</sup> Asia Society Policy Institute. (2022). Raising Standards: Data and Artificial Intelligence in South East Asia. [https://asiasociety.org/sites/default/files/inlinefiles/ASPI\\_RaisingStandards\\_report\\_fin\\_web\\_0.pdf](https://asiasociety.org/sites/default/files/inlinefiles/ASPI_RaisingStandards_report_fin_web_0.pdf).

<sup>95</sup> Ministry of Foreign Affairs and Trade (New Zealand). (2023, July). Indonesia's National Strategy for Artificial Intelligence. <https://www.mfat.govt.nz/en/trade/mfat-market-reports/indonesias-national-strategy-for-artificial-intelligence-july-2023>.

<sup>96</sup> Ibid, 88.

<sup>97</sup> Government of Indonesia. (2008). Electronic Information and Transactions Law, no. 11 of 2008, § 1 [tr ABNR]. [https://www.icnl.org/wp-content/uploads/Indonesia\\_elec.pdf](https://www.icnl.org/wp-content/uploads/Indonesia_elec.pdf).

<sup>98</sup> Arkyasa, M. (2023, June 15). KORIKA, Open AI to Develop an AI with Indonesian Values. Indonesia Business Post. <https://indonesiabusinesspost.com/risks-opportunities/korika-open-ai-to-develop-an-ai-with-indonesian-values/>.

<sup>99</sup> Asia Society Policy Institute. (2022). Raising Standards: Data and Artificial Intelligence in South East Asia, 24–5. [https://asiasociety.org/sites/default/files/inline-files/ASPI\\_RaisingStandards\\_report\\_fin\\_web\\_0.pdf](https://asiasociety.org/sites/default/files/inline-files/ASPI_RaisingStandards_report_fin_web_0.pdf).

<sup>100</sup> U.S. Commercial Service. (n.d.). Indonesia: Digital Economy Opportunities. <https://www.trade.gov/market-intelligence/indonesia-digital-economy-opportunities>.

<sup>101</sup> Antara News. (n.d.). Indonesia, Singapore forge cooperation on tech talent development. Antara News. <https://en.antaranews.com/news/275742/indonesia-singapore-forge-cooperation-on-tech-talent-development>.

Intelligence Center Indonesia to encourage greater research and human resource development in the AI field.

In January 2022, NVIDIA signed a Memorandum of Agreement with the Ministry of Education, Culture, Research, and Technology to develop AI talent as part of the country's digital transformation initiative.

Under the agreement, NVIDIA would help educate Indonesian lecturers and more than 20,000 university students in AI skills to boost the nation's AI talent pool over the next five years. The agreement also covers AI curriculum development, a translation research workshop and talks, and AI startup ecosystem development and support. In addition, NVIDIA systems will provide the computing needed to advance AI education in Indonesia.<sup>102</sup>

In June 2023, Google unveiled new solutions and resources available to organizations of all sizes in Indonesia to help them leverage the power of artificial AI quickly, securely, and responsibly.<sup>103</sup>

As of July 2023, Indonesia's existing legal frameworks tend to reject the concept that content generated by ChatGPT is work subject to Intellectual property protection due as it is work created by non-human legal entities and that it lacks any human-related creative and intellectual elements in the production process.<sup>104</sup>

ChatGPT has yet to be officially determined as an electronic system by the government and has simultaneously yet to be registered as an Electronic Systems Provider in Indonesia. ChatGPT would have to be registered as a systems provider if it generates revenue from Indonesia through, for example, a paid plan such as ChatGPT Plus. That would see the chatbot regulated by the government for the purposes of taxation and content supervision.<sup>105</sup>

In August 2023, On August 30, the informatics ministry announced that it is developing ethical guidelines on the use of AI. The guidelines are also expected to touch on ensuring that the ethical use of AI is in line with existing policies, including the Personal Data Protection Law and Electronic the Information and Transactions Law.<sup>106</sup>

### ***Lao PDR***

At the time of this writing, Lao PDR does not have a national, overarching strategy specifically devoted to AI, but it has launched various initiatives aimed at setting the stage for AI adoption by the public and private sectors.

Lao PDR is committed to bridging gaps and enhancing its digital landscape to support economic development and provide better public services.<sup>107</sup> The most significant milestone would be adoption of

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<sup>102</sup> NVIDIA. (n.d.). NVIDIA signs agreement to develop AI talent, support industry research in Indonesia.

<https://www.nvidia.com/en-sg/news/nvidia-signs-agreement-to-develop-ai-talent-support-industry-research-in-indonesia/>.

<sup>103</sup> Tech Wire Asia. (2023, June). Google Cloud unveils AI upskilling courses in Indonesia.

<https://techwireasia.com/2023/06/google-cloud-unveils-ai-upskilling-courses-in-indonesia/>.

<sup>104</sup> Ministry of Foreign Affairs and Trade (New Zealand). (2023, July). Indonesia's National Strategy for Artificial Intelligence.

<https://www.mfat.govt.nz/en/trade/mfat-market-reports/indonesias-national-strategy-for-artificial-intelligence-july-2023>.

<sup>105</sup> Ibid.

<sup>106</sup> Indonesia: Kominfo set to develop AI ethics guidelines. (n.d.). DataGuidance.

<https://www.dataguidance.com/news/indonesia-kominfo-set-develop-ai-ethics-guidelines>.

<sup>107</sup> 10-Year National Digital Economy Development Strategy (2021-2030), First 5-Year National Digital Economy Development Plan (2021-2025). [https://docs.google.com/document/d/1Tgnuva5jG8YuHsJde4VAfk-j1Jrb\\_0Xi/edit](https://docs.google.com/document/d/1Tgnuva5jG8YuHsJde4VAfk-j1Jrb_0Xi/edit).

the National Digital Economy Vision (2021–2040), the National Digital Economy Strategy (2021–2030), and the National Digital Economy Development Plan (2021–2025) December 2021.<sup>108</sup>

The Five-Year National Socio-economic Development Plan (2021–2025) outlines aspirations to invite foreign private investment in AI and improve AI research and development.<sup>109</sup> The plan says AI should become a priority area in education with a strengthened curriculum by reinforcing it with greater inclusion of AI technologies. Higher education is targeted for this prioritization. However, further details about funding or other arrangements that will help bolster this have been limited.<sup>110</sup>

The National Science Technology and Innovation Strategy 2016–2025 highlights the need to strengthen research and development capabilities in the country. It acknowledges that these efforts need to be enhanced to support technological innovation and the knowledge-based economy.

The government has expressed its intent to promote research and development in artificial intelligence and has revised policies to encourage foreign investment in the field while also promoting AI education in universities. Lao PDR remains committed to bridging these gaps and further enhancing its digital landscape to support economic development and provide improved public services.<sup>111</sup>

Lao PDR has been making efforts to collaborate with foreign universities to foster greater talent development and research opportunities related to AI. The Lao–Korean College is affiliated with the Institute of Advanced Technology Education and Research, which has been working with Korean universities through joint research opportunities such as Lab AI since late 2020.<sup>112</sup> In February 2023, the Research Institute for Smart Technology under the Ministry of Technology and Communications and the Chongqing College of Electronic Engineering in China signed a memorandum of understanding with key points related to artificial intelligence.<sup>113</sup> Through the agreement, Chongqing College will provide technical training and education programs for the development of smart technology-related human resources in Lao PDR.

## **Malaysia**

While the AI regulatory landscape in Malaysia is still in its early stages, the country has taken notable steps to introduce policies to guide digital transformation and ensure the responsible deployment of AI systems. The Malaysian Ministry of Science, Technology, and Innovation has played a crucial role in driving progress. Its contributions include the 2018 National Policy on Industry 4.0 to guide the country's digital transformation effort,<sup>114</sup> further developed in 2021 with its release of the National 4IR Policy, or policy for

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<sup>108</sup> Asia-Pacific, R. I. C. U. (2022b, December 21). Inclusive whole of society digital government transformation: How Lao PDR is striving for this change. Medium. <https://undp-ric.medium.com/inclusive-whole-of-society-digital-government-transformation-how-lao-pdr-is-striving-for-this-f493269178c2>.

<sup>109</sup> LaoFab (2021) 9th Five-Year National Socioeconomic Development Plan (2021-2025), <https://laofab.org/document/download/4870>.

<sup>110</sup> Ibid.

<sup>111</sup> Laos PDR, Ministry of Post, Telecommunication and Communication, 10-Year National Digital Economy Development Strategy (2021-2030), First 5-Year National Digital Economy Development Plan (2021-2025), See [https://docs.google.com/document/d/1Tgnuva5jG8YuHsJde4VAfk-j1Jrb\\_0Xi/edit](https://docs.google.com/document/d/1Tgnuva5jG8YuHsJde4VAfk-j1Jrb_0Xi/edit).

<sup>112</sup> Institute of Advanced Technology Education and Research. (n.d.). See <http://www.iater.org/research.php>.

<sup>113</sup> Laotian Times. (2023, March 1). Laos And China Sign MoU to Research Development of Artificial Intelligence. <https://laotiantimes.com/2023/03/01/laos-and-china-sign-mou-to-research-development-of-artificial-intelligence/>.

