White paper

Future of Malaysia's AI governance

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Institute of Strategic & International Studies (ISIS) Malaysia

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Foreword

Earlier in the year, at the launch of AI for Rakyat, Prime Minister Dato' Seri Anwar Ibrahim captivated the audience with how he introduced the computer to the community at a time of great suspicion, with computers then being seen as gateways to societal ills.

Thus, illustrating the enabling function of the technology, he had asked the imam if there were any surah the community would like to hear. They requested Surah Al-Baqarah. With a few keystrokes, the computer played the surah. The anecdote ties characteristics of technology, which could be a source of information, with culture, knowledge and a purpose meant to serve humanity.

Yet, AI's impact would be resounding. Geoffrey Hinton, the "Godfather of AI" and 2024 Nobel Prize Winner for Physics and major contributor to ChatGPT, has a chilling view. He states that between five and 20 years from now, there's a probability humanity will confront the problem of AI trying to take over[1].

These are technical domains beyond humanity's control. As AI trains AI, the complexity of the human relationship in programming or using the machine becomes complicated. It could leave Malaysia vulnerable to job loss and inequality, and impact on its ability to mitigate risk from harms. On the other hand, if we decide to stay on the path of caution and not ride on the technology train, we risk being left behind, foregoing a slice of the digital pie. And that is not an option we should take.

Governments worldwide are grappling with balancing between maximising AI's potential for economic growth, enabling innovation and managing the consequences if it is left unchecked. AT Kearney[2] estimated that AI has the potential to contribute almost US$1 trillion (RM4.4 trillion) to Southeast Asia's GDP, with Malaysia positioned to capture US$115 billion by 2030. Generative AI alone[3] could unlock US$113.4 billion.

Microsoft and LinkedIn's 2024 Work Trend Index found that 75% of the 31,000 respondents used AI at work. Employees are using AI to unlock levels of productivity from getting ready for the next workday to focusing on important work or manage workload[4].

Yet, in October, the Human Resources Ministry announced that emerging technologies, inclusive of AI[5], could displace up to 600,000 workers from 10 key industries. In the same month, ByteDance axed hundreds of jobs in Malaysia with most being content moderators. This is on the path of increasing efficiency in TikTok's content moderation, a job with ambitions to depend largely on automated technologies[6].

There are other issues related to AI, such as its use infringing on intellectual property and exacerbating disinformation and misinformation, among others. AI's challenges are cross-sectoral and could bear different degrees of impact on the individual, organisational and ecosystem level.

The question remains yet unanswered which, therefore, warrants greater in-depth attention which would necessitate cross-border, regional and even global collaboration: how could governments navigate between the disruptive potential of these technologies and the promise they could bring?

Exacerbating these concerns is the potential for abuse of these technologies in the name of national security on account of the increasing geopolitical and geo-economic rivalries and conflicts confronting particularly the major powers. These challenges pose significant risks of fallout, which may not be geographically confined to the belligerent or warring parties but pose the threat of worldwide contagion.

These scenarios call in the need for multilateral governance, which itself has been subject to much cynicism because of the inherent problems associated with nations perpetuating self-interests first and regional good second, not to mention the profit-making motivations of big tech and their self-serving tendencies to fall behind the protective wall of market forces.

For Malaysia to progress, for instance, there must be the wherewithal to control the unwieldly machine beast so that it unlocks human potential with minimal harm. Coterminously, elaborate and extensive governance protocols should be in place to make it sufficiently fit for purpose without becoming a stumbling block on the course of technological advancement. That way, a technology Faustian bargain need not be an inevitability for all.

DATUK PROF DR MOHD FAIZ ABDULLAH
Chairman
30 October 2024

Executive summary

Technology is meant to deliver services that could unlock human and societal potential. Yet, much as cars have taken the lives of people, the current digital age has exacerbated social divisions, introduced social ails and caused great monetary losses. The world is catching up with emerging technologies, particularly artificial intelligence (AI), which has evolved faster than expected[7]. AI is becoming highly entrenched in society, from personal consumption to shaping business practices. As with any tool, there are positive and negative consequences, depending on how it is used. In the case of AI, the risks that constitute its usage are unique in that they could be complicated, especially where AI systems could be trained and layered in a manner that is unexplainable and unpredictable. Hence, the need to enhance governance to be forward looking and to include research and development (R&D) that can keep pace with the dizzying changes.

This white paper starts with the central question of "How should Malaysia govern AI?". To answer this, we first need to dissect "what is Malaysia in regard to AI", a question which does not have fixed metrics or quantifications. This requires examining Malaysia's position in AI maturity and value chain. While through the years, documents, such as the Malaysia Digital Economy Blueprint[8], 10-10 Malaysian Science, Technology, Innovation and Economy (MySTIE) Framework[9], National Science and Technology Policy 2021-2030[10], AI Roadmap 2021-2025[11] and National Industrial Master Plan (NIMP) 2030[12] outlined ambitions, these could not gauge fully where Malaysia stood in the AI value chain.

It would also require the nation to address challenging questions about technology adoption. Questions, such as, is Malaysia prepared with the resources needed to cultivate an AI industry? Does the nation have plans, procedures and oversight mechanisms to address environmental implications? Might there be a solution to talent shortages or ambivalence towards AI? Are there institutional mechanisms in place to address, research and find solutions to social harms? Could the nation navigate the difficult realm of cyber diplomacy to project Malaysia's ambitions abroad and participate in tables where such rules are made? Responding to the multi-faceted challenges requires various collaborative governance efforts. Yet, it may require a captain to steer the ship in a direction forward.

Charting the way forward, the paper draws lessons from the past. While hard laws are in vogue now, the recent spate of policies for AI governance and cultivation started in 2016. These set the foundations for an AI industry in countries like China, Japan, Canada and the UK. Building infrastructure and increasing pools of data continued with policies accruing AI knowledge through education, R&D and growing talent. These are complemented by the final ingredient to build an AI industry: data. With all materials in place, this led these countries to focus on governance in the realms of ethics, privacy and guardrails. Most nations have opted for soft laws to address nascent adoption and deployment. These approaches introduced principles for system development. Such approaches differ from nations pursuing risk-focused assessments. Yet, in terms of implementation, nations have varying approaches, with Indonesia, Australia, China, Japan and the UK opting for sectoral-focused oversight. These could be useful where government agencies already have jurisdiction.

At the time of writing, Malaysia's AI governance ecosystem consisted of unconnected players, which undermined efforts to utilise resources effectively. The Ministry of Science, Technology

and Innovation (MOSTI), Ministry of Digital, Ministry of Communications and corresponding agencies, such as MyDIGITAL, MDEC and MCMC, have introduced policies and programmes to grow the AI ecosystem. These efforts cover principles of ethics for developers, adoption and awareness as well as constructing forums on potential standards and guidelines. The existence of Malaysia's present players is considered alongside trends in AI governance. It then analyses Malaysia's history with governance in the digital sphere and aims to identify governing structures to facilitate AI ambitions, socio-economic goals and aspirations.

This paper answers the question of governance as follows:

- First, Malaysia should not pursue hard regulations in haste. At the current stage, due processes would have to be constructed for legislation, lest laws are introduced which could impact on innovation or weaken trust between user, industry and government. Strengthening existing hard laws could be possible, especially for critical issues and risks within the realm of crime and discrimination. For instance, the Road Transport Act 1987 defines responsibility and insurance policies in the case of road accidents. However, deaths from autonomous vehicles powered by technologies like AI still have many jurisdictional gaps and liability issues. While such technologies have existed in their respective sectors since the turn of the millennium, gaps in Malaysia's laws, such as the Personal Data Protection Act exempting government, might not prevent incidences regarding bias in government algorithms from occurring in Malaysia. Lastly, in misuse of deepfakes that affect the safety and security of individuals including children, laws such as Child Act 2001, Sexual Offences Against Children Act 2017, and related penal codes might be insufficient to safeguard Malaysians.

- Second, leadership is needed from cultivating the AI industry to building a harms repository and mitigating risks of AI in society. This policymaking body must have a vision for Malaysia's AI development and to operationalise this vision, the body must be endowed with the mandate to lead and coordinate. This body must be able to engage with multiple stakeholders to oversee the whole ecosystem. It must conduct stocktaking exercises, determine data-sharing requirements, conduct programmes on AI awareness, safety and ethics and embark on cross-collaboration efforts for security purposes. Additionally, as talent development will continue to be a challenge, ensuring upskilling and reskilling programmes across sectors is imperative. To galvanise efforts in a single direction, the body might want to pursue a National AI Project which could strengthen the AI industry. This could include things like producing smart-home appliances as was done by Japan or China or other projects laid out in the AI road map, such as AI Personalised Learning System to help with overcrowded classrooms and teacher shortages. The body should also consider sectoral-based governance, especially drawing from Malaysia's cybersecurity and data-protection experience. This could encourage sectoral lead approaches and shared accountability, which would make regulations more effective.

- Third, to prepare for the unintended consequences of AI, Malaysia could consider setting up its own AI safety institute. The body should conduct research into the trusted development and safe deployment of AI, while advising the government on current AI developments and providing policy insights into avoiding unintended consequences. The institute would need to have sandboxing capabilities, serving as a hub for information-sharing and manage a repository of harms. This could allow AI policies to shift from sandboxes to safeguards, which could improve Malaysia's ability to govern a thriving AI ecosystem.

- Lastly, Malaysia could also consider a centre or data governance and ethics that focuses on data innovation and management. As data will catalyse AI and fuel the digital economy, understanding data use and providing secure architectures for data sharing could cultivate digital sectors. While building a centre require resources and standardised data management practices, Malaysia could also consider exploring the introduction of a data strategy that could grow its shared data resources, link data resources in a research, development, commercialisation, innovation and enterprise (RDCIE) loop and map its data resources.

Often governance is misunderstood as relying solely on regulations. However, the workshop in June indicated that governance requires a cohesive direction from institutions and support from the ecosystem. Additionally, comprehensive consultation with all related agencies and stakeholders must be conducted should hard regulations be the intended outcome. Given the potential AI boom, it must be done in ways that do not dampen growth, innovation and ensure equity in the processes.

The paper is indebted to the workshop participants, including government agencies, academic institutions and think-tank, civil society organisation and industry leaders. The central findings of the workshop are included in the appendix for consideration. The authors are also extremely grateful to the thriving community of academics, practitioners, industry players and members of government comitted to advancing progress in this space.

Introduction

a. What is AI?

Defining AI can be a difficult task as it is a concept that evolves over time with no clear standardisation and has a moving goal post. The concept is prominently traced back to Alan Turing in the 1950s[13] when he developed the Turing machine, envisioning computational programme that could learn from experience and solve problems. The term "artificial intelligence" was first coined by John McCarthy in 1956[14] during the Dartmouth summer research project and often touted as the birth of AI.

Malaysia's Artificial Intelligence Roadmap 2021-2025[15] identifies AI as a suite of technologies that enable machines to demonstrate intelligence. Acknowledging that the definition of "intelligence" itself varies, the general intelligence refers to the "general mental ability for reasoning, problem solving, and learning[16]". This includes demonstrating perception, reasoning, learning, problem-solving, language understanding, comprehension, awareness, intuition and others. This could mean that machines may perform extremely specific tasks[17] or tackle a wide array of tasks[18] with varying degrees of automation.

Thus, AI could be classified broadly to three categories;[19] weak and narrow; strong and general; or super and superintelligent. The first refers to machine programming with rule-based decision-making whose models can be broken into discriminative, such as chatbots, Netflix's recommendation system or virtual assistants like Apple's Siri, or generative, such

as ChatGPT. The second and third apply more to rule-following decision-making[20] that could learn the rules from itself, with the second type more akin to humans in multiple intelligence domains, including emotions and spatial, and the last type aims to exceed human capabilities altogether. Currently, most of the commercialised technologies in the market still fall under the first category, with a heightened concern about the risks that the generative model poses.

b. Defining AI for governance

In governance, setting the parameters for governance is crucial for resource allocation and efficiency. The EU AI Act[21], for instance, states that the regulation should identify characteristics of AI which differ from simpler traditional software systems or systems based on the rules defined by natural persons to execute automatically operations. The act also defines AI systems as those able to infer, whether the inference would be introduced as outputs, such as predictions, content, recommendations or decisions. The inference could influence physical or virtual environments or develop AI systems or algorithms in the form of inputs or data.

The UK's legal definition of artificial intelligence is found in the National Security and Investment Act[22], which states AI as technology enabling the programming or training of a device or software. This software could fit several purposes, inclusive of perceiving environments using data, interpreting data using automated processing and making recommendations. Like the EU's AI Act, the UK's definition also highlighted "cognitive abilities", such as reasoning, problem-solving abstract thinking, or decision-making as characteristics of the regulated AI.

Japan's definition of AI system[23] is found in the AI Operator Guidelines, serving a broad definition that covers software capable of autonomous operation and learning, such as machines, robots and cloud systems. Japan's definition, however, provides additional principles and obligations for "advanced AI systems", which include generative AI.

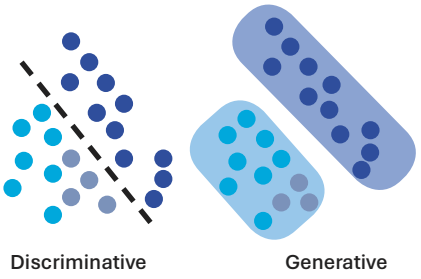
These definitions reflect those set by the Organisation for Economic and Cooperation Development (OECD)[24] in 2023 as foundation for AI governance and regulation. OECD articulates "an AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment." While this definition was not fully adopted in legal definitions, it was a source of reference for member states and beyond, including the EU, Canada and the UK as well as the private sector.

Analysing from these three definitions, it can be deduced that artificial intelligence covers a broad range of systems and applications, inclusive of automated systems in factories and those in robotics. It is not necessarily anchored in a device or a specific technology. However, differentiating it from optical character recognition programmes of the past is the emphasis on inference, impact on virtual and physical domains as well as the ability for AI to train other systems. To maximise resources, a threshold where governance, regulations and legal mechanisms apply could be useful. Thus, from examples above, the point of governance begins at AI capable of inferring from data, with impact on virtual and physical domains and is capable of training other systems. This definition could apply to chatbots capable of deducing personal identifiable information from assisting customers or even AI systems managing

processes in critical national information infrastructure. With a definition in place, developers or adopters of such AI may need to assess safety, harms and privacy risks posed by these types of AI systems on virtual and physical realities.

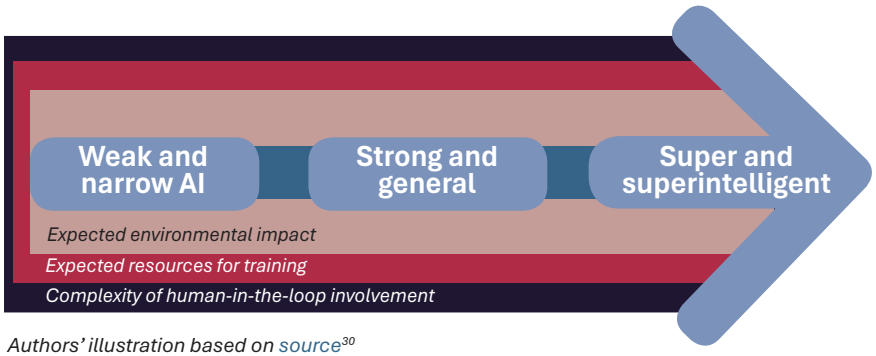
c. Discriminative, generative models and Malaysia's future

While this paper is not intended to be technical, there are aspects of training the AI model which could impact on plans for Malaysia's AI future, especially should it wish to be a producer of AI. These are anchored in the known models for training AI, which are the discriminative and generative models.



Source: Turing[25]

As illustrated above, discriminative and generative models can be differentiated by their methods of solving a problem and learning. Discriminative models separate data points into different classes and use direct probability for estimates to achieve conclusions. On the other hand, generative models utilise unsupervised learning techniques that predict without predetermined labelled examples or predefined rules[26]. This would mean that generative models could and would generate their own data points for further training. While this opaque and layered training process could complicate transparency and fortify the "black box" of AI, it does mean that generative models might not require a large data set to begin training. However, as the model is expected to produce more data and conduct parallel processes, resources, such as GPUs and data centres, are needed. Comparatively, discriminative models use direct probability estimates[27] without calculating unnecessary correlations, thus requiring less computing power[28]. These are also typically built on supervised learning methods[29], which means they may require data scientists and tagging moderators who label or train the data. Current techniques may not opt for one or the other and could deploy both as seen in image and video generation, or in audio synthesis. These training methods underpin the development of weak, strong or superintelligent AI as illustrated below.



Authors' illustration based on source[30]

Training AI based on these models could have various considerations for AI ambitions. Generative AI, for instance, could train on its own data. Unlike discriminative models that do require data scientists, the absence of a moderator in the processes raises complexity of human involvement and oversight mechanisms. This affects the explainability and interpretability of systems needed for transparency. Furthermore, resource considerations can vary, whether in need of a data training library, computing power or data centres. The environmental impact of producing more superintelligent machines is a concern of developers as well as regulators.

To mitigate costs, there are considerations to invest in foundational models[31], which may minimise the cost of training models from scratch. Yet, these may be in the hands of selected developed nations and may require diplomatic acumen to form MoUs, partnerships or exchanges for Malaysia to increase access to these foundational models.

The methods which AI is trained could have an impact on the environment and resources needed for training. Furthermore, as training become layered and complex, it would complicate the relationship with human supervision. Training and deploying AI could result in both positive and negative outcomes, thus emphasising the importance of building technical capacity to address challenges.

Malaysia in AI-enabled world

a. Malaysia: the AI explorer

Malaysia's status as a technology user or producer could impact on the pathways of governance. Malaysia is a positive adopter of technologies, reflected through several indicators, such as increased household's internet access, especially through mobile broadband, overall, from 91.7% in 2020 to 96.4% in 2023[32] and government initiatives like KL20 Summit that aims to enhance the start-up ecosystem, coupled with growing policies, such as the National 4IR Policy, National AI Roadmap 2021-2025, Malaysia Digital Economy Blueprint and the newly established Malaysia Centre4IR, which is the first centre in Southeast Asia, partnering with the World Economic Forum (WEF) to focus on the fourth industrial revolution which is inherent for AI.

The term "technology creator", though not academically coined, is associated with the ability to innovate, develop and commercialise new technologies. The measures of this can either be through its processes or outputs. For processes, measures include the total expenditure on R&D on technology and high-tech patents grants. Meanwhile, output can be measured through (i) high-tech exports, (ii) tech-based companies that include the number of start-ups and unicorns, (iii) global market share and (iv) AI-related academic publications. Malaysia's position in the Global Innovation Index[33] has plateaued at 36th but improved in 2024, moving up three places.

Despite this, there are several local companies that have successfully created and commercialised new technologies, such as Aerodyne Group and Carsome. Deemed as Malaysia's unicorns, these could indicate a need for a more business-friendly environment with systems that support ease of doing business, better venture capital ecosystem, tax incentives and market size. In that aspect, it is fair to say that Malaysia can develop and

innovate technologies. However, progress could greatly improve with strategic policies that build a more optimal environment for the market to thrive.

b. Malaysia's AI ambitions

Malaysia made the turn for ICT with policies, such as the Multimedia Super Corridor and Vision 2020 formulated in the 1990s. ICT has featured in Malaysia's national research and development activities since 1994[34]. Since then, Malaysia has ranked fairly well in indexes, such as ITU's Global Cyber Security Index[35] where the fourth edition in 2021 saw Malaysia ranked second in the upper middle-income grouping. Malaysia has also shown great promise to embrace AI, with Oxford Insights' 2023[36] report ranking Malaysia 23 out of the 193 nations assessed. The report made a special mention of Malaysia's performance as a nation, especially in the technology pillar, where the nation ranked among the top 25 among regional peers.

Malaysia's policies specific for artificial intelligence could be found in recent documents, such as the Malaysia Digital Economy Blueprint[37], 10-10 Malaysian Science, Technology, Innovation and Economy (MySTIE) Framework[38], National Science and Technology Policy 2021-2030[39], AI Roadmap 2021-2025[40] and National Industrial Master Plan (NIMP) 2030[41]. From developing semiconductors to linking consortiums that diffuse knowledge, there are components of the federal and state government, academia and private sectors pursuing AI.

The AI road map captured the strategic plans of states in addition to the chatbots already deployed in the government and private sector. Of note are the AI companies and start-ups in Malaysia[42] which number above 200 enterprises, of varying sizes and adoption. A 2024 study by Microsoft and LinkedIn[43] states that Malaysia's adoption rate stands at 84%, higher than the global rate of 75%. Malaysia's use cases could range from assisting courts in sentencing, such as Sabah and Sarawak's Artificial Intelligence in Court Sentencing[44] (AICOS) to using ChatGPT for productivity. The International Data Corporation's (IDC) Asia/Pacific AI Maturity Study 2024, categorised Malaysia as an "AI explorer", together with Indonesia. These are two stages away from Malaysia's goal of being an "AI innovator". The study assessed maturity in three key dimensions: enterprise, government and socio-economic readiness. These would allow nations to graduate from being an "AI explorer" to an "AI practitioner", "AI innovator" and finally, "AI leader".

It should be noted that Malaysia is not alone in realising its AI ambitions. Between 2021 and 2023, Malaysia approved RM114.7 billion investments in data centres and cloud service. Of these are significant investments from players intended to meet multiple goals of building infrastructure and talent.

Investor	Value	Purpose and added value
Amazon	US$6.2 billion (2024-2038)	To help local businesses and organisations run their applications closer to home, especially those wishing to deploy a broader set of AWS technologies, such as AI and machine learning. AWS data centres tend to have independent energy infrastructures and in 2023, all the energy consumed by Amazon's operations was matched with 100% renewable energy. *Added value:* • Supports about 3,500 full-time equivalent jobs, such as construction, facility maintenance, engineering and telecommunications through 2038. Upskilling through Program AKAR powered by AWS re/Start with PayNet to bridge cloud skills gap in the financial services industry. • Encourage adoption of AWS services in the public sector, such as cloud for online learning, teaching and examinations with Higher Education Ministry as well as building GenAI and machine-learning solutions with the Credit Counselling and Debt Management Agency (AKPK) to build GenAI. • Digital transformation in the private sector with AEON Bank (M) Berhad, Astro Malaysia Berhad, Maxis and more. • Support Malaysia's climate goals to meet net-zero carbon by 2040.
ByteDance	US$2.13 billion	To build an AI hub in Sedenak Tech Park, Johor, with a focus on automated content moderation
Google	US$2 billion	Intended to facilitate Google Cloud services, such as Search, Maps and Workspace. Will be in Elmina Business Park in Sg Buloh. *Added value:* • Programmes to encourage business and public sector adoption of AI. • Energy and water efficient technologies • Computer science awareness and literacy initiative with UNICEF, CelcomDigi, Education Ministry, MDEC and Arus Academy • Introduce Solar API • Semiconductor manufacturing in partnership with DNeX
Microsoft	US$2.2 billion (2024-2028)	Data centre investment is geared towards building Malaysia's cloud and AI infrastructure, as an extension of the private company's Bersama Malaysia initiative. Microsoft is also collaborating with agencies under the Ministry of Digital for the establishment of a national AI Centre of Excellence with various outreach programmes.