<sup>114</sup> Ministry of International Trade and Industry. (2018, October 28). National Policy On Industry 4.0 - Industry4WRD. <https://docs.google.com/viewerng/viewer?url=https://www.pmo.gov.my/dokumenattached/Dasar/Polisi/National-Policy-on-Industry-4.0-Industry4WRD-min.pdf&hl=en>.

the fourth industrial revolution.<sup>115</sup> The prime minister has noted that these policies serve as guiding principles for Malaysia to remain at the forefront of the fourth industrial revolution.<sup>116</sup> They specifically highlight the significance of AI ethics, prioritizing aspects such as human well-being, fairness, transparency, and accountability in adopting and deploying AI technologies.

In 2021, the ministry launched the Malaysia AI Roadmap 2021–25, which seeks to improve AI growth, adoption, and cross-sectoral collaboration.<sup>117</sup> The development of an AI Code of Ethics is projected to take place over a period of four years (2021–2025), with progressive yardsticks and measurable key performance indicators along the way.<sup>118</sup> A significant recent development in Malaysia is the 2023 Responsible AI Framework developed by the Malaysia Digital Economy Corporation, which provides guidelines and principles for organizations to develop and deploy AI systems responsibly.<sup>119</sup> The framework paper proposes a dynamic approach to developing a suitable AI ethics and governance framework with the goal of maximizing AI adoption among diverse stakeholders in Malaysia, such as the ministry, high-tech companies, researchers, and consumers.

In collaboration with the International Data Corporation, the Digital Economy Corporation has taken a noteworthy step in advancing AI adoption.<sup>120</sup> Similar to Singapore's recently introduced AI Verify,<sup>121</sup> Malaysia launched the Data, Analytics, and AI Readiness Assessment Tool to enhance the integration of AI models within the country. The tool is aimed at assisting enterprises and organizations in understanding the value of their assets and effectively deploying data technology. This tool enables optimized operational, tactical, and strategic decisions to overcome challenges and embrace the fourth industrial revolution. Surina Shukri, the CEO of the Digital Economy Corporation, noted, “this assessment tool, jointly-developed with the global market intelligence firm, will greatly benefit local businesses in their journey toward being 4IR-ready in line with the goal of the Malaysia Digital Economy Blueprint or MyDIGITAL to boost economic competitiveness through digitalization.”<sup>122</sup>

The government has also encouraged collaboration between industry players, academia, and international agencies to promote research and development in AI ethics. One of these collaborations, for instance, has contributed to further strengthening Malaysia–China trade and investment relations, including through the Regional Comprehensive Economic Partnership, which is the main driving force in integrating the regional economy with the use of new technology.<sup>123</sup> This collaboration represents a continuing intergovernmental research initiative between Malaysia and China, specifically focusing on the

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<sup>115</sup> Economic Planning Unit, Prime Minister's Department. (2021, July). National Fourth Industrial Revolution (4IR) Policy <https://www.mosti.gov.my/wp-content/uploads/2021/07/National-Fourth-Industrial-Revolution-4IR-Policy.pdf>.

<sup>116</sup> The Industrial Revolution 4.0 refers to the disruptive transformation of industries through the application of emerging technology.

<sup>117</sup> Ministry of Science, Technology & Innovation. (2021). Malaysia's National Artificial Intelligence Roadmap 2021-2025 <https://airmap.my/wp-content/uploads/2022/08/AIR-Map-Playbook-final-s.pdf>.

<sup>118</sup> Asia Society. (n.d.). Raising Standards for Data & AI in Southeast Asia. <https://asiasociety.org/policy-institute/raising-standards-data-ai-southeast-asia/ai/malaysia>.

<sup>119</sup> Ariffin, Aini Suzana, Mathew Maavak, Rozzeta Dolah, and Mohd Nabil Muhtazaruddin, Formulation of AI Governance and Ethics Framework to Support the Implementation of Responsible AI for Malaysia, *Resmilitaris* 13 (3): 2491–2516. (2023) <https://resmilitaris.net/menu-script/index.php/resmilitaris/article/view/3826/2966>.

<sup>120</sup> Ministry of Communications and Digital. (2023). MDEC Launches Free Data, Analytics and AI Assessment Tool. (2023) <https://www.kkd.gov.my/en/public/news/19097-mdec-launches-free-data-analytics-and-ai-assessment-tool>.

<sup>121</sup> AI Verify Foundation. (n.d.). What Is AI Verify, <https://aiverifyfoundation.sg/what-is-ai-verify/>.

<sup>122</sup> Ibid.

<sup>123</sup> Universiti Malaya. (2023, February 14). Welcome to Faculty of Computer Science & Information Technology, <https://fsktm.um.edu.my/news/myeg-rsq-s-zetrix-partners-uni-malaya-and-caict-in-g2g-programme-between-malaysia-china>.

fields of science, technology, and innovation. Collaborative approaches such as these can foster a comprehensive understanding of the risks of AI technologies and strengthen national governance.

The Malaysia AI Roadmap 2021–25 seeks to develop AI talents through comprehensive and inclusive AI education, reskilling and upskilling employees, and attracting overseas talent. In addition to strategic initiatives outlined in the AI Roadmap, Malaysia has launched tools and initiatives to encourage AI talent development, including the MyIndustry AI Scholarship Program<sup>124</sup> and Digital Skills Training Directory by the Digital Economy Corporation.<sup>125</sup>

In September 2023, MyDigital Corporation and the Malaysia Centre for the Fourth Industrial Revolution launched its first report, *The economic impact of generative AI: The future of work in Malaysia*.<sup>126</sup> The study estimates that using generative AI to transform the way work is currently done in the Malaysian economy can potentially unlock US\$113.4 billion of productive capacity, equivalent to a quarter of 2022 GDP.

As of October 2023, the ministry, in collaboration with Universiti Teknologi Malaysia, representatives of government agencies, higher education institutions and industry players, is developing a code of ethics and governance for artificial intelligence.<sup>127</sup> As well, the Malaysian Standards Department has established a National Mirror Committee to come up with national AI standards.<sup>128</sup>

On January 16, 2024, the economy ministry in partnership with Intel Malaysia introduced an Artificial Intelligence Programme For The People. The program focuses on introducing AI and enabling people to master basic AI skills in a four-hour module.<sup>129</sup>

## Myanmar

The AI ecosystem in Myanmar is nascent, suggesting a lot of potential due to a largely untapped AI market. Myanmar does not have a single principal data protection law and does not have a data protection agency. Its data protection and privacy legislation is fragmented and elements of it are spread out across four legal instruments: the Constitution of the Republic of the Union of Myanmar (2008); the Law Protecting the Privacy and Security of Citizens of March 8, 2017 as amended by Law No. 16/2020; the State Administration Council Law 4/2021; and the Electronic Transactions Law of April 30, 2004 as amended by Law No. 6/2014) and the State Administration Council Law No. 7/2021.<sup>130</sup> Myanmar is in a particularly unique situation in that it has a young, digital-native population that is eager to learn and apply new skills for the overall improvement of the country.<sup>131</sup>

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<sup>124</sup> Universiti Teknologi Malaysia. (2020, May 17). UTM-MDEC collaboration on MyIndustry AI Scholarship. See UTM NewsHub. <https://news.utm.my/2020/05/utm-mdec-collaboration-on-fourthcoming-myindustry-ai-scholarship-program/>.

<sup>125</sup> Digital Skills Training Laboratory. (n.d.). <https://titan.mdec.my/digitalskillstrainingdirectory/>.

<sup>126</sup> Access Partnership. (n.d.). *The Economic Impact of Generative AI: The future of work in Malaysia*. <https://accesspartnership.com/the-economic-impact-of-generative-ai-the-future-of-work-in-malaysia>.

<sup>127</sup> Channel NewsAsia. (n.d.). Malaysia developing AI code of ethics and governance, to be ready by 2024. <https://www.channelnewsasia.com/asia/malaysia-artificial-intelligence-ai-code-ethics-governance-technology-3836801>.

<sup>128</sup> Ibid.

<sup>129</sup> Peoples Gazette. (2024). Malaysia launches AI literacy programme. Peoples Gazette Nigeria. <https://gazettengr.com/malaysia-launches-ai-literacy-programme/>.

<sup>130</sup> Center for AI and Digital Policy (2022) *Artificial Intelligence and Democratic Values*, [www.caidp.org/reports/aidv-2022/](http://www.caidp.org/reports/aidv-2022/).

<sup>131</sup> ASEAN (2022) *ASEAN-ROK Technical and Vocational Education and Training Mobility (TEAM) Programme, Country Report: Myanmar*, [https://asean.org/wp-content/uploads/2022/10/20221006-6.Country-Report\\_Myanmar.pdf](https://asean.org/wp-content/uploads/2022/10/20221006-6.Country-Report_Myanmar.pdf).