Investor	Value	Purpose and added value
		Added value: • Investment aims to address Malaysia's talent challenges. As part of the investment, the infrastructure is accompanied by AI skilling opportunities for an additional 200,000 people in Malaysia across programmes, such as AITEACH Malaysia, Women Ready4AI&Security, AI fluency training for youth and employees of non-profit organisations. • AI Odyssey aims to help 2,000 Malaysian developers become AI subject-matter experts. • Encourage government adoption through programmes with Ministry of Digital for AI governance and regulatory compliance, MITI for better trade-negotiation analyses, Cradle for a virtual information assistant for its MYStartup platform.
Nvidia (with YTL)	US$4.3 billion, operational from mid-2024	To build AI infrastructure, including supercomputers and cloud computing in Johor *Added value:* • Building a supercomputer to kickstart a large language model in Malay

Sources: Amazon[45], Reuters[46], Data Center Dynamics[47], Malay Mail[48], DNeX[49], Microsoft[50], Reuters[51]

Identifying platforms for collaboration could expedite productivity and AI gains, especially as Malaysia marches towards turning the nation into an AI hub. Yet the development and deployment of AI in Malaysia is fraught with challenges.

1) Resources and environmental implications

Among the most challenging for Malaysia is the resources needed to leap into the categories of "AI innovator" or "AI leader". It was estimated that training ChatGPT-3 would have cost US$4.6 million[52] for a single run because of the cost of the GPUs. Large language models (LLM), such as OpenAI's products, require multiple rounds of training, which could go above US$100 million[53]. Such costs are exacerbated by estimations of energy consumption where if there were 30,000 GPUs running ChatGPT daily, this is equivalent to the daily consumption of energy by 33,000 American households[54]. Meanwhile, incorporating technology, such as ChatGPT, enabled in every search engine will exceed US$100 billion of capital expenditure[55].

This means that the energy and capital expenditure costs of training could be dependent on deft policymaking as well as Malaysia's AI policy ambitions – while costs of computing required for AI are part of business costs for private technology companies, building national infrastructure for AI computing power, for instance, would require extensive government funding. Complementary to this is the pathway for Malaysia's energy transformations. While it is estimated that Malaysia has sufficient supply for the data centres, questions remain over whether energy is renewable[56].

While not a silver bullet, Malaysia's manufacturing, digital and sustainable future should be intertwined further. The economic complexity sought by Malaysia's NIMP 2030 must occur in tandem with AI developments. Technological and research breakthroughs must occur at the semiconductor front, in programmes which could address space issues and storage, as well as sustainability in data centres.

2) Talent

Unlocking Malaysia's potential with AI requires two different sets of talent: those adept at adopting the technology to increase productivity and those capable of developing AI systems. Access Partnership and MyDIGITAL's Economic Impact of Generative AI report found that close to 65% of the workforce could incorporate generative AI in 5-20% of their work activities to assist with tasks, such as coordination, operations monitoring and complex problem solving[57]. However, Microsoft and LinkedIn's corresponding 2024 Work Trend Index state that 78% of global AI users are bringing their own AI tools to work, with 52% using AI at work reluctant to disclose the use for their most important tasks[58]. This ties with a 2021 AI road map survey conducted by MOSTI where findings stated that a majority of respondents (47.5%) have neither studied, reviewed nor updated related AI policies and regulations to accelerate AI development. A majority (47.5%) have also not established a dedicated task force to implement and manage AI initiatives[59]. This corroborates with recommendations from Access Partnership to develop AI-ready infrastructure and ensure conducive digital policies and regulation.

Adoption and efforts within companies are crucial to developing talents keen on adopting AI, aside from reskilling and upskilling programmes that could produce technical or non-technical talents with AI aptitude. Microsoft and LinkedIn's findings state that 66% of leaders say they wouldn't hire someone without AI skills while 71% indicated they preferred a less experienced candidate with AI skills compared with a more experienced candidate.

Meanwhile, talent development is an ongoing process. Talent challenges will not only be in those who would innovate, design or programme, but also those who need to be upskilled for potential job impacts because of AI. For this, TalentCorp had released the study, a safer AI environment requires those able to audit the AI technology. Metrics, such as transparency, require expertise, thus talents able to navigate AI risks are much needed for Malaysia to monitor and build a safe AI ecosystem. Other issues related to talent include the lack of availability, especially at senior levels. This is especially important as people with more experience are better equipped with the industry landscape and are likely more experienced in the decision-making processes. Malaysia's brain drain might also inflict damage upon this sector as talents would leave the country because of an unfavourable environment or better compensation in other places.

There are currently efforts to address this landscape. MOSTI in collaboration with the Higher Education Ministry launched the AI Talent Roadmap 2024-2033[60], specifically to ensure Malaysia produces high quality AI graduates into the next decade. Prime Minister Datuk Seri Anwar Ibrahim also announced Malaysia's first AI faculty in Budget 2024. The faculty, housed in Universiti Teknologi Malaysia, is part of the Malaysia AI Consortium for public and private universities publicised in May.

Addressing the lack of and mismatched talent issues would require a whole-of-government approach in collaboration with the private sector. It could consider (i) establishing transition programme centre for early-career or mid-career individuals to those who are interested in reskilling towards AI-related industries and skills, and (ii) training to upskill the existing software programmers, data scientists or data analysts. With regard to generative AI, the government or the private sector could also consider recommendations[61] to develop future-ready skills consisting of (1) skills to develop and manage AI, (2) skills to work with AI and (3) skills to live with AI. Meanwhile, the transition of jobs affected may require sector-based analysis. The Human Resource Ministry states that up to 600,000 workers from 10 key industries[62] could be displaced because of technologies, inclusive of AI. The study, prepared by TalentCorp was released in November.

3) Intellectual property in Malaysia

Malaysia's intellectual property protection environment could be the catalyst for a competitive market while ensuring rights of innovators, creators and those in the knowledge-producing sector are protected. Secure IP rights[63] provide confidence for investment and information dissemination.

Yet, AI presents new challenges to the IP environment. In Malaysia recently, the founder of Gila-Gila used an AI-generated image for the cover of the beloved magazine. The magazine, which usually features works by local artists, thus received swift backlash from the creative community. This incident, following further international developments, such as the writers' strike in Hollywood, indicates concern for sufficient compensation in data training, especially in the creative industry.

On the innovation front, protecting the IP in relation to works created with the help of AI may be a difficult endeavour, and debate on the best approach is on-going globally. The AI algorithm itself may not qualify for a patent unless inserted into a technology or if it is truly unique, which means AI must possess technical character[64]. Otherwise, it would be protected under copyright law, which could mean that minor changes[65] to the algorithm would require new copyright filings. Additionally, in itself, AI-generated output does not qualify[66] for IP protection due to the ambiguity of the system's status as an inventor. To this end, policy gaps as well as social awareness aspects of intellectual property protection need to be explored to build Malaysia's IP vibrancy for AI.

4) Social harms

Because of AI's socio-technical nature, understanding the societal implications is vital. These problems are unique with the AI system in several ways. For example, the data it was trained on could change over time, affecting the outputs and the way it functions. The way AI infers could also be influenced by societal dynamics and human behaviour. One of the most pressing concerns in this regard is the perpetuation of biases that could lead to discriminatory outcomes, especially against underserved and marginalised communities.

These biases often stem from the data used to train AI models that reflect societal prejudices and historical inequalities. Cases in point are the gender bias of Amazon's hiring system[67] that discriminated female applicants and the study conducted by the National Institute of Standards and Technology (NIST) found empirical evidence[68] for demographic differentials in most of the algorithms evaluated. Another example is automated decision-making (ADM), especially in critical sectors, such as finance, where automation bias might lead to discrimination. For instance, the Australian government introduced an automated debt collection system[69] in 2015 but it incorrectly flagged more than 381,000 debtors causing "financial hardship, anxiety and distress".

The use of AI for misinformation and disinformation through deepfakes could also undermine trust in information and risk destabilising the democratic process. ADM or automated prediction and biases could deepen social inequality and discrimination, particularly in low-skilled sectors where workers risk unemployment, isolation and exacerbation of wealth gap.

The erosion of privacy and security is another major risk. Facial recognition and person-based predictive policing[70] could lead to a surveillance state that is likely to reinforce existing biases, infringe upon civil liberties and suppress dissent – which is a threat to security and freedom. Furthermore, if the question of responsibility and liability for the negative effects of AI-related products is not addressed thoroughly, it may lead to a prolonged injustice to victims.

5) Competing international governance on AI

Bloomberg[71] estimates the GenAI market to be valued at US$1.3 trillion. As the world clamours for a foothold in developing the technology that will transform battlefields, economic development and societies, developing nations caught between the process of building infrastructure and cultivating talent, face a high risk of being left behind as rules of governance are developed in exclusive settings. OECD's AI Policy Observatory records 69 countries and one region with national AI policies and strategies[72].

Meanwhile, the United Nations Institute for Disarmament Research's AI Policy Portal found at least six international organisations developing concerted rules on AI governance. These are the European Union, G7, NATO, OECD and the UN. The UN's High-Level Advisory Body sampled seven non-UN AI initiatives resulting in the OECD AI Principles (2019), G20 AI Principles (2019), Council of Europe AI Convention drafting group (2022-2024), Global Partnership on AI Ministerial Declaration (2022), G7 Ministers' Statement (2023), Bletchley Declaration (2023) and Seoul Ministerial Declaration (2024). Of these, Canada, France, Germany, Italy, Japan, the UK and the US are parties to all the sampled initiatives while not one out of 118 countries, mostly from Africa and Asia-Pacific, is listed. Discussions on the deficit of global governance, particularly those with equal and representative platforms, prompted the UN's advisory body to recommend a biannual AI policy dialogue among others.

Building capacity for adequate representation would be necessary to enable Malaysia's concerns to be voiced and for Malaysia to protect its interests in the international arena. As AI will be a technology that crosses borders, yet developed by selected companies, the nation must seek methods to engage in ways that build Malaysia's AI ecosystem.

What is governance for technology, such as AI?

Governance can be defined as the process of decision-making and the process by which decisions are implemented[73] or not implemented. This could mean looking into the structures of bureaucracy, talents and skill in government, degree of autonomy or effective taxation. In recent years, the terminology "good governance" has also entered the vocabulary, where governance mechanisms should be held accountable, participatory and emphasises the rule of law. To these ends, governance may refer to bureaucratic processes realising specific goals. Achieving these goals requires an array of tools for efficacy, namely a shared vision, soft and hard laws, and clear mandate of institutions.

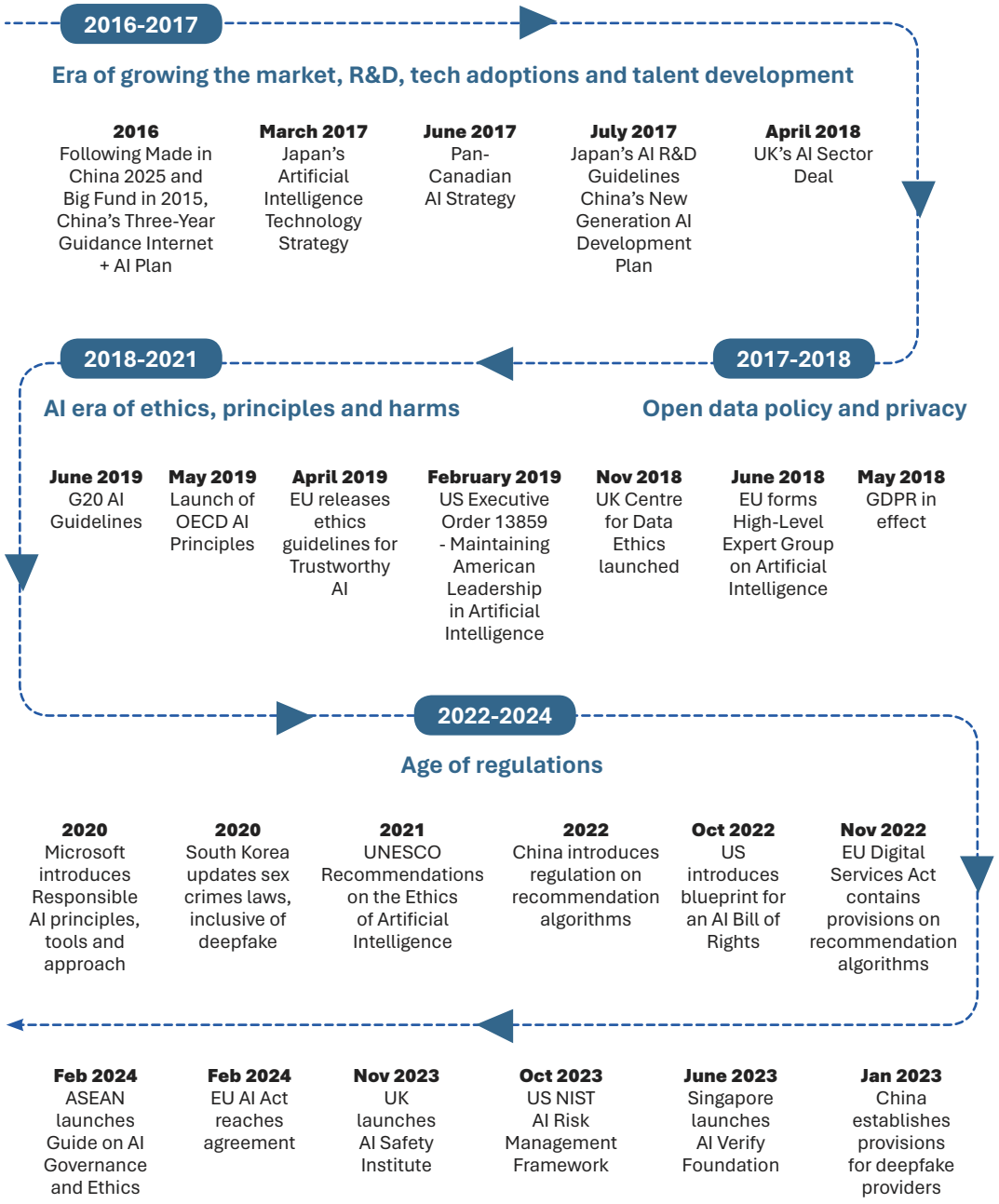
In the case of AI, governance can be quite challenging because of the ubiquity of technology that has diverse impact in different settings. The NIST AI Risk Management Framework[74], for instance, identifies that AI systems could introduce harms to people in three categories: (i) individual, community or societal level; (ii) an organisation be it from security breaches or monetary loss; or (iii) an ecosystem regarding interdependent resources or the planet. Khazanah Research Institute's (KRI) Dr Tan Jun-E also argues that certain aspects of AI, such as ADM has relational consequences[75], thus is at risk of imposing individual, collective and societal harm. However, as AI is predicted to be an economic boon[76], the government faces the predicament of introducing guardrails while building an effective ecosystem for AI to be a growth enabler. The government needs mechanisms to introspect internally, understand how the technologies within the AI space work, assess the risks involved and analyse them against its own assessments of strengths, weaknesses, threats and opportunities.

Finally, as AI is a cross-cutting technology that will be applied vertically across sectors and horizontally across processes, governance mechanisms need to be designed in a way that leverage on the availability of existing processes, while not contradicting existing legislation. In parallel, they must also align with international standards, to strengthen Malaysia's competitive standing.

a. International eras of AI governance

The world is currently in the age of AI regulation, especially after years of autonomous vehicle driving, ADM and the advent of ChatGPT circa end of 2022-early 2023. While not holistic, the flow below may describe the maturity in a governance process, which for developed nations began with the pursuit of growing their market, economic complexity and R&D in 2016. This era that began almost a decade ago allowed for developed economies to build conducive ecosystems, including data-sharing spaces and economic-complexity support. Then, the conversations shifted to emphasise on privacy and ethics around the years when the EU's General Data Protection Regulation (GDPR) came into effect.

The years post-2021 saw keen interest to regulate the technologies, most of which began with the most harmful impacts of AI, particularly in deepfakes or recommendation algorithms. Below is the visual and historical summary.



Source: Stanford AI Index[77], *Stanford DigiChina*[78], *AI Japan*[79], *GovUK*[80], *MOFA JP*[81], *OECD*[82], *Microsoft*[83], *White House.gov*[84], *European Commission*[85]

[2016 – 2018] Era of market leadership, infrastructure and building an AI industry

- **Developing competitive AI industry:** most strategies and policies between 2016 and 2018 were intended to kickstart an AI industry. This means linking manufacturing goals with AI adoption. China's initial Three-Year Guidance for Internet plus AI Plan[86] sought to cultivate and develop AI capacity, whether it is by building a massive training resource library, strengthening a quadruple helix AI research and development platform or promoting specific projects, such as AI in smart home applications or unmanned system applications. Japan's Artificial Intelligence Technology Strategy[87] launched in March 2017 highlighted utilisation and application as the foundations for building the AI industry, before linking the ecosystem to value-added purposes in personal, work or urban spaces.

- **Infrastructure, semiconductors and algorithms:** infrastructure, such as computing power, chips and sustainable energy sources, would be the backbone of AI development. Furthermore, building a library of data for analysis requires developments in adjunct industries, such as sensors, optical devices or other data gathering devices. At risk of hyper-dependence on foreign chips, China launched policies for a high-technology future like Made in China 2025 and the Big Fund for integrated circuit development in 2015. The UK's AI Sector Deal[88], initially released in 2018, allocated for digital infrastructure inclusive of 5G and fibre networks. In some circumstances, funding also included shared infrastructure, data and tools by industry, academia and government.

[2017 – 2019] Policies to accrue AI knowledge, R&D and talent

- **Linking knowledge hubs:** cultivating AI innovation requires collaboration, information sharing and discovery of new knowledge. Therefore, efforts linking knowledge hubs in addition to increasing output on AI became part of strategy and policy. Canada's Pan-Canadian AI Strategy[89], for instance, developed AI innovation clusters in three major cities to serve as hubs of AI research and commercial application, in addition to fostering collaboration between academia, private sector and government. Japan, through the instructions issued by the prime minister in 2016, established the "Strategic Council for AI Technology", which manages five R&D agencies.

- **Investing in research**: AI research, as well as research in AI-related sectors, such as healthcare and finance, widens the pool of data and the roles to training AI. To this end, various nations have undertaken R&D be it on AI or its applications as a prime step towards building AI capacity. These are inclusive of Germany's AI Made in Germany, France's Strategy for Artificial Intelligence, India's National Strategy on Artificial Intelligence and Singapore's National Artificial Intelligence Strategy. The US, subsequent to Executive Order 13859 in 2019[90], too, established its first-ever national AI research institutes.

- **Talent development:** talent availability would decide a nation's capacity to leverage on the AI industry in ways which could benefit the economy and population. Yet a skills shortage seems endemic to this sector[91], with the need to establish pipelines, upskilling or reskilling platforms as part of AI development. Talent is not only the

matter of participating in an AI-enabled economy, concerns about shortages were also inclusive of talent involved in oversight. As such, talent was crucially highlighted by various national strategies and policies, such as EU's initial Coordinated Plan on Artificial Intelligence in 2018, UK's Industrial Strategy: Artificial Intelligence Sector Deal (2018) and Saudi Arabia's National Strategy on Data and AI (2020). Plans, such as Japan's Artificial Intelligence Technology Strategy, articulated considerations of work conditions in addition to matching the salaries of workers to competitors.

[2017 – 2018] Open and secure data policy

- **Data source and architecture as a backbone of AI development:** data will be the fuel for AI and harnessing it requires platform, policy and protection. For example, an open-data policy requires laws that enable data sharing, which might highlight standards and procedure for the process. Japan's Artificial Intelligence Technology Strategy[92] launched in March 2017 focused on the volume of data sources and corresponding disciplines enabled by AI. This could build the pool of data for the AI to be trained upon. China's New Generation Artificial Intelligence Development Plan[93] proposes to complete data architectures by establishing cross-medium platforms to enable data sharing for applications like smart commerce, building cloud collection for purposes, such as smart factories and big-data infrastructure. These approaches identify the need to seek possible sources and the platforms to be developed for data sharing and machine-learning training. Europe made efforts on data sharing, specifically known as data spaces. These are inclusive[94] of Germany's mCloud and Malta's Data Portal. MCloud is a part of a number of thematic data mobility spaces[95] aimed at facilitating sharing between industry, academia and government. Germany's current thematic spaces are in the mobility sector, smart cities and health.

- **Privacy as an ethical and technical challenge:** privacy and data classification will be a challenge, especially if AI could infer personally identifiable information from mere analysis of language. It became necessary to strengthen data-protection mechanisms, inclusive of legal that could identify nuances in data classifications for AI processing. To this, the UK introduced a guidance on AI and data protection in July 2020 while GDPR covers aspects of data classification which would impact on operations within the bloc. The interpretation of privacy is conducted through risk-based analysis and could be dependent on the appetite of local contexts.

- **Public-private partnerships for data sharing:** much information is cultivated and analysed in the private sector and the government with efforts needed to facilitate data sharing. The US' AI initiative encouraged federal agencies to share data with AI R&D experts, researchers and industries. An Open, Public, Electronic, and Necessary, (OPEN) Government Data Act[96] was passed in March 2018 to facilitate data sharing between government and the private sector. Thus, it may be necessary to build public-private partnerships to share information and experience on AI.

[2018 – 2021] Era of ethical norms and privacy

- The introduction of GDPR in addition to the publication of OECD's recommendation on data ethics and UNESCO's recommendations impacted on the landscape in ways to consider normalising or codifying ethics and practices and hard law.

- **Developing AI along ethical principles:** the literature on the ethics of AI became prominent in late 2017, as the advent of automated driving in addition to other repercussions of AI received notable headlines. Because of GDPR, approaches emphasising on ethics rose to the fore, whether it is in data management or addressing AI technicalities. The UK launched a Centre for Data Ethics in 2018[97] while the European Commission formed a high-level experts' group in 2018 who presented a draft AI Ethics Guidelines[98] by year-end. Further recommendations on ethics and principles[99] were also agreed by OECD members in 2019, with the G20 promoting AI guidelines[100] in the same year. Such guidelines introduced concepts, such as responsible and trustworthy AI, where AI should be developed with commitments to requirements, such as accountability, data governance, design for all and non-discrimination. Since then, nations have embraced the approach of developing AI guided by principles, inclusive of Malaysia whose National AI Roadmap highlights 7 principles.