The younger generation has a genuine interest in technological and digital solutions including AI and Machine Learning.<sup>132</sup> However, educational opportunities and initiatives related to AI are limited, with some universities offering diplomas or courses in AI, including the Myanmar Institute of Business and University of Yangon. In the National Education Strategic Plan for 2016–2021, ICT and digitalization are mentioned in relation to improving digital access and facilities, but the plan makes little mention of employer demand for digital skills and competencies necessary for AI-related professions.

One challenge is the lack of infrastructure to support AI adoption. Myanmar lacks widespread access to reliable electricity and internet connectivity, which are essential for the development of AI-based technologies. Among ASEAN countries, Myanmar has the lowest electrification rate, with only half of its population connected to the national grid, and 80 percent of people in rural areas having no access to grid electricity.<sup>133</sup>

### Philippines

The digital economy in the Philippines is valued at US\$20 billion, according to Digital Transformation ng Pilipinas (DigiPinas), a local industry group. It suggests that could reach US\$150 billion by 2033.<sup>134</sup> When looking at Gen AI, the market size is expected to show a compound annual growth rate of 27.8 percent over the 2023–2030 period, resulting in a market volume of US\$835 million by 2030.<sup>135</sup>

The Philippines acknowledges the significance of regulating AI to harness its advantages while minimizing potential risks. Like other countries in the region, it has a strategic vision to increase AI research, development, and adoption. In January 2023, President Marcos signed the Philippines Development Plan for 2023–2028, which aims to “bring back the country to a high-growth trajectory and, more importantly, enable economic and social transformation for a prosperous, inclusive, and resilient society.” It underscores AI as a key technology that will be instrumental in achieving this.<sup>136</sup>

The National AI Strategy Roadmap, launched by the Department of Trade and Industry in 2021, aims to guide stakeholders in the public and private sectors to use AI to improve the productivity of domestic industries and the competitiveness of the national economy.<sup>137</sup> Notably, the roadmap identifies five barriers to AI adoption: a lack of understanding of data science and AI; a lack of knowledge of potential use cases; a lack of resources; a lack of data strategy; and uncertainties about legal and regulatory frameworks for AI.<sup>138</sup>

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<sup>132</sup> National Center for High-performance Computing. (2019). 2019 SCSE AI Technology, Application and Innovation for Digital Cities <https://event.nchc.org.tw/2019/SmartCitiesAI/>; Than, C., & Myint, U. A. (2019). Smart Cities in Myanmar., <https://event.nchc.org.tw/2019/SmartCitiesAI/download.php>.

<sup>133</sup> International Trade Administration (2023) Burma - Country Commercial Guide, [www.trade.gov/country-commercial-guides/burma-energy](http://www.trade.gov/country-commercial-guides/burma-energy).

<sup>134</sup> Digital Transformation ng Pilipinas. (2023, January 5). Gov't online shift may boost Philippine digital economy. BusinessWorld.[www.bworldonline.com/technology/2023/01/05/496484/govt-online-shift-may-boost-philippine-digital-economy](http://www.bworldonline.com/technology/2023/01/05/496484/govt-online-shift-may-boost-philippine-digital-economy).

<sup>135</sup> Statista. (n.d.). Generative AI-Philippines. <https://www.statista.com/outlook/tmo/artificial-intelligence/generative-ai/philippines>.

<sup>136</sup> Access Partnership. (n.d.). The Economic Impact of Generative AI: The Future of Work in the Philippines <https://accesspartnership.com/the-economic-impact-of-generative-ai-the-future-of-work-in-the-philippines/>

<sup>137</sup> Department of Trade and Industry. (2021). National AI Strategy Roadmap (Abridged). <https://drive.google.com/file/d/1de5kfaGi3tdUgXu1UPV8iRxKpXECTkDp/view>.

<sup>138</sup> Ibid, 6–7.

In 2023, the House of Representatives proposed Bill No. 7396, an Act Promoting the Development and Regulation of Artificial Intelligence in the Philippines.<sup>139</sup> The policy behind the bill is stated as promoting AI's development and "ensuring that its development and deployment are aligned with national priorities, [are] socially responsible, and respectful of human rights."<sup>140</sup> This policy would be chiefly advanced by a proposed body called the Artificial Intelligence Development Authority, which would be responsible for, among other things, developing national regulations, conducting research into activities to promote the advancement of AI, and establishing mechanisms for handling complaints related to AI deployment.<sup>141</sup>

The National Privacy Commission issued Circular No 22-04, which requires a personal information controller or processor who carries out any automated decision-making operation or profiling to indicate its registration with the corporation and identify the data processing system involved in the automated decision-making or profiling operation.<sup>142</sup>

Further, AI is subject to general laws like intellectual property and consumer protection. The Intellectual Property Code safeguards AI developers and companies, promoting innovation and investment in AI. The Consumer Act defends consumers from AI-related unfair practices, ensuring safety, reliability, and honesty in AI usage. It addresses issues like price discrimination, bias, and false claims, providing legal remedies for consumers.<sup>143</sup>

In May 2023, Senator Imee Marcos filed a Senate Resolution calling for an inquiry into the impact of AI on job displacement in the business process outsourcing and original equipment manufacturer sectors.<sup>144</sup> Senator Marcos referred to economic predictions that rapid technological innovations will eliminate at least 1.1 million jobs in the Philippines. Therefore, there is an apparent recognition that appropriate governance and specific regulations are required to support citizens in the transition to AI.

Most recently, the Department of Labor and Employment and the Department of Information and Communications Technology have called for safeguards to mitigate the impact of AI on employees.<sup>145</sup> In June 2023, the trade and industry department announced that the conglomerates agreed to cooperate with the government to provide US\$20 million to fund the establishment of the proposed National Center for AI Research, suggesting that the conglomerates see AI as strategically important as well.<sup>146</sup>

The Philippines Skills Framework initiative provides a potential platform with which to specify both the sector-specific and cross-sectoral skills that will be needed in a future-ready workplace supported by AI.<sup>147</sup> The Technical Education and Skills Development Authority is currently developing the National Technical Education and Skills Development Plan 2023–2028 to provide guidance to the technical and vocational

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<sup>139</sup> Republic of the Philippines House of Representatives. (2023, March 1). House Bill No. 7396. [https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/basic\\_19/HB07396.pdf](https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/basic_19/HB07396.pdf).

<sup>140</sup> *Ibid*, s 2.

<sup>141</sup> *Ibid*, ss 5, 7.

<sup>142</sup> Chambers Practice Guides. (2023). Artificial Intelligence 2023 - Philippines, <https://practiceguides.chambers.com/practice-guides/artificial-intelligence-2023/philippines>.

<sup>143</sup> *Ibid*.

<sup>144</sup> Senate Office of the Secretary. (2023, May 3). P.S. Resolution No. 591. <https://legacy.senate.gov.ph/lisdata/4148537771!.pdf>.

<sup>145</sup> Philippine Star (2023) DOLE backs regulating AI in workplace, [www.philstar.com/headlines/2023/06/14/2273753/dole-backs-regulating-ai-workplace](http://www.philstar.com/headlines/2023/06/14/2273753/dole-backs-regulating-ai-workplace).

<sup>146</sup> Philippine News Agency (2023) Conglomerates investing \$20-M for AI center, [www.pna.gov.ph/articles/1177557](http://www.pna.gov.ph/articles/1177557)

<sup>147</sup> Manila Bulletin (2022). Improving digital skills in the Philippines, <https://mb.com.ph/2022/08/25/improving-digital-skills-in-the-philippines/>



education and training sector, with the plan expected to focus on digitalization in response to the Fourth Industrial Revolution.<sup>148</sup>

In 2022, the Department of Science and Technology conducted its first foreign mission to the United Arab Emirates with the goal of initiating cooperation in AI to bolster and benefit both Filipino and Emirate stakeholders.<sup>149</sup> In September 2022, the trade and industry department said it signed a partnership agreement with UnionBank of the Philippines and Global Learning Solutions to establish an AI research center.<sup>150</sup> Global Learning Solutions will serve as the training and learning partner for upskilling and reskilling employees of small and medium enterprises.

On January 17, 2024, the Philippines said it plans to propose the creation of a Southeast Asian regulatory framework by 2026 to set rules on AI based on its own draft legislation.

## **Singapore**

Singapore strives to establish a balanced approach to governing AI, one that fosters innovation while also ensuring the protection of consumer welfare. Its recent AI governance developments have contributed to establishing itself as the benchmark for global AI governance standards.<sup>151</sup> It was the first country in Southeast Asia to launch a national AI strategy. As a percentage of GDP, Singapore's government-supported AI R&D spending is 18 times larger than U.S. R&D spending.<sup>152</sup>

The nation has been at the forefront of pioneering efforts to develop a global Trustworthy AI ecosystem. For Singapore, this began in 2018 with the Model AI Governance Framework released by the Personal Data Protection Commission and, one year later, with the National Artificial Intelligence Strategy.<sup>153</sup> The Data Protection Commission is a major part of Singapore's regulatory landscape, overseeing data and AI activities. This includes monitoring AI developers and companies that employ AI, encompassing various aspects such as backroom operations, front-end usage companies, and distributors of AI-equipped equipment.<sup>154</sup>

The Singapore government announced its National AI Strategy in 2019 to map out a plan for the development and deployment of scalable, impactful AI solutions in key sectors of high value and relevance by 2030. The strategy identifies five critical ecosystem enablers to build a vibrant and sustainable AI ecosystem: (1) a progressive and trusted environment; (2) talent and education; (3) triple helix partnerships; (4) data architecture; and (5) international collaboration.<sup>155</sup> The government also

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<sup>148</sup> Manila Bulletin. (2023, January 25). TESDA vows to empower PH workforce, boost economic recovery <https://mb.com.ph/2023/01/25/tesda-vows-to-empower-ph-workforce-boost-economic-recovery/>.