- **Harmonising standards:** there are a number of ISO/IEC standards emerging since 2018, with those in 2018 setting standards in the field of big-data reference architecture[101]. Subsequently, standards were finalised by ISO/IEC for framework on AI systems, be it bias in AI systems or risk management. Meanwhile, different standards are explored across domains or applications, for instance IEEE Standards[102] for autonomous and intelligent systems. Guidelines developed for specific sectors can be found in Indonesia's OJK Code of Ethics Guideline on Responsible and Trustworthy AI in the Financial Technology Industry (OJK AI Guideline) or the UK's guidelines in accordance with sectors, such as medicines, healthcare and advertising.

- **Harms repository:** the United Nations Human Rights Office of the High Commissioner[103] identified 10 areas of human rights affected by Gen AI, which is inclusive of right to equality before the law and to protection against discrimination, right to privacy and right to culture, arts and science. The UNESCO recommendations on the ethics of artificial intelligence[104] stated the necessity for the prevention of harm caused by AI, including safety risks, vulnerabilities to attacks, hate speech, human rights infringements, effects on mental health or negative impacts on environment and ecosystems. It recommends further research to understand the negative impacts of AI, which could mean linking research institutes with policy in an environment where the use cases and impact of the algorithms could be examined further. As policy solutions could be technical and non-technical, finding the root of issues with AI might be useful to identify the best and balanced solutions.

[2022 – 2024] Age of AI restrictions and regulations

- **Regulation of known challenges:** hard laws for AI began emerging from 2020, when the impact of deepfakes and ADM systems were heavily debated. However,

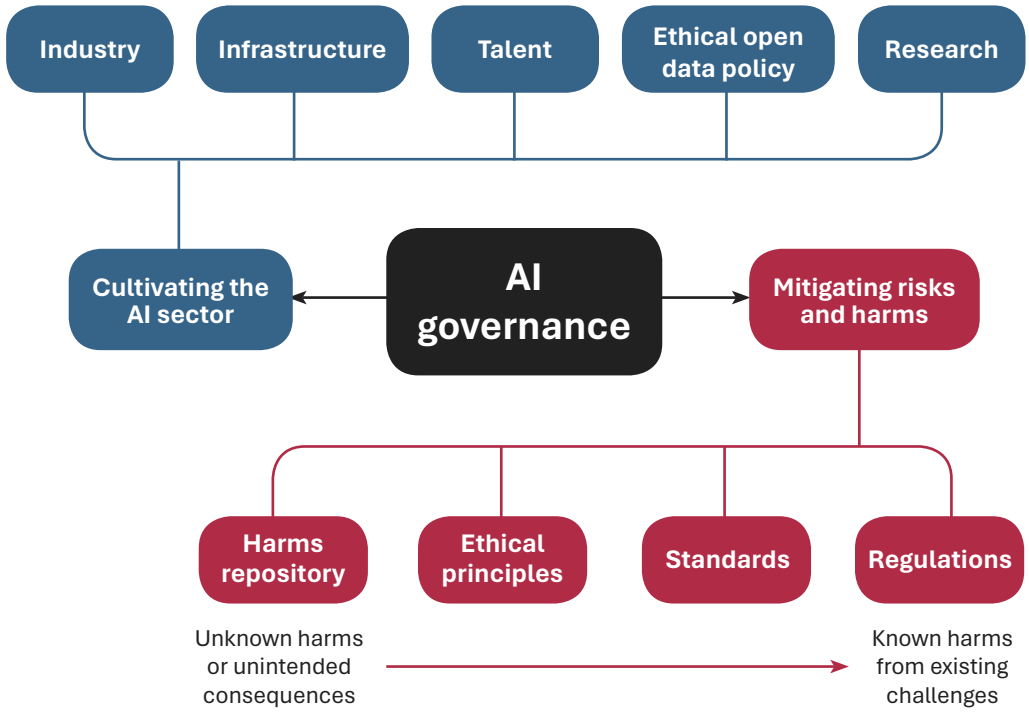
the approaches are a mix of updating existing laws and constructing new ones. South Korea updated its sex crime laws to include the mention of deepfakes. China introduced the regulation on recommendation algorithms in 2022 and provisions for deepfake providers in 2023. There may be a need to address legal gaps for criminal use of AI, especially under the current legal architecture.

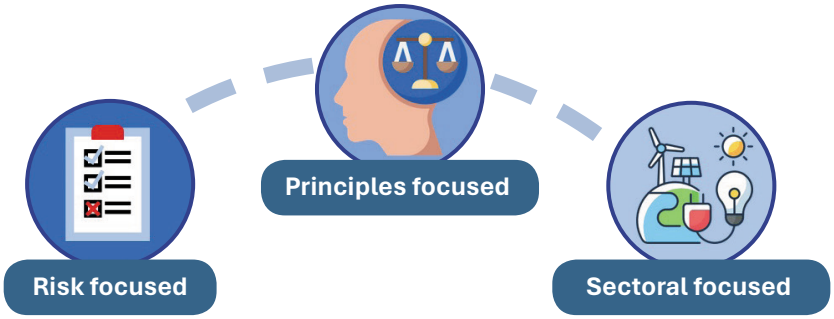
- **Risk-based approaches to AI:** derisking stems from the interest of managing risk in technology adoption, especially where technology can be vulnerable to exploitation or exacerbate socio-technical issues. The European Commission's 2020 White Paper on Artificial Intelligence[105] pursued the categorisation of AI technologies in accordance with risks, especially those that may impact on fundamental rights, considering Europe's strict interpretations of privacy. This led to the EU AI Act which categorises AI into classifications of unacceptable, high, limited or minimal risk. As a result, certain AI systems are expected to be banned over the dangers to safety and fundamental rights it would impose on the European population. While the EU's approach resulted in prescriptive measures to regulate AI, the US National Institute of Standards and Technology (NIST) AI Risk Management Framework[106], first released in 2023, aims for a process-based approach to managing risk. NIST attributes characteristics to the system and introduces measurement mechanisms for the ideal AI to be deployed in society. Trustworthy or responsible AI is intended to mean that the AI is developed to be safe, secure, explainable, fair, accountable and transparent – among other characteristics. The AI risk-management framework encourages parties to map context and risks, measure identified risks and manage risks based on prioritisation with further action required upon impact. The US NIST framework tends to be technology agnostic while the EU's categorises technologies to be regulated.

- **AI safety institutes:** the years 2023-2024 saw the launch of various AI safety institutes[107] in the UK[108], Japan[109], the US (NIST)[110] and Singapore's Digital Trust Centre[111] in Nanyang Technological University. An AI safety institute can be described as a policymaking sandbox where AI technology could be tested to identify the risk it poses upon deployment. Certain institutes have clearer direction and enforcement mandates[112]. The UK's AI Safety Institute (AISI), for instance, aims to identify risks posed by "frontier models" while maintaining government-led approaches to AI governance. AISI does not have regulatory powers while the EU's AI Office (EUAIO) could be empowered under the EU's AI Act. An AI safety institute might be a norm in the future, especially if risks posed by technologies need to be assessed for its local contexts. Alternatively, participating and sharing information in a global network for AI safety could distribute resources more efficiently. As AI become complex, the trajectory of harms could be difficult to trace, thus complicating the prospects of placing responsibility. There might be a need to construct a risk repository, engage with various stakeholders on frontier models and fortify testing capabilities to develop domestic and localised understanding of AI's impact.

b. Governance approaches against harms

- The deployment of AI can inflict known and unknown harmful consequences. UNESCO recently highlighted nine forms of possible governance[113], from an agile and experimentalist approach to one that emphasises on rights and transparency. Because of the ubiquitous nature of AI in addition to the desire to reach several goals, governments may opt for mixed approaches to address different aspects of AI. An example is to construct an AI safety institute to research on the unpredictable impact of AI, which introduces policy directions, thus creating a safer and vibrant ecosystem. Below is a visualisation of how the AI governance in Malaysia could work:

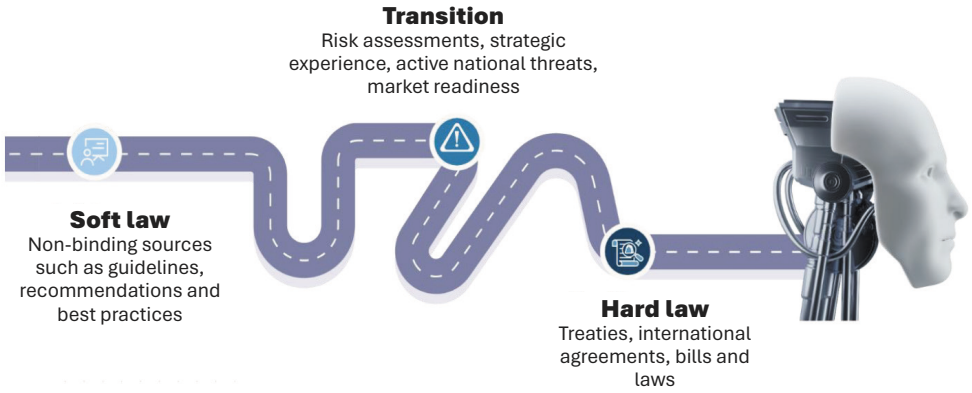




Three of UNESCO's nine governance approaches utilise risk focused, principles focused and sectoral focused practices, especially to mitigate risks and harm. This classification, while not mutually exclusive, provides some guidance for focus and for the purpose of developing appropriate policy tools whether these may be soft laws or hard laws. With any governance, the underlying objective of having an explicit mechanism is to mitigate risks associated with AI deployment. Approaches should be both proactive and reactive to mitigate risks and harms, thus governance mechanisms should exist ex-post and ex-ante before harm occurs. Decisions to pursue hard law or soft law may vary, motivated by national vision, institutional capacities, economic strengths and social context. For example, the EU, about six years after its high-level expert group, sought to investigate mechanisms to govern AI. After the success of GDPR, it opted for specific hard regulation on AI, resulting in the implementation of the first AI act in the world. While the inherent risks that AI poses are the reason for such laws, the EU's decision to introduce this act is also a combination of several factors, including an interest to lead global ethical standards. The classification below illustrates where countries stand in their AI governance development.

Countries	Soft law	Transition	Hard law	Risk focused	Principles focused	Sectoral focused
Malaysia	✔				✔	
Singapore	✔	✔			✔	
Indonesia	✔				✔	✔
Australia	✔				✔	✔
India		✔		✔		
China		✔		✔	✔	✔
Japan	✔	✔		✔		✔
South Korea		✔			✔	
United Kingdom	✔				✔	✔
Switzerland	✔				✔	✔
Canada		✔		✔		
Brazil		✔		✔		
European Union			✔	✔		

While hard regulation may be appealing, lessons from GDPR should be observed where there was a positive impact of awareness on the protection of personal data rights. The awareness increased to 69% among those surveyed in 2020[114] but this came at the expense of innovation, especially start-ups, as research shows that the anti-competitive behaviour from larger companies influenced the R&D innovation direction[115] with the focus on building features or products that would bring value to an acquisition instead of a noble innovation. Another study also showed that due to compliance costs and higher trust perception towards bigger companies, hard regulation mainly benefited larger firms[116] at the detriment to smaller and medium firms in Malaysia in AI.