<sup>149</sup> OpenGov Asia. (2022, February 15). The Philippines, United Arab Emirates collaborate on AI. <https://opengovasia.com/the-philippines-united-arab-emirates-collaborate-on-ai/>.

<sup>150</sup> BusinessWorld. (2022, September 12). UnionBank, GLS sign on as gov't partners in AI research center. <https://www.bworldonline.com/economy/2022/09/12/474026/unionbank-gls-sign-on-as-govt-partners-in-ai-research-center/>.

<sup>151</sup> Infocomm Media Development Authority. (n.d.). Artificial Intelligence. <https://www.imda.gov.sg/about-imda/research-and-statistics/sgdigital/tech-pillars/artificial-intelligence>.

<sup>152</sup> Networking and Information Technology Research and Development, "Artificial Intelligence R&D Investments, Fiscal Year 2018 Fiscal Year 2023," <https://www.nitrd.gov/apps/itdashboard/ai-rd-investments/#Chart-1-Federal-Budget-for-AI-RDFYs-2021-2023>.

<sup>153</sup> Smart Nation Singapore. (2019). National Artificial Intelligence Strategy: Advancing Our Smart Nation Journey., <https://www.smartnation.gov.sg/files/publications/national-ai-strategy.pdf>.

<sup>154</sup> Srinakaran, N. (2023, June 7). AI Regulation and Governance in Singapore and Thailand - New Technology - Worldwide. Mondaq, <https://www.mondaq.com/new-technology/1326366/ai-regulation-and-governance-in-singapore-and-thailand>.

<sup>155</sup> Smart Nation Singapore (2023) The Next Frontier of Singapore's Smart Nation Journey, [www.smartnation.gov.sg/initiatives/artificial-intelligence/](http://www.smartnation.gov.sg/initiatives/artificial-intelligence/).

established an Advisory Council on the Ethical Use of AI and Data, and a research program on the Governance of AI and Data Use in partnership with Singapore Management University.<sup>156</sup>

The government has placed significant emphasis on the deployment of Responsible AI. On June 7, 2023, Singapore's Infocomm Media Development Authority released AI Verify, the world's first AI Governance Testing Framework.<sup>157</sup> The primary objective is to assist organizations in verifying the effectiveness of their AI systems by utilizing globally acknowledged governance principles and standardized assessments. It draws on the contributions of the global open-source community to improve AI testing tools. Trustworthy AI was adopted in 2022 as the MAS published a set of five white papers outlining evaluation methodologies for fairness, ethics, accountability, and transparency.<sup>158</sup>

These guidelines are aimed at promoting the responsible utilization of AI technologies by financial service providers. The monetary authority initiative aims to encourage collaboration between public and private entities, with the objective of achieving tangible outcomes and enhancing capabilities in the adoption of AI within Singapore's fintech ecosystem.<sup>159</sup>

In May 2023, the Ministry of Communications and Information announced that the government intended to release the Advisory Guidelines on the Use of Personal Data in AI Systems within the framework of the Personal Data Protection Act.<sup>160</sup> The advisory guidelines have progressed to the stage of open consultation and will provide businesses with greater clarity on the permissible uses of personal data to train or develop AI models.<sup>161</sup> <sup>162</sup> The Singapore Academy of Law has released multiple reports addressing legal aspects influenced by the growing adoption of robotics and AI-driven technologies in society. These reports, including Criminal Liability, Robotics, and AI Systems, and Applying Ethical Principles for Artificial Intelligence in Regulatory Reform, offer recommendations concerning the AI industry and its impact on different legal domains.<sup>163</sup>

Also in May 2023, the Smart Nation and Digital Government Office and Google Cloud announced the launch of the Artificial Intelligence Government Cloud Cluster, a platform designed to accelerate AI adoption in Singapore's public sector, advance local research efforts in applied AI, and support the growth of the local AI startup ecosystem.<sup>164</sup> It has been implemented for use by Singapore government agencies

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<sup>156</sup> Singapore Government (2018) AI Governance and Ethics Initiatives [www.gov.sg/~sgpcmedia/media\\_releases/imda/press\\_release/P-20180605-1/attachment/Artificial%20Intelligence%20Governance%20and%20Ethics%20Initiatives.pdf](http://www.gov.sg/~sgpcmedia/media_releases/imda/press_release/P-20180605-1/attachment/Artificial%20Intelligence%20Governance%20and%20Ethics%20Initiatives.pdf).

<sup>157</sup> AI Verify Foundation. (n.d.). What Is AI Verify?, <https://aiverifyfoundation.sg/what-is-ai-verify/>.

<sup>158</sup> Monetary Authority of Singapore. (2022). Implementation of fairness principles in the use by financial institutions of artificial intelligence / machine learning. See <https://www.mas.gov.sg/publications/monographs-or-information-paper/2022/implementation-of-fairness-principles-in-financial-institutions-use-of-artificial-intelligence-and-machine-learning>.

<sup>159</sup> Ibid 2.

<sup>160</sup> Ministry of Communication and Information. (2023, May 9). MCI Response to PQ on Ensuring Development and Maintenance of Ethical Artificial Intelligence Standards. <https://www.mci.gov.sg/pressroom/news-and-stories/pressroom/2023/5/mci-response-to-pq-on-ensuring-development-and-maintenance-of-ethical-artificial-intelligence-standards?pagesize=24&page=2>.

<sup>161</sup> Ministry of Communication and Information. (2023, July 18). Speech by Minister Josephine Teo at the Opening of the Personal Data Protection Week on 18 July 2023. <https://www.mci.gov.sg/pressroom/news-and-stories/pressroom/2023/7/speech-by-minister-josephine-teo-at-the-opening-of-the-personal-data-protection-week-on-18-july-2023>.

<sup>162</sup> Personal Data Protection Commission. (2023). Proposed Advisory Guidelines on Use of Personal Data in AI Recommendation and Decision Systems., <https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Legislation-and-Guidelines/Public-Consult-on-Proposed-AG-on-Use-of-PD-in-AI-Recommendation-and-Systems-2023-07-18-Draft-Advisory-Guidelines.pdf>.

<sup>163</sup> Singapore Academy of Law. (2020). Applying Ethical Principles for Artificial Intelligence in Regulatory Reform. [https://www.sal.org.sg/Resources-Tools/Law-Reform/AI\\_Ethical\\_Principles](https://www.sal.org.sg/Resources-Tools/Law-Reform/AI_Ethical_Principles).

<sup>164</sup> Smart Nation Singapore. (2023, May 31). Launch of the Artificial Intelligence Government Cloud Cluster. <https://www.smartnation.gov.sg/media-hub/press-releases/31052023/>.

and the research, innovation, and enterprise ecosystem. The Government Technology Agency is the first public sector organization to use the cloud cluster and is exploring the use of its models in its Pair chatbot, which was announced in February 2023 to enable civil servants to boost productivity with the use of large language model-powered assistants while safeguarding privacy, security, and confidentiality.

Singapore advocates for the effectiveness of clear and transparent guidelines regarding cross-border data flows instead of universally implementing rigid data localization rules. One notable initiative is a collaboration between Google and the IMDA using privacy enhancing technologies or PETs that allow businesses to extract value from consumer datasets while ensuring that personal data is protected. The PET x Privacy Sandbox was launched in July 2023. This is Google's first partnership with a regulator in Asia-Pacific to support the industry in testing and adopting these privacy technologies.<sup>165</sup> The collaboration marks a notable advancement, considering the increasing significance of data in the AI-driven landscape. Singapore's Minister of Communications and Information has praised Indonesia and Thailand on this topic for their progressive approach in enacting legislation that facilitates data transfers across borders.<sup>166</sup>

Singapore has identified six primary risks associated with Gen AI: hallucinations, accelerated disinformation, copyright challenges, embedded biases, impersonation, and malicious code generation.

To address these risks, the IMDA and Aicadium, an AI tech company, have jointly proposed a discussion paper for the "trusted and responsible" adoption of Gen AI. The discussion paper emphasizes disclosure standards, global interoperability, and investment in governance to ensure long-term outcomes.<sup>167</sup> In a more recent effort and acknowledging that Gen AI has reinforced some AI risks and introduced new ones, Singapore announced its proposed Model AI Governance Framework for Gen AI.<sup>168</sup>

With regards to labor, an initiative of SkillsFuture, the TechSkills Accelerator aims to build and develop a skilled information and communications technology workforce. The accelerator is driven by the IMDA in collaboration with industry, SkillsFuture Singapore, Workforce Singapore, and the National Trades Union Congress. The Media Development Authority takes an integrated approach to ICT skills acquisition and practitioner training, enabling professionals to acquire the relevant in-demand skills.<sup>169</sup>

Other initiatives include AI for Industry and AI for Everyone. They were both developed in partnership between the IMDA and AI Singapore under the TechSkills Accelerator initiative. The AI for Industry initiative, funded by the Critical Infocomm Technology Resource Programme Plus under IMDA, is ideal for Singapore professionals on gaining AI skills.<sup>170</sup> Also, according to LinkedIn's latest future of work report,<sup>171</sup> Singapore has the highest diffusion rate of AI skills—where the share of members adding such skills to their profiles grew 20 times compared to January 2016. The SMEs Go Digital program, including the Advanced Digital Solutions initiative, supports small and mid-sized enterprises in adopting advanced technologies like AI, robotics, blockchains, and IoT to address enterprise-level challenges.<sup>172</sup>

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<sup>165</sup> Minister Josephine Teo. (2023, July 18). Speech at the Opening of the Personal Data Protection Week

<sup>166</sup> Ibid.

<sup>167</sup> AIVerify Foundation. (n.d.). Generative AI: Implications for Trust. [https://aiverifyfoundation.sg/downloads/Discussion\\_Paper.pdf](https://aiverifyfoundation.sg/downloads/Discussion_Paper.pdf).

<sup>169</sup> Infocomm Media Development Authority. TechSkills Accelerator (TESA). <https://www.imda.gov.sg/how-we-can-help/techskills-accelerator-tesa>.

<sup>170</sup> OpenGov Asia. (n.d.). A look at AI in Singapore's workforce. <https://opengovasia.com/a-look-at-ai-in-singapores-workforce/>.

<sup>171</sup> LinkedIn Economic Graph. (2023). Future of work report. <https://economicgraph.linkedin.com/content/dam/me/economicgraph/en-us/PDF/future-of-work-report-ai-august-2023.pdf>.

<sup>172</sup> Infocomm Media Development Authority. (n.d.). Artificial Intelligence in Singapore. <https://www.imda.gov.sg/about-imda/emerging-technologies-and-research/artificial-intelligence>.

Looking at investment and infrastructure, In May 2017, the city state launched AI Singapore, a national program that seeks to catalyze, synergize and boost Singapore’s AI capabilities.<sup>173</sup> Today, the program drives AI development through initiatives advancing research, local talent cultivation, and industry adoption.<sup>174</sup> Singapore is aiming for AI to drive an 18 percent growth in GDP by 2030, marking the largest expected percentage contribution among Southeast Asian countries.<sup>175</sup> Singapore stands 12th globally for the highest number of AI patent applications.<sup>176</sup>

Singapore believes that international cooperation on AI governance issues is essential. In March 2022, Singapore and the United States signed an memorandum of understanding to expand their economic cooperation to include AI governance and cybersecurity involving other ASEAN markets.<sup>177</sup> In June 2023, Run: ai, a leader in AI workload orchestration, partnered with AI Singapore, a national R&D program. Their collaboration aims to provide scalable infrastructure solutions for AI projects, supporting AI adoption in industries.<sup>178</sup>

In August 2023, the Personal Data Protection Commission ended a public consultation for the proposed Advisory Guidelines on the Use of Personal Data in AI Recommendation and Decision Systems.<sup>179</sup> The proposed guidelines are not legally binding but provide guidance on how the commission interprets provisions of the Personal Data Protection Act throughout the AI life cycle to encourage organizations to comply with transparency and explainability standards and enable customers to know when and how AI is being used to process personal data.

During the October 2023 U.S.–Singapore Critical and Emerging Technology Dialogue, the two countries announced they will strengthen cooperation in AI to foster a more conducive environment for AI deployment and innovation.<sup>180</sup> They will seek to expand bilateral research collaboration and establish a bilateral AI Governance Group to promote AI safety and innovation. The next dialogue will be held in Singapore in 2024.

Singapore unveiled the first of its kind Gen AI Evaluation Sandbox on October 30, 2023 to bring together global ecosystem players through concrete use cases to enable the evaluation of trusted AI products.<sup>181</sup>

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<sup>173</sup> National Research Foundation. (n.d.). AI Singapore. Prime Minister’s Office of Singapore. <https://www.nrf.gov.sg/programmes>.

<sup>174</sup> AI Singapore. (n.d.). Home. <https://aisingapore.org/>

<sup>175</sup> Chua, S. G., & Dobberstein, N. (2020, October 7). Racing toward the future: artificial intelligence in Southeast Asia. Kearney <https://www.kenney.com/digital/article/?a/racing-toward-the-future-artificial-intelligence-in-southeast-asia>.

<sup>176</sup> Center for Security and Emerging Technology. (n.d.). Patent Metrics for Singapore, Using All AI Fields. <https://cat.eto.tech/?countries=Singapore&countryGroups=&expanded=Summary+metrics&dataset=Pate>.

<sup>177</sup> ZDNet. (n.d.). Singapore, US expand bilateral economic cooperation to include AI governance. <https://www.zdnet.com/article/singapore-us-expand-bilateral-economic-cooperation-to-include-ai-governance/>.

<sup>178</sup> PR Newswire. (n.d.). Run:ai and AI Singapore partner to propel AI adoption across the ecosystem. <https://www.prnewswire.com/il/news-releases/runai-and-ai-singapore-partner-to-propel-ai-adoption-across-the-ecosystem-301848534.html>.

<sup>179</sup> Personal Data Protection Commission Singapore. (n.d.). Public consultation for the proposed Advisory Guidelines on Use of Personal Data in AI Recommendation and Decision Systems. <https://www.pdpc.gov.sg/guidelines-and-consultation/2023/07/public-consultation-for-the-proposed-advisory-guidelines-on-use-of-personal-data-in-ai-recommendation-and-decision-systems>.

<sup>180</sup> The White House. (2023, October 12). U.S.-Singapore Critical and Emerging Technology Dialogue: Joint Vision Statement. <https://www.whitehouse.gov/briefing-room/statements-releases/2023/10/12/u-s-singapore-critical-and-emerging-technology-dialogue-joint-vision-statement>.

<sup>181</sup> Infocomm Media Development Authority. (2023, October 31). First of its kind Generative AI Evaluation Sandbox for Trusted AI by AI Verify Foundation and IMDA. Singapore Government Agency Website. <https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/generative-ai-evaluation-sandbox>.

## Thailand

The Thai government has recognized the importance of Trustworthy AI and shown a commitment to increasing AI adoption rates and fostering Responsible AI practices. Thailand's first AI ethics guidelines were released in 2019 by the Digital Economy and Society Ministry, with input from Mahidol University and the private sector, including Microsoft. The guidelines provided that AI technologies must support Thailand's sustainable development and adhere to principles of fairness and accountability.<sup>182</sup>

In 2022, the Thai cabinet approved the Thailand National AI Strategy and Action Plan, 2022-2027, which aims to promote Thailand's AI ecosystem and enhance the nation's economy and quality of life.<sup>183</sup> The National AI Committee has been appointed by the Prime Minister, with National Science and Technology Development Agency (NSTDA) and the Office of the National Digital Economy and Society Commission (ONDE) serving as secretaries to drive the plan forward. The master plan indicates that Thailand seeks to have enforceable laws and regulations concerning AI by the end of 2027, in addition to stronger digital infrastructure and AI innovation. 2023 marked the beginning of Phase 2 of the master plan, which aims to expand research and applications of AI across 10 target sectors.

Collaboration between private and public agencies is expected to drive AI adoption. One example is the Thailand Artificial Intelligence Research Institute, a venture between Visai AI Co Ltd and the Digital Economy Promotion Agency that was announced in April 2022.<sup>184</sup>

In August 2023, the National Science and Technology Development Agency (NSTDA) held a press conference to announce the progress of Thailand National AI Strategy and Action Plan one year into its implementation.<sup>185</sup> The press conference highlighted achievements including the release of Thailand's first AI ethics handbook and a self-learning course on AI ethics, as well as the launch of the AI Governance Clinic, all aimed at promoting the responsible use of AI.<sup>186</sup> Further, overall more than 83,000 individuals have received AI training, and 1.29 billion THB (US\$35.9 million) in funding has been disbursed to finance AI R&D projects. An investment of 639 million THB has been made toward AI startups and Thailand's ranking in AI Government Readiness Index moved up from 59th place to 31st place.<sup>187</sup>

A more comprehensive proposal for regulations followed with the release of the draft Royal Decree on Artificial Intelligence System Service Business for public comment in October 2022.<sup>188</sup> The decree appears to have taken inspiration from other proposed frameworks, such as the EU's Draft AI Act, due to its risk-based approach to regulating AI systems. AI systems deemed as higher risk will be subject to greater regulatory scrutiny, with certain systems being prohibitively risky.<sup>189</sup> However, the draft decree is still pending for further presentation.

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<sup>182</sup> Ministry of Digital Economy and Society. (2019). Digital Thailand: AI Ethics Guideline. <https://ai.in.th/en/about-ai-thailand/>.