- Depending on the institutional mechanisms and multi-stakeholder arrangements, some countries might favour less restrictive approaches, such as the US and Australia. The US leans towards sectoral-based governance where existing sectoral regulations are adopted according to the industry's usages. These are reflected through the issuance of executive orders[117]. Meanwhile, Australia and Singapore use a voluntary framework of AI principles[118]. Some countries are in the transition phase from soft law to hard law, such as China, Canada and Japan. China has drafted an AI law[119,] a process led by scholars. Canada tabled the AI and Data Act (AIDAAI and Data Act (AIDA)[120] and rolled out a directive on ADM[121]. Against this backdrop, Japan's lawmakers are advancing a "Basic Act on the advancement of responsible AI"[122] law that will shift the current soft-law approach to hard law.

In the case of AI, it is then pertinent to understand and map the risks it poses to ensure what and how to regulate in an optimal manner. Yet, assessing risk is a domestic exercise. In many ways, the EU AI Act is a product of a six-year risk assessment exercise where technology that contradicts the values and sovereignty of European society is categorised as unacceptable, high risk, limited or transparent risk or minimal. If the NIST Framework or Dr Tan Jun-E's relational framework is used, risk assessed at individual, organisational and ecosystem levels could be affected by culture, national security, power relations or technology gaps.

Managing a risk repository would be useful, especially to build Malaysia's coordinated vocabulary and understanding of harms caused by AI. In doing this, Malaysia could identify and utilise open-source materials, such as Massachusetts Institute of Technology (MIT) Future Tech's AI Risk Repository[123] published in August. The repository is a living database that has compiled more than 700 works and identifies sources of risks, their causes and the temporal space when such risks occur. A sandbox to policy linkage could also fortify Malaysia's own capacity to identify such risks. Meanwhile, obligations by developers could consider conformity assessments, transparency obligations or general adherence to principles. An example is the expectations under EU's AI Act.

Classification	Action by developers
Unacceptable	Prohibited
High risk	To conduct conformity assessments, transparency obligations and oversight mechanisms
Limited/transparent risk	To inform users of interaction with AI
Minimal risk	To follow general principles, such as human oversight, non-discrimination and fairness

Malaysia may have to prioritise the way forward in ways that reflect the maturity of its AI sector. Admitting that Malaysia is a nascent "AI explorer", Malaysia would have to focus on improving the ecosystem and market conditions. This is to strengthen adoption and complexity in the industry, building ethical data-sharing spaces, developing talent pipelines and cultivating research. Hence, Malaysia might have to take the long road to introduce laws that can specifically address potential AI harms. This could mean forming a high-level task force to examine the exact areas of misuses and identifying unacceptable harms that the law would have to regulate. In the meantime, Malaysia could construct sustainable ways to address unexpected consequences of AI adoption. For example, having a responsive body which could respond to issues related to AI. Additionally, there may be a need to manage a repository of harms while identifying gaps in existing laws exacerbated or exploited by AI. Malaysia needs to strategise both the growth of the AI sector and the mitigation of risks and harms for an improved future.

Malaysia's progress in AI governance

Malaysia is not new to governing the ICT domain. Prior to AI, Malaysia faced the challenge of harnessing and realising an IT nation while addressing issues, such as cybersecurity and data protection. Malaysia's early body of digital legislations included the Communications and Multimedia Act 1998 (CMA 1998) and Computer Crimes Act 1997 (CCA 1997). CMA 1998 was not constructed specifically to address harms stemming through the ICT domain but to accommodate a shift in telecommunications policy that privatised the telecommunications sector[124]. A combination of legislation and licensing regime[125], CMA 1998 endowed the Communications and Multimedia Commission with regulatory and enforcement powers over industry operators. CCA 1997, on the other hand, was intended to address misuse of ICT.

At the time, institutions were needed to provide technical insights while breaching the socio-technical language of IT security for policy direction. MOSTI played a key role establishing the Computer Emergency Response Team (CERT), Cybersecurity Malaysia and constructing the National Cyber Security Policy (NCSP) in 2008. NCSP introduced a sectoral-based approach to governance for critical national information infrastructure (CNII). Obligations for CNII began with trust-building exercises between the public and private sector and lacked stringent responsibilities. This focused on strengthening crisis communications and ensuring information on incidences would be shared, especially where there could be distrust between industry and government. It was not until 2010 that cabinet[126] imposed obligations, such as ISO27001. However, as cybersecurity challenges became more complex and reached national security proportions, the National Security Council's Directive No. 24 issued in 2013[127] defined the roles and responsibilities of critical infrastructure agencies further. Malaysia proved to be a success story for multi-stakeholder management of cybersecurity though certain issues on coordination remained through the National Cyber Security Strategy and the gazetting of the Cybersecurity Act.

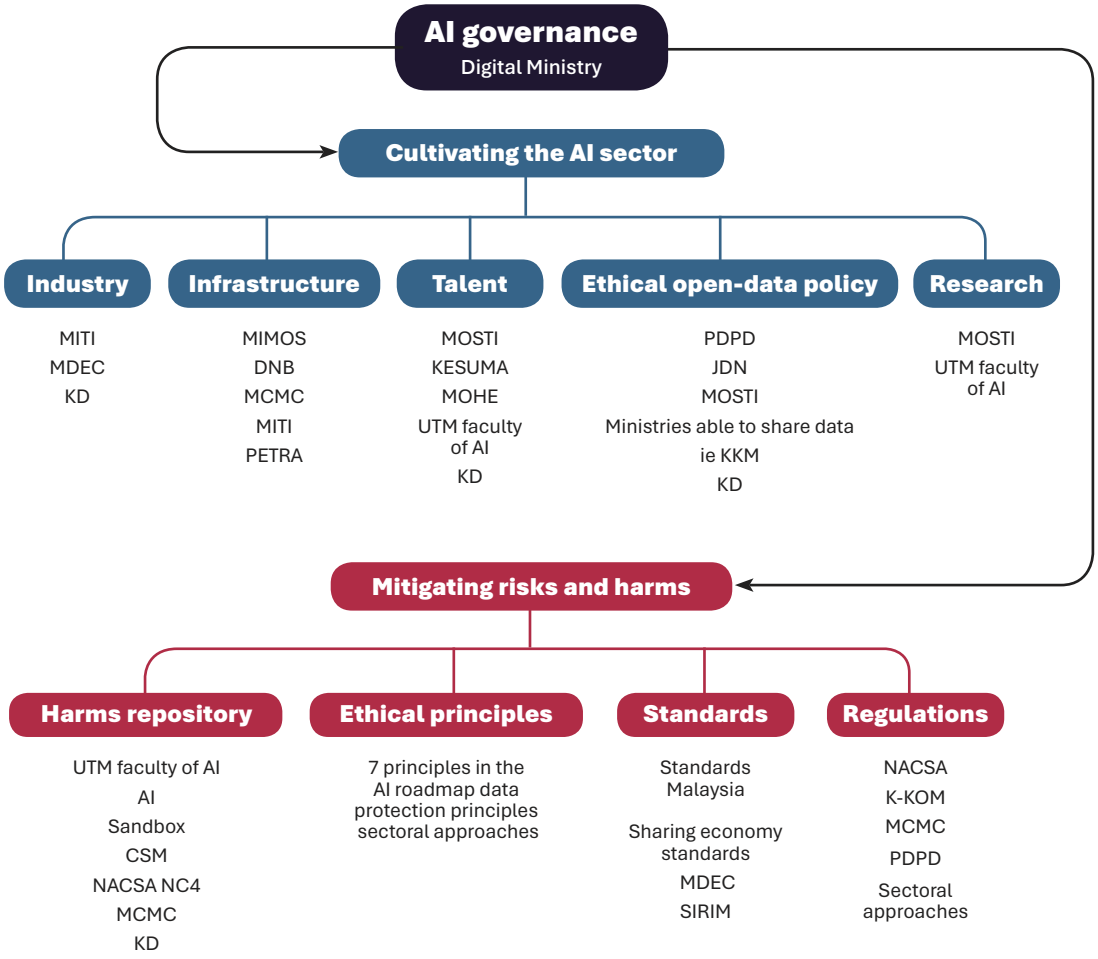
There are also elements of sectoral governance in unrolling the Personal Data Protection Act 2010. Sectors such as the licensees under CMA 1998 interpreted PDPA into codes of practice, which could be operationalised. This means addressing the seven general principles identified in PDPA and stating their applicability to data user and data subject[128]. There is a possibility that AI governance may take the form of governing data protection, not only due to AI being data fuelled, but also because there is a sharp inclination towards adherence to principles as the initial point of regulation. However, recent PDPA updates do indicate the need for improved governance, aside from mere self-assessment endeavours. The government would have to be proactive in enforcement lest data breaches become detrimental social ails.

If there are lessons from the two experiences, one could be the need for trust-building to occur hand in hand with governance, mainly because threats and disruptions in this space benefit greatly from information sharing. Therefore, building a platform for the exchanges to occur could be useful as soft mechanisms of compliance. Second is that for the government to provide fit-for-purpose policies, it needs technical knowledge and capacities. This access can be in the form of collaboration with universities and the private sector, forming an agency or constructing an internal technical arm in a ministry. It can be noted that the exercise was conducted in the past with the formation of Cybersecurity Malaysia. While Cybersecurity Malaysia was eventually taken out of MIMOS and incorporated into a company limited by guarantee, Cybersecurity Malaysia has remained a part of Malaysia's governance apparatus, currently situated under the Digital Ministry.

Regardless, governance is more effective if there is clarity on roles and responsibility. On this, Malaysia has made significant strides in AI governance. It has a road map and is currently pursuing adoption and innovation strategies through the Malaysia AI Roadmap 2021-2025. Malaysia has a few players in this space, namely:

Ministry or agency	Intended purpose
Ministry of Digital	Ministry of Digital was mandated to lead discussions on AI. With agencies, such as MyDIGITAL, Personal Data Protection Department, Cybersecurity Malaysia and Malaysia Digital Economy Corporation (MDEC), the ministry is well placed to introduce programmes that could cultivate AI in the general population or targeted segments. Its agencies could carry out onboarding, assessment of risks, guidance for entrepreneurship and international engagements to promote Malaysia's voice in AI. An example is Cybersecurity Malaysia, which could explore the technical challenges of AI, thus, guiding discussions on harms, societal impact and policy. MDEC has onboarded AI companies for the registration of Malaysia Digital (MD) status, which could introduce companies to incentives or guide them through assessment processes.
Ministry of Science, Technology and Industry	Due to MOSTI's linkages in the scientific community, it has released platforms for open data sharing while cultivating a research and development environment. MOSTI articulated the principles to govern AI in the road map. This would place MOSTI as an important player for research, development, commercialisation and innovation efforts.
National Cyber Security Agency	With the Cybersecurity Bill 2024, NACSA was appointed as the lead agency to drive discussions of cybersecurity policy and enforce the bill on the critical national infrastructure sector. This would place NACSA as a key stakeholder for cybersecurity and engagements on international platforms for responsible AI and responsible state behaviour regarding AI.
Ministry of Communications	The Ministry of Communications, as the implementer of the Communication and Multimedia Act (CMA), holds the legislative power and governs activities in digital spaces in addition to the hardware that enables their functions.
Ministry of Human Resources (KESUMA)	The Ministry of Human Resources is in the position of driving reskilling and upskilling programmes. TalentCorp is now a strategic think-tank under the ministry and is tasked with developing Malaysia's talents, inclusive of those on digital. It is currently developing reports on jobs in Malaysia.

Mapped against international AI maturity developments, the players may appear as below:



Source: Authors' own

As AI cuts across various jurisdictions, there is a need for a whole-of-government approach to cultivate the sector and mitigate the risks and harms of its deployment. While the above aims to match the AI maturity trajectory with government jurisdictions, it is cognisant that there is an existing mechanism where such discussions could take place. An example is the National Digital Economy and 4IR Council chaired by the prime minister and supported by ministers, sector representatives, academics and CSOs. The council already convenes on digital infrastructure and data in addition to economy and society. It could also discuss directions for AI, with auxiliary processes to implement vision and policies with agility and flexibility. More importantly is to develop mechanisms that break through silos and barriers.