<sup>183</sup> Thai Cabinet. (2022). (Draft) Thailand National AI Strategy and Action Plan (2022 – 2027). <https://ai.in.th/wp-content/uploads/2022/12/2022-NAIS-Presentation-eng.pdf>.

<sup>184</sup> Nation Thailand. (2022, April 9). New Research Centre Aims to Offer Readymade AI Solutions to All Sectors. <https://www.nationthailand.com/pr-news/business/40014357>.

<sup>185</sup> National Science and Technology Development Agency. (2023). NSTDA unveils one-year progress report on the implementation of National AI Strategy and Action Plan <https://www.nstda.or.th/en/news/news-years-2023/nstda-unveils-one-year-progress-report-on-the-implementation-of-national-ai-strategy-and-action-plan.html>.

<sup>186</sup> Ibid.

<sup>187</sup> Ibid.

<sup>188</sup> Royal Decree. (1962). Issued under the Revenue Code Regarding Revenue Tax Exemption (No. 18), B.E. 2505, [https://www.rd.go.th/fileadmin/user\\_upload/kormor/eng/RD\\_18.pdf](https://www.rd.go.th/fileadmin/user_upload/kormor/eng/RD_18.pdf).

<sup>189</sup> Tilleke & Gibbins. (2023, May 24). Key Concerns and Provisions in Thailand's Draft AI Regulation. <https://www.tilleke.com/insights/key-concerns-and-provisions-in-thailands-draft-ai-regulation/>.

Thailand's Digital Government Development Agency, with the mandate of driving government digital transformation, has implemented several AI initiatives, including courses on using AI and furthering knowledge of the ethics of AI in government services.<sup>190</sup>

Under the Digital Economy and Society Development Fund, the Artificial Intelligence Center of Thammasat University was established a collaboration between the digital economy ministry and Thammasat University to advance AI research and development and serve as a knowledge source on AI for the public.<sup>191</sup>

The third strategy under the National AI Strategy and Action Plan focuses on AI talent development through improving AI education and scholarships as well as increased cooperation with foreign researchers and experts. In December 2022, the National AI Committee met for its augural meeting,<sup>192</sup> leading to the establishment of a central platform to provide AI services and approval of a Manpower Development Plan to educate at least 13,500 people annually in everything from basic AI skills to AI development.

To further facilitate and enable AI use and development, the Thai government has engaged in public-private partnerships to help it achieve its AI ambitions. For instance, Thailand is participating in the AI for Social Good Project—Strengthening AI Capabilities and Governing Frameworks in Asia and the Pacific, where it is collaborating with the Association of Pacific Rim Universities, the United Nations Economic and Social Commission for Asia and the Pacific, and Google researchers. The project aims to explore opportunities and challenges for maximizing AI benefits for society, with Thailand identifying poverty alleviation and medicine and healthcare as priority areas.<sup>193</sup>

Thailand has made efforts to engage bilaterally with other states in developing its digital economy. For example, in June 2021, it began negotiations with Singapore on a digital trade agreement. The agreement notably covers issues like cooperation in developing ethical guidelines for AI, among other Industry 4.0 technologies, and promoting the digital trade participation of small and mid-sized enterprises.<sup>194</sup>

In August 2023, the AI Governance Clinic, established by the Electronic Transactions Development Agency entered a collaborative partnership with Mahidol University.<sup>195</sup> The governance clinic has now welcomed more than 33 partners spanning three crucial sectors: healthcare, finance, and government. The assembly will serve as a forum for implementing AI governance guidelines in Thailand.<sup>196</sup>

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<sup>190</sup> Thailand Digital Government Academy (n.d.) Modern Technology and AI for Government Service, [https://tdga.dga.or.th/index.php?option=com\\_eventbooking&view=event&id=218&catid=34&Itemid=156&lang=th](https://tdga.dga.or.th/index.php?option=com_eventbooking&view=event&id=218&catid=34&Itemid=156&lang=th).

<sup>191</sup> OpenGov Asia. (2022, September 29). Thailand to establish AI centre. <https://opengovasia.com/thailand-to-establish-ai-centre/>.

<sup>192</sup> National Science and Technology Development Agency. (2022, December 13). Prime Minister chairs the first meeting of National AI Committee <https://www.nstda.or.th/en/news/news-years-2022/prime-minister-chairs-the-first-meeting-of-national-ai-committee.html>.

<sup>193</sup> Association of Pacific Rim Universities (2022) APRU on Bloomberg: The next stage: APRU-Google-UN ESCAP AI for Social Good Project now working directly with government agencies, <https://apru.org/news/the-next-stage-apru-google-un-escap-ai-for-social-good-project-now-working-directly-with-government-agencies/>.

<sup>194</sup> Association of Pacific Rim Universities (2022) APRU on Bloomberg: The next stage: APRU-Google-UN ESCAP AI for Social Good Project now working directly with government agencies, <https://apru.org/news/the-next-stage-apru-google-un-escap-ai-for-social-good-project-now-working-directly-with-government-agencies/>.

<sup>195</sup> OpenGov Asia. (2023, September 5). Thailand's AI governance transformation. <https://opengovasia.com/thailands-ai-governance-transformation/>.

<sup>196</sup> Ibid.

The AI Governance Clinic has also established a framework for AI Governance Guidelines for Executives.<sup>197</sup> The guidelines provide a framework tailored to the perspective of corporate executives and offers best practices from practical experiences, both domestic and international. The guidelines are aligned with international standards.<sup>198</sup>

In September 2023, Huawei Technologies reached an agreement with Thailand to establish a center focused on the development of Thai workers in AI and cloud computing. The center aims to train 50,000 skilled personnel over five years.<sup>199</sup> In December 2023, Huawei and the digital economy ministry signed a memorandum of understanding supporting AI development with the goal of making Thailand a regional AI hub.<sup>200</sup>

### Timor-Leste

Timor Digital 2032 is a 10-year strategic plan to develop digital technologies and ICTs, with emphasis on their application in critical areas that have the most significant impact on human and economic development.

ICTs play an important role in Timor-Leste's social, political, and economic development. Since independence, the country has made notable progress in expanding mobile phone and mobile broadband coverage.

In an effort to reduce multidimensional poverty in the country and transition Timor-Leste from a low-income to an upper middle-income country with a healthy, well-educated, and safe population by 2030, the National Strategic Development Plan was introduced in 2010. The plan provides a vision for Timor-Leste's long-term development from 2011 to 2030. It is an integrated package of policies framed around three pillars: social capital, infrastructure development, and economic development.<sup>201</sup>

Since 2002, Timor-Leste has made significant strides in developing its telecommunications infrastructure. Prior to independence, the country had limited access to modern communication systems. Telecomunicacoes de Timor-Leste (Telemor), a state-owned company, was established as the primary telecommunications service provider.

Telemor initially focused on basic telephony services, including fixed-line and mobile connections. However, mobile telephony played a vital role in expanding communication services due to its flexibility and cost-effectiveness, with multiple operators entering the market. Efforts were made to improve infrastructure, including the development of submarine fiber-optic cables to improve international connectivity and internet access within the country.

In recent years, the government has worked toward liberalizing the telecommunications sector and promoting competition. Prior to its liberalization, Timor-Leste's telecom sector was monopolized by Portugal Telecom. The country's liberalization policies have involved issuing licenses to additional operators, encouraging private sector participation, and diversifying service offerings. Timor-Leste has also focused on improving internet connectivity and digital initiatives. Various projects have been

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<sup>197</sup> Ibid.

<sup>198</sup> Ibid.

<sup>199</sup> Huawei. (2023, Sept. 22). Huawei partners with Thailand to establish AI and Cloud Development Center. <https://w.media.huawei-partners-with-thailand-to-establish-ai-and-cloud-development-center/>.

<sup>200</sup> Huawei Cloud. (2023, Dec. 18). Huawei and MDES Signed MoU. <https://www.huaweicloud.com/intl/en-us/news/20231218173915847.html>.

<sup>201</sup> Timor Leste. (n.d.). National Strategic Development Plan. Asian Development Bank. <https://www.adb.org/sites/default/files/linked-documents/cobp-tim-2014-2016-sd-02.pdf>.

launched to support e-government services, digital literacy, and ICT training programs to enhance digital inclusion and drive economic development.

A major challenge for Timor-Leste is internet connectivity—namely, its reliability and affordability. The International Telecommunication Union reports that Timor-Leste faces some of the highest internet costs in the Asia-Pacific region. Limited competition and the geographical challenges of providing connectivity contribute to the high costs of internet services. While 3G coverage in the country can reach 92 percent of the population, and more than 80 percent of its population owns a mobile phone, the lack of affordable options means that the country’s internet penetration rate is only about 40 percent.

This obstacle hinders the opportunity for valuable data generation that can then be used by AI models for various commercial and governmental purposes. For those using the internet, the costs represent a higher percentage of income than in neighboring countries. This suggests that internet affordability might also be a factor of income levels in the country. Improving income levels and internet affordability will be key to leveraging developments in AI for the country.

### ***Viet Nam***

Viet Nam recognizes AI as the background technology of the fourth industrial revolution and is working to allocate resources for its development and implementation.<sup>202</sup> Its digital economy is rapidly growing and diversifying, hitting US\$23 billion in Gross merchandise value in 2022 and is expected to reach US\$50 billion by 2025—making it the fastest-growing market in the region.<sup>203</sup>

As part of the 2019 National AI Strategy, the government has set ambitious targets such as bringing Viet Nam to a leadership position among the other four Southeast Asian countries in the research, development, and application of AI. Collaboration between government, industry, and academia has sought to increase AI adoption and development domestically. For example, the Viet Nam AI Grand Challenge, launched in 2019, connects policymakers, tech companies and engineers with the aim of developing AI solutions across local industries.<sup>204</sup>

As part of its national strategy to increase the domestic application of AI, research centers are being opened across the nation. The International Research Centre for Artificial Intelligence was established in 2021 at the Hanoi University of Science and Technology with the aim of promoting domestic and international collaboration regarding the creation of new AI technologies.<sup>205</sup>

In 2021, the government launched the landmark National Strategy on the Research, Development, and Application of AI Until the Year 2030. The strategy aims for Viet Nam to be among the top five countries in ASEAN and top 60 in the world for the research, development, and application of AI by 2025, and then the top four in ASEAN and top 50 globally by 2030.<sup>206</sup>

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<sup>202</sup> OECD, National Strategy On R&D and Application of Artificial Intelligence (2021), [https://wp.oecd.ai/app/uploads/2021/12/Vietnam\\_National\\_Strategy\\_on\\_RD\\_and\\_Application\\_of\\_AI\\_2021-2030.pdf](https://wp.oecd.ai/app/uploads/2021/12/Vietnam_National_Strategy_on_RD_and_Application_of_AI_2021-2030.pdf).

<sup>203</sup> Google, e-Conomy 2022 SEA Report: Vietnam, [https://services.google.com/fh/files/misc/vietnam\\_e\\_economy\\_sea\\_2022\\_report.pdf](https://services.google.com/fh/files/misc/vietnam_e_economy_sea_2022_report.pdf).

<sup>204</sup> Kambria. (2019, August 16). Vietnam AI Grand Challenge Recap , <https://blog.kambria.io/vietnam-ai-grand-challenge-recap/>.

<sup>205</sup> Anh Kiet. (2021, April 3). Vietnam inaugurates first AI research center in Hanoi. Hanoi Times. <https://hanoitimes.vn/vietnam-inaugurates-first-ai-research-center-in-hanoi-316904.html>.

<sup>206</sup> Socialist Republic of Vietnam Government News (2021) National Strategy On R&D and Application of Artificial Intelligence, <https://en.baochinhphu.vn/national-strategy-on-rd-and-application-of-artificial-intelligence-11140663.htm>.



In 2022, the Ministry of Information and Communication released the draft National Standard on Artificial Intelligence and Big Data for public comment.<sup>207</sup> It contained two documents concerning standards to govern the quality and robustness of AI systems across their lifespan. Importantly, the standards propose a risk-based approach to regulating AI systems, which appears to be grounded in principles of safety and mitigating AI biases.

In June 2023, it was reported that the deputy minister of science and technology said the ministry is working with Australian experts to develop “rules to hold AI developers and users responsible for their actions.”<sup>208</sup>

In April 2023, the Vietnamese government promulgated the Personal Data Protection Decree, providing a comprehensive and uniform approach to personal data protection in Viet Nam.<sup>209</sup> The decree came into force this year (2024).<sup>210</sup> It resembles data protection rules on other countries that concerning the processing of personal data. However, unlike the European Union’s General Data Protection Regulation, the Vietnamese decree does not recognize the principle of “legitimate interests” as a justification for the processing of personal data.<sup>211</sup>

In June 2023, FPT, Viet Nam's largest IT service provider, and Mila, the Quebec Artificial Intelligence Institute, announced the renewal of their three-year strategic partnership agreement. This ongoing commitment will see FPT and Mila collaborating on research projects related to large language models and natural language processing while advocating for Responsible AI. Both organizations will contribute to the development of guidelines, best practices, and ethical standards aimed at promoting transparency, fairness, accountability, and privacy in AI applications.<sup>212</sup>

In August 2021, the Viet Nam–Australia AI cooperation network was launched. Initiated by Viet Nam’s Ministry of Science and Technology, the network aims to create a platform for knowledge sharing and opportunities between individuals and organizations across both countries to develop the AI industry in Viet Nam.<sup>213</sup>

In Aug 2023, Ericsson and the Royal Melbourne Institute of Technology University (RMIT) signed an agreement to launch the RMIT & Ericsson AI Lab at RMIT's campus in Hanoi. The joint AI Lab initiative is an extension of the existing 5G education collaboration between RMIT and Ericsson that helps educate

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<sup>207</sup> Data Guidance. (2023, May 3). Vietnam: MIC requests comments on draft AI and big data standard.

<https://www.dataguidance.com/news/vietnam-mic-requests-comments-draft-ai-and-big-data>.

<sup>208</sup> Vietnamnet Global (2023) Local firms demand incentives to develop tech industry, <https://vietnamnet.vn/en/local-firms-demand-incentives-to-develop-tech-industry-2155362.html>.

<sup>209</sup> Future of Privacy Forum (2023) Vietnam’s Personal Data Protection Decree: Overview, Key Takeaways, And Context, <https://fpf.org/blog/vietnams-personal-data-protection-decree-overview-key-takeaways-and-context/>.

<sup>210</sup> Tomonoby Murata, Tuan Anh Nguyen, Vietnam: The Government has just issued the Personal Data Protection Decree – the hottest legislation in Vietnam’s data privacy practice (2023), [https://www.nishimura.com/sites/default/files/newsletters/file/asia\\_data\\_protection\\_230421\\_en.pdf](https://www.nishimura.com/sites/default/files/newsletters/file/asia_data_protection_230421_en.pdf), citing Decree No. 13/2023/ND-CP (the ‘Decree’).

<sup>211</sup> Anh Hoai Nguyen et al, A Closer Look at Vietnam’s First-Ever Personal Data Protection Decree, Tilleke & Gibbins, 21 April 2023, <https://www.tilleke.com/insights/a-closer-look-at-vietnams-first-ever-personal-data-protection-decree/>.

<sup>212</sup> Economic Times. (n.d.). Vietnam’s FPT and Mila renew strategic partnership, advancing responsible AI.

<https://ciosea.economicstimes.indiatimes.com/news/corporate/vietnams-fpt-and-mila-renew-strategic-partnership-advancing-responsible-ai/100753292>.

<sup>213</sup> Hanoi Times (2021) Vietnam-Australia artificial intelligence cooperation network launched <https://hanoitimes.vn/vietnam-australia-artificial-intelligence-cooperation-network-launched-318558.html>.

Vietnamese students on AI, machine learning, blockchains, cloud computing, and augmented reality/virtual reality.<sup>214</sup>

The Science and Technology Ministry has also partnered with the Australian through the Aus4Innovation program,<sup>215</sup> which has enhanced partnerships between Vietnamese and Australian institutions, sponsored capacity-building activities, and provided technical assistance to the ministry's AI research. Viet Nam's high-tech application projects in e-commerce, fintech, and AI have secured nearly US\$1 million in funding through the program.

The ministry has annually sponsored the Viet Nam National AI Day since 2018, as well as the Viet Nam AI Grand Challenge. The ministry is also collaborating with the Ministry of Planning and Investment to support Viet Nam's AI communities in digital technology R&D. The ministry says has set favorable conditions to attract domestic and international investment in AI. These include tax incentives and preferential credit terms for science and technology firms.

The government is increasingly exercising governance over social media platforms and its risks, such as offensive material and disinformation.<sup>216</sup> The Ministry of Information and Communications stated that, in the first half of 2023, Facebook and TikTok had removed 2,549 and 415 posts, respectively, pursuant to government requests.<sup>217</sup>

In September 2023, the United States and Viet Nam closed commercial agreements and forged partnerships of substantial value amounting to billions of dollars with the aim of advancing AI, semiconductor technology, and cloud computing.<sup>218</sup>

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<sup>214</sup> Hanoi Times. (n.d.). Ericsson and RMIT University to establish an AI Lab in Vietnam. <https://hanoitimes.vn/ericsson-and-rmit-university-to-establish-ai-lab-in-vietnam-324519.html>.

<sup>215</sup> Home - AUS4Innovation. <https://research.csiro.au/aus4innovation/>.

<sup>216</sup> Phuong Nguyen, "Vietnam tells foreign social media to use AI to detect 'toxic' content," Reuters, 30 June 2023, <https://www.reuters.com/world/asia-pacific/vietnam-tells-foreign-social-media-use-ai-detect-toxic-content-2023-06-30>.

<sup>217</sup> Ibid.