Complementary to existing mechanisms, perhaps, are coordination for economic complexity in AI, ethical and innovative data spaces, multi-stakeholder talent pipeline efforts and building a harms repository. Growing the AI sector would require policies that encourage economic complexity where Malaysia's IC design houses could design chips used in other components of the AI ecosystem, appliances or even the manufacturing industry. The ecosystem could be further strengthened with policies that would enable the growth of AI-related start-ups and draw local and foreign companies to invest and increase Malaysia's production in the higher value of the AI supply chain.

Malaysia can also take several steps to enhance the adoption of AI industry-wide, not just in large enterprises but also especially among SMEs, which is important to boost competitiveness[129]. In addition, AI-enabling investments are a key to growing Malaysia's AI ecosystem. At present, the MyDIGITAL Corporation initiative includes the Digital Investment Office (DIO)[130] that facilitates and drives digital investments, creates incentives for adoption, such as the Malaysia Digital Catalyst Grant[131], and Malaysia Digital X-Port Grant[132]. The government could focus further on building the business ecosystem, especially on the R&D and commercialisation part to put Malaysia at the forefront of technology producer. The recently launched AI Sandbox Programme[133] led by MRANTI, under MOSTI, raises much optimism on such endeavours. To ensure that Malaysia is on the right track, all these initiatives should be coordinated to be implemented strategically across the whole of government, with proper monitoring and evaluation mechanisms established through the years.

Meanwhile, the development of Malaysia's near future and far future talent requires policies. The government is also putting plans in place to increase the talent supply in the ecosystem. First, is the introduction of several faculties centred on AI, such as the Universiti Teknologi Malaysia's (UTM) Centre for AI and Robotics[134], Universiti Kebangsaan Malaysia's (UKM) Centre for AI Tech, and Universiti Malaysia's Kelantan (UMK) Institute for AI and Big Data.[135] These could tap into a growing interest in the computer science field where Malaysia's Science, Technology and Innovation Indicators Report 2020 saw a 40% increase of ICT enrolments in STPM between 2015 and 2019[136] while SPM-level registration for ICT had a gradual increase from 2011 to 2017. However, considering the fast-pace technological environment, programmes and upskilling are essential to meet the pressing need for skills and talent.

This is also important to ensure that those with such skills are already at senior levels to fill gaps. To lessen the risk of brain drain and mismatching of skills and jobs, public-private partnership (PPP) and academia-industry collaboration are vital. Under the newly developed Ministry of Digital (MD), several programmes have been established, such as the MoU with a coding institution called 42 Malaysia[137]. Yayasan Peneraju, an agency, aims to improve the quantity and quality of talents through funding programmes. It also offers certificates[138] related to the field. It is, therefore, pertinent for the government to use an agency like TalentCorp to coordinate tracking the placement and effectiveness of such collaborations so that resources may be allocated in the most optimal way. MCMC, in collaboration with Microsoft, has rolled out the MCMC AI teach programme[139], which aims to enhance career opportunities in AI-related field through its capacity building programmes. To inculcate more awareness and interest in science and technology, MyDIGITAL Corporation has also launched the AI untuk rakyat[140] self-learning online programme.

Concurrently, there is a need to bridge known harms and unknown harms stemming from the adoption of AI. To that end, hosting a harms repository or appointing an AI safety institute could be useful. The harms repository should feed policymaking direction, whether in technical or contextual terms. Supporting the mitigation of harms are laws which could strengthen Malaysia's legal mechanisms. Malaysia has already updated the PDPA and passed the Cybersecurity Bill. In the pipeline are laws, such as the Online Safety Act, in addition to safety standards such as the Sharing economy – Part 2: General trustworthiness and safety requirements for digital platforms developed by Standards Malaysia. These could be tools to address future issues with AI.

Recommendations

1. Policymaking body with clear agenda

In a fragmented environment, communication and synergy across sectors and agencies is needed with clear jurisdiction for each stakeholder and player. A single vision of direction for AI, whether for innovation, industry or mitigating harms would be useful to determine the path forward. One institution needs to set the agenda in AI governance, with specific policies and implementation strategies. To address AI adoption and mitigation of risks, the body should:

1. construct a multi-stakeholder communication component on AI governance so that reforms and collaboration can be done seamlessly and effectively.
2. communicate the issues of AI with the other ministries and stakeholders and shepherd approaches to provide guidelines for all.
3. conduct a stock-taking exercise on existing AI policies and responsibilities with clear goals and timelines are needed before reforms and alignment can be done.
4. determine data-sharing requirements and cross-collaboration efforts to address security issues from AI, such as frauds and scams.
5. monitor and ensure the effectiveness of the upskilling and reskilling programmes.
6. policymaking body should conduct programmes on AI awareness, safety and ethical AI.
7. develop adoption targets for AI across sectors.

The structure needs to have and deliver clear mandate, milestones, coordination and alignment of efforts across sectors and agencies. The body, in constructing a vision, could consider a national AI project, which could set the tone for direction and trajectory. Below are further explanations on the key criteria of the body.

a. Multistakeholder way forward

This institution must take the lead in the communication platform/network across sectors and agencies. For coordination to take place effectively, it is important that communication is aligned so that information is accurate and could be dispersed in a timely manner. Furthermore, involving private sector and members of academia in the policymaking processes could pool resources to build secure AI or identify vulnerabilities in the ecosystem sooner. Programmes addressing the dual impact of AI deployment – mitigating harms and harnessing growth could assist with policymaking, especially if the body in this endeavour is lean.

Therefore, a central hub for AI safety could benefit the community where it links a user (anyone who uses the technology); creator, which may include the industry players, such as

developers and companies; third party that includes vendor, academics or any research and development institutions for AI; and the mediator could be the government as the governing body in a network that converses on AI safety while developing ideas to safeguard the rakyat. Governance or regulation is necessary for those involved in creating any technology with AI to ensure that users are not abused. On the other hand, a user also needs to be responsible about using AI ethically, like deepfakes and copyright issues.

b. Consider sectoral-based governance

Sectoral approaches are practised in Malaysia for cybersecurity and data protection where sectoral leads who are knowledgeable of the concerns and activities in their sectors could construct guidelines, which would elevate security and safety in the digital ecosystem. Much needed for sectoral-based governance is agenda setting, approaches to address risk and risky technologies as well as guidelines for safety. Transparency reporting to sectoral leads could demystify usage and impact of AI technologies. This means standardised, high-quality transparency reports detailing items required by regulators and/or civil society should be reported to the sectoral leads. Third-party independent assessments are needed for trust to be truly baked into current systems. An example of a sectoral-based approach is the Securities Commission's "Guiding principles relating to the adoption of artificial intelligence (AI) and machine learning (ML)" incorporated into its guidance on technology risk management[141] for the capital markets industry.

c. National AI project

Malaysia could consider formulating a flagship AI initiative or initiatives that galvanise efforts to develop local AI capabilities. For example, the development of smart-home appliances or to pursue advancement of locally developed AI technologies. This could include cultivating local development of AI models and methodologies that incorporate local values and norms when assessing high risk-use cases especially those affecting national security, national defence and critical infrastructure. This project can also be central to creating and implementing frameworks that are aligned with national values, ethics and laws to combat issues, such as data privacy, algorithmic transparency and avoidance of bias. This can also ensure that Malaysia's moral ethics and values are reflected in the output production of AI, especially in the knowledge-generation field.

A national AI project that is initiated and funded by the government can ensure that Malaysia develops its AI expertise and capabilities, including technical capacity, regulators and policymakers, to project its capability and AI industry. Such projects would require the collaboration of a network of stakeholders from industry, academia and relevant government agencies. Apart from that, by fostering a strong domestic ecosystem through a national AI project, it could spur economic growth, create jobs and enhance global competitiveness.

Lastly, a flagship project should strengthen governance mechanisms by mitigating and reducing risks, inclusive of managing data and understanding risks, in the use of advanced global technologies. Countries like China and the United States (US) have undertaken national AI initiatives with the aim of achieving technological capability. China's AI strategy, for example, involves significant investment in domestic leading AI[142] research institutions and companies like Baidu, Tencent, Alibaba and Sensetime. The US on the other hand, has prioritised AI

spending on its national security[143] and economic strategy. Singapore is also strategising AI as reflected from AI Singapore[144], a national programme that convenes Singapore-based research institute, start-ups and companies to enhance their local capabilities. They are also building a national multimodal programme touted as Southeast Asia's first regional LLM.

For Malaysia, initiating a national AI project could consider different mechanisms, such as deploying hackathon programmes for local companies to meet the objectives. This may serve as a cornerstone for developing national AI capabilities, enabling the country to harness its own socio-economic development while maintaining control over critical technologies and data.

2. On legislation: finding gaps and priorities

There are several ways Malaysia could build a safer ecosystem for and through the deployment of AI. Among them is to operationalise Malaysia's seven principles for responsible AI through accountability or transparency mechanisms. Challenges to the operationalisation of the seven principles should be identified. Existing laws and regulations should be leveraged on and, if needed, the legislation way forward could consider:

- **Existing enforcement mechanisms.** Forming or empowering existing sectoral regulators or enforcement bodies could be considered to augment capabilities to regulate activity that is now AI-enabled. The institution should focus on building awareness and accountability, in addition to meting out punishments.

- Constructing mechanisms for **transparency and explainability** could be useful. Concepts such as interpretability and explainability could be vague. Therefore, introducing standardised mechanisms of assessments could provide clarity to practices.

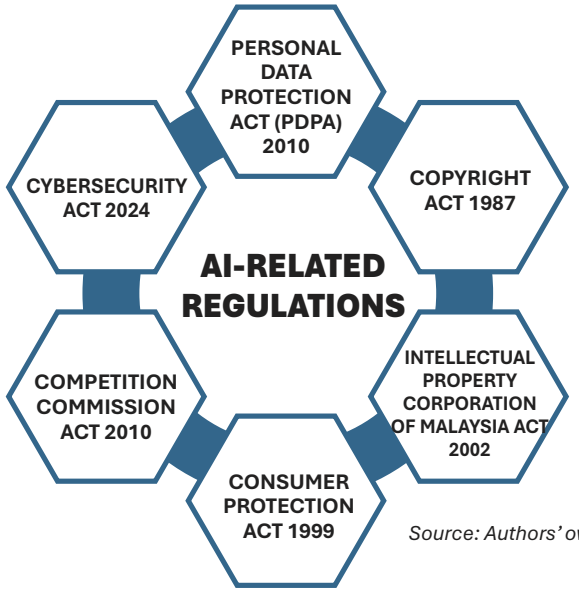
- Malaysia would need to consider approaches to support industry with guidance on technology risk in critical infrastructure sectors. Any additional risk from the use of AI, various security considerations and technology risks for use of AI systems, and risk-management frameworks and practices, particularly technology and security risks, should be enhanced and upgraded taking into account new developments from use of AI. This includes any additional or different risk, such as bias, unexplainability, lack of accountability as well as existing risks, such as third-party risk or security and privacy risks, especially if the state, user or deployer could not decipher or understand the technology. The pool of knowledge on models and its risks has to be expanded. Therefore, utilising a mix of growing local sectors, leveraging on global developments and having relationships with entities, such as AI safety institutes globally could help address challenges.

- The government could also construct an **AI assessment and evaluation matrix and system**. This borrows from Singapore's AI Verify, which allows developers to check against a self-assessment toolkit when developing systems. Thus, developers could bake processes to check the toolkit in their development strategy.

- **Transparency reports** could be used to present details of algorithms during assessments

- **Developing a rights-based environment.** Rights-based approaches are needed in the digital age, especially where with the right mechanisms, individuals could hold platforms accountable. However, awareness of digital rights is not articulated in society. Prioritising human rights at the centre of technology design should be paramount. AI would require certain rights to be functional, such as the right to be forgotten.

- Should Malaysia wish to be a producer of AI systems, there is a need to clarify grey areas and **strengthen intellectual property standards** in Malaysia for AI. There may be a need to develop specific approaches to patenting AI systems and protecting AI works and innovation.



Source: Authors' own

Malaysia has several existing laws that govern prevention of potential harms caused by AI, as well as mechanisms that fall under the soft law approach. Malaysia should not be hasty about introducing hard legislations, especially if they risk being ineffective and create more uncertainties in the market, dampen innovation and stifle competition. However, in preparation for future legislation, Malaysia could start mapping out the risks and prioritise those identified as most harmful and require hard law. Malaysia could focus on areas with high and prohibited risks, where it could examine what are the areas of extreme high risk for the population. In the case of the EU AI Act, those deemed as high risk are those caused by humans, could be prevented through design as well as those that involve manipulation and human lives. It should be examined together with related laws, such as the Cybersecurity Act 2024, Personal Data Protection Act 2010, Copyright Act 1987, Consumer Protection Act 1999 and Competition Commission Act 2010. The establishment of a clear and comprehensive development of hard law is essential to ensure that there is trust and safety in the ecosystem, coupled with clear direction and boundaries set by regulators for businesses to plan and make decisions.

The law governing AI technologies should be harmonised, similar to global IP standards. Additionally, regulations that strengthen IP standards could be useful to calcify Malaysia's innovation environment. It should also be considered that legal framework for AI accountability should include the government, with no carve-outs like the PDPA. Soon, laws governing blockchain should also be considered as an extension of ongoing developments.

3. Data governance and ethics centre

AI is trained on data, with the result of training producing copious amounts of data or metadata. The data ecosystem needs to enable sharing yet preserve privacy. This would mean there needs to be clarity on policies towards ownership of metadata, whether for privacy purposes or compensation for data being used to train AI.

Malaysia's data future may need to consider efforts to grow abundant, safe and secure data spaces. UK's Centre for Data Ethics[145] is a think-tank of sorts exploring how data is used, their economic impact and the issues arising from emerging technology's data hungry future. The centre serves several functions, where the first is to improve the UK government's means of regulating data while the second is to enable access to data for innovation in a trustworthy environment. Meanwhile, EU countries have constructed data spaces for data sharing. These spaces could be government led, where data would be provided by government bodies. Australia has seen efforts by the New South Wales state government and Australia Research Data Commons, which aim to share data in ethical means. Reflecting on international developments, there may be a need for Malaysia to map out data as resources. Malaysia could consider developing a full-fledged data strategy to create the data points needed for AI, join data pools into data lakes and chart data as a resource for innovation. This may also allow Malaysia to develop unique ways forward to manage risks associated with data sovereignty. Thus, Malaysia could evaluate and understand the potential trade-offs with the benefits from data interoperability.

While building an institutional and physical data governance and ethics centre could be resource intensive, the advantage of a "data space" is that it could ease the process for data sharing and training. The government has constructed several open data-sharing platforms, among which are those that cater to transportation, environment, as well as OpenDOSM and data.gov.my. Though Malaysia has improved through the years in providing dashboards for data seekers to access and utilise the data, there are challenges. These are mainly in attaining the data, absence of data to begin with and privacy-related concerns in the ecosystem. Additionally, the Official Secrets Act 1972 could colour public sector practices on shared data. While Malaysia is currently debating a freedom of information act and omnibus law, it could consider a data strategy. A data governance and ethics centre could research and chart Malaysia's means of accruing and managing a resource vital for an AI future. A unified platform delivering such services in a manner that seeks ways to preserve privacy and build data innovations could be useful.

4. Malaysia's AI safety institute

The Malaysian context is important. Despite positive case studies, principles and ethical concepts or frameworks developed elsewhere may need to be contextualised to Malaysia to account for the country's socio-political and economic imperatives. AI safety could be practised either through a code of ethics or standards or guidelines finetuned to the local context.

The AI safety institute is a research and policy organisation dedicated to ensuring that AI technologies are developed and deployed in ways that are safe and aligned with human values. Different than a data governance and ethics centre that focuses on the ethical principles on sourcing, collecting, training, and analysing data, the safety institute would focus more on the technical aspects of AI design and deployment in terms of how it should be modelled, trained, inferred, behaved and aligned. It focuses on identifying and mitigating risks associated with AI, such as bias, privacy violations and potential misuse of AI in critical areas, such as security and autonomous system. It can be the central institute that establishes guidelines and best practices that filter the production and deployment from unintended consensus, ensuring AI behaves as intended and aligns with national values. Malaysia with its growing digital economy would benefit from proactively addressing the AI risks and navigate challenges, such as data privacy, algorithmic bias and the safe use of AI in sectors like healthcare and finance. The institute may determine the most optimal process, such as guiding on technical standards or providing AI assessments. Additionally, the institute could manage a repository on harms that may serve as reference for policymaking. To this end, Malaysia's AI safety institute may need to have technical capacity with information-sharing capacity, especially for knowledge on foundational models, Malaysian contexts and expected outcomes.

Operationalising the institute need not cause delays to AI deployment, as there are many approaches and its terms of reference could be built in phases. An institute could begin by facilitating sandboxing of new technologies prior to widescale and public deployment to drive adoption while ensuring that the implications – both expected and otherwise – can be managed in a controlled environment. In governance models, such as Japan's and the UK's, research and development are emphasised in these institutes, which spin off into policy and advisories.
There are many forms of AI safety institutes. The UK established a stand-alone outfit while Singapore designated a university to carry out work of the AI safety institute. As the institute has a mixture of a sandbox, research- and information-sharing capacity, building from existing institutions, such as the AI sandbox pilot programme launched under MOSTI with the policy sandbox approach by Futurise, may provide structure in a manner which could be effective for governance. The institute would also be expected to participate in international arenas for information exchange and where necessary, may be required to project Malaysia's voice at the international stage, especially in arenas where rules and standards are being crafted.

Conclusion

Malaysia's commitment to advancing AI in a responsible and ethical manner is commendable, as reflected in the recent release of the National Guidelines on AI Governance and Ethics, and National AI Roadmap. Next year would be a year of maturity for Malaysia's aspirational document on AI and it would be useful to chart ways forward that could establish its position on AI domestically, regionally and internationally. This initiative demonstrates the government's intent and attempt to address the risks and mitigating the unintended consequences of AI, ensuring that technology serves the public good while fostering innovation and economic growth.

At this critical juncture, Malaysia must continue to build on this momentum by charting and refining its AI governance strategy. One of the key recommendations is for the government to have a single policymaking coordinator that streamlines and oversees the whole ecosystem, by convening multiple stakeholders at its most optimal position, according to its potential and functions. This comprehensive body should investigate, monitor and nudge economic growth, the R&D of AI-related works, talent development, and the safety and governance aspects. Active communication and collaboration should happen to ensure that all stakeholders' views and concerns are addressed. The body could apply a more agile approach to its formation, according to progress and needs. Considering the high potential of AI in growing the country coupled with the grave consequences of AI, it is worth investing in a dedicated AI safety institute and/or data ethics and governance.

In terms of regulation, Malaysia should focus on identifying and categorising the unacceptable and high risks of AI to comprehend the types of regulations required to mitigate these risks. Simultaneously, it should be examined comprehensively with other related laws as AI usage is both vertical and horizontal. Finally, ensuring that the AI ecosystem is supportive and inclusive is vital. This includes fostering talent, investing in research, and creating an environment where ethical AI innovation can thrive. With these steps, Malaysia is well positioned to lead its AI progress and realise its ambitions of becoming a safe and trusted high-tech nation.

Appendix

AI governance white paper

This white paper is produced from an AI governance workshop organised by MyDIGITAL and ISIS Malaysia, supported by Microsoft on 27 June 2024. The workshop, which gathered 39 members from government, academia, private sector and civil society, collected feedback on current challenges in governing AI. A synthesised version of the findings can be found below.

Introduction

AI regulation has bloomed across the world. The EU AI Act enacts different rules for different risk levels. China's three recent regulations target specific function of processes. Then, there is the US executive order setting standards and regulations for AI development and deployment. Amid this, different nations have opted for different institutions to oversee the shifting landscape. The US and UK are establishing government-led AI safety institutes. China, on the other hand, has an algorithm registry for the deployment of AI. In this region, Singapore's AI Verify offers a governance-testing framework and toolkit for developers to code AI in line with government-mandated ethics and principles.

As nations develop approaches towards AI governance, multilateral platforms aim to harmonise approaches. The Hiroshima Process International Guiding Principles for Organisations Developing Advanced AI Systems has developed common principles applicable in stages of AI design, development, deployment and use of advanced AI systems. Meanwhile, the Global Partnership on AI (GPAI) offers best practices and guidelines in four areas: responsible AI, data governance, future of work, innovation and commercialisation. New institutions and regulations could impact on the development and deployment of AI.
The workshop on 27 June yielded several findings.

First is that regulation or setting up a new legal framework is not the primary concern of participants. The workshop, which divided delegates into groups discussing institution, legal mechanism and ecosystem, had a voting component articulating challenges and solutions.

Specifically, cross-pillar discussions on challenges saw:

- The ***interpretation of AI safety in local contexts***, ranking highest among challenges identified. There was a call among participants to ensure AI safety through soft-law approaches, such as developing a code of ethics or standards and guidelines finetuned to the local contexts.
- This is followed by the need for ***clarity around accountability mechanisms*** with the possibility of setting up an institution to impose accountability and mete out punishments.

- ***Fragmentation in communication and synergy*** across sectors and agencies challenges unified approaches to building a safe AI environment. Participants reflected that jurisdiction for stakeholders are unclear, which could be traced to institutional developments or lack of clarity in mandates.
- Last of highly ranked challenges include ***complexity in regulating data to address challenges***, such as fraud. Participants reflected that data sharing is needed to address issues such as fraud. Yet, compliance with data-sharing efforts could differ between parties and sector. In such situations, laws that could facilitate data sharing or ease collaborations to address issues, such as scams and fraud, could be useful.

Building a stronger and secure data-governance ecosystem was also reflected in other issues, such as managing misinformation and data interoperability. Further issues are upended in the appendix.

Recommended solutions for governance include:

- To set up ***programmes addressing the dual intentions of mitigating harms and harnessing growth.*** These include awareness of AI, safety and ethical AI while also pursuing transition (reskilling) programmes for individuals interested in changing career paths into one for AI. Upskilling existing data scientists or data analysts, too, require programmes.
- Building a ***unified data governance and ethics centre*** also received much support. As AI needs to be trained on data, the management of data is of high importance, especially where government data could be used to train AI. It was suggested to refer to examples in Australia, whose efforts include those adopted by the New South Wales government which shares data with the public. Additionally, the Australia Research Data Commons links communities to facilitate data sharing, inclusive of highly sensitive data.
- ***Transparency is key*** in a rapidly changing environment. Therefore, setting mechanisms that could deliver standardised and high-quality transparency reports would be useful to gauge safety and compliance. It would be useful if items in the transparency report are determined by regulators in consultation with civil