<sup>218</sup> Cointelegraph. (n.d.). US and Vietnam make deals on AI chips and tech worth billions. <https://cointelegraph.com/news/us-vietnam-make-deals-on-ai-chips-tech>

## Annex 2: Overview of Leading Global Governance Empires<sup>219</sup>

Country	Overarching Framework on Gen AI	Developments	Description	Additional
United States	No comprehensive framework has been adopted yet; there is now a patchwork of sector-specific regulations (e.g., healthcare, finance) and guidelines (e.g., NIST's AI Risk Management Framework).	Voluntary Commitments	These include a commitment from leading AI companies to develop and deploy advanced AI systems to help address society's greatest challenges.	The Special Competitive Studies Project in September 2023 released <i>The Governance of Generative AI Memo</i> that outlines concrete actions the United States can take now and in the longer term to address the rising domestic and international challenges of generative AI, especially actions to harness its benefits and mitigate the worst of its harm. A recent report by Microsoft, <i>Gauging the Impact of Generative AI on Government</i> , finds that three-fourths of agency leaders polled in the United States said their agencies have already started establishing teams to assess the impact of Gen AI and are planning to implement initial applications in the coming months.
		NIST Generative AI Public Working Group	Developing a profile of the NIST AI Risk Management Framework for generative AI systems	
		President's Council of Advisers on Science and Technology Working Group on Generative AI	Developing recommendations for the President on how to best ensure that these technologies are developed and deployed as equitably, responsibly, and safely as possible.	

<sup>219</sup> See Bradford, Anu, *Digital Empires: The Global Battle to Regulate Technology*. (New York, 2023). Oxford Academic. See <https://doi.org/10.1093/oso/9780197649268.001.0001>.

Country	Overarching Framework on Gen AI	Developments	Description	Additional
<p><b>European Union</b></p>	<p>Has proposed regulation (the EU AI Act) on artificial intelligence aimed at ensuring the ethical use of AI while promoting innovation and competitiveness.</p>	<p>Testing and Experimentation Facilities (TEF)</p>	<p>In cooperation with EU member states, the European Commission is co-funding the TEFs in order to support AI developers in bringing trustworthy AI to the market in a more efficient way and to facilitate its uptake in Europe.</p>	<p>As of February 2024, the pre-final text of the EU AI Act was endorsed by all 27 EU Member States. In April 2023, Italy banned the use of Open AI for a month over privacy concerns.</p>
		<p>European Digital Infrastructure Consortium ( EDIC) for Natural Language Processing</p>	<p>This is a European initiative to develop an international consortium for Natural Language Processing (now being extended toward multimodal generative AI). EDIC is a legal framework aiding EU member states to set up and implement multi-country projects.</p>	
<p><b>China</b></p>	<p>A National New Generation Artificial Intelligence Development Plan (2019) sets a focus on AI technologies, data, talent, and ethics.</p>	<p>Interim Administrative Measures for Generative Artificial Intelligence Services</p>	<p>The Generative AI Measures encompass a wide array of subjects pertaining to the development and provision of Gen AI services. The regulations are set to impact Chinese technological exports and global AI research networks.</p>	

Country	Overarching Framework on Gen AI	Developments	Description	Additional
	<p>The Generative AI Measures, released by the Cyberspace Administration of China effective from August 15, 2023, are poised to significantly affect the AI sector in China, especially in conjunction with the potential enactment of the 2023 Artificial Intelligence Law.</p>	<p>Security requirements for firms offering services powered by Gen AI by the National Information Security Standardization Committee</p>	<p>The committee suggests evaluating the security of training data for public-facing AI models, and blacklisting content exceeding 5% of illegal or harmful information, including specific prohibited categories, while also prohibiting the use of censored Chinese internet data for model training.</p>	

## Annex 3: Overview of Expert Stakeholder Engagement

Name	Organization	Sector/Country
Lori Baker	Vice President, Data Protection and Regulatory Compliance, Dubai International Financial Centre	Government
Rodrigo Balbontin	Associate Director, The Asia Foundation	Policy Research
Irakli Beridze	Head of the Centre for Artificial Intelligence and Robotics, United Nations Interregional Crime and Justice Research Institute	Multilateral Organization
Wendy Bonython	AI-API Advisory Board; Associate Professor, Faculty of Law, Bond University, Queensland, Australia	Advisory Research
Andrew Collinge	Adviser, Dubai Digital Authority	Government
Marta Pérez Cusó	Economic Affairs Officer, United Nations Economic and Social Commission for Asia ARTNET on STI	Multilateral Organization
Mario Domingos	Global Chief Technology Officer, UBX Philippines Corporation	AI Industry
Byoungchan (Ben) Eum	AI-API Advisory Board Head of APAC, Armilla Assurance	AI Research   Advisory   Industry
Antonio Feraco	AI-API Advisory Board Senior Adviser Industrial Strategy, Abu Dhabi Department of Economic Development	AI Research   Advisory
Jonathan Gonzalez	Senior Policy Manager Access Partnership	Policy Consultancy
Luis Gonzalez	AI-API Advisory Board Chief Data & AI Officer, Aboitiz	Advisory AI   Industry
David R. Hardoon	AI-API Advisory Board; Senior Adviser for Data and Artificial Intelligence at UnionBank Philippines Chair of Data Committee at Aboitiz Group Acting Managing Director for Aboitiz Data Innovation	Advisory Industry
Yaron Hazan	AI-API Advisory Board VP Regulatory Affairs, ThetaRay	Advisory Industry

Name	Organization	Sector/Country
Seongwook Heo	AIAPI Research Affiliate; Associate Professor, Seoul National University Law School	Advisory Academia
Habuka Hiroki	Research Professor, Graduate School of Law, Kyoto University	Academia Research
Ozzeir Khan	Director for Digital Innovation and Architecture Division, Asia Development Bank	Multilateral Organization
Peter Leong	AIAPI Advisory Board AI Specialist and Senior Lecturer, School of Computing, Singapore Polytechnic	Advisory Researcher
Jian Gang Ngui	AI Singapore	AI Research
Elina Noor	Senior Fellow, Carnegie Endowment for International Peace	Academia Research
Philippa Penfold	AIAPI Advisory Board Research Scholar, University of Western Australia	AI Research Advisory
May Leng Kwok	AIAPI Advisory Board Regional Head, CIPD - APAC	Advisory Industry
Alejandro Reyes	Scholar-in-residence, Asia Society Hong Kong Center	NGO/CSO
Martin Saerbeck	Chief Technology Officer, TUV SUD Singapore	AI Industry
Christina Schoenleber	Chief Strategy Officer, APRU International University Centre	Multilateral Organization
Leesa Soulodre	AIAPI Advisory Board General Partner, R3I CAPITAL	AI Research Advisory Industry
Yosephine Susanto	AI Singapore	AI Research
Araz Taeihagh	Assistant Professor of Public Policy, National University of Singapore	Academia
William Tjhi	Head, Applied Research for Foundation Models, AI Singapore	AI Research

Name	Organization	Sector/Country
Jasper Tromp	Assistant Professor, National University of Singapore	Academia
Alex Toh	AI-API Advisory Board	Advisory
Petar Tsankov	CEO, Latticeflow	AI Industry
William Valtos	Senior Adviser to Chairman, Republic of the Philippines Senate Committee on Economic Affairs	Government
Vincent Vuillard	AI-API Advisory Board Co-Founder, FutureWork Studio	AI Research/Advisory
Toby Walsh	Laureate Fellow; Scientia Professor of Artificial Intelligence, University of New South Wales	Academia
Marianne Winslett	Professor Emerita of Computer Science, University of Illinois, Urbana-Champaign, specializing in databases. Known for her “possible models” approach to belief revision	Academia
Janet Wong	AI-API Advisory Board Vice President, Sustainable Investing, J.P. Morgan Asset Management	AI Research/Advisory
James Wright	Programme Specialist, UNESCO	Multilateral Organization
<b>SCMIT/COSTI Members</b>		
Hilman Pardede	SCMIT member	Indonesia
Fifi Juniarti	SCMIT member	Indonesia
Erry Dwi Kurniawan	SCMIT member	Indonesia
Nur Anis Brin	SCMIT member	Indonesia
Anis Salwa	SCMIT member	Malaysia
Hazlina Selamat	SCMIT member	Malaysia
Franz A. de Leon	SCMIT member	Philippines
Elmer C. Peramo	SCMIT member	Philippines
Alexis Niño H. Almasan	SCMIT member	Philippines



Name	Organization	Sector/Country
Chai Wutiwivatchai	SCMIT member	Thailand
Rinnapatch Khongsuksipas	SCMIT member	Thailand
'Kalaya Udomvitid	SCMIT Member	Thailand
Nguyen Truong Thang	SCMIT Member (tbc)	Vietnam
Ngo Hai Anh	SCMIT Member (tbc)	Vietnam
<b>AIAPI Project Team</b>		
David Berend	AI technical team member	
BOPInc	Workshop facilitators	
Peter Brimble	Private Sector and Public Policy Team Member AIAPI Advisory Board	
Barbara Erskine	Communications team member AIAPI Advisory Board	
Kelly Forbes	Project team leader AIAPI Executive Director	
Jose Luna	AI junior technical team member AIAPI Research Affiliate	
Simran Singh	Research assistant AIAPI Research Assistant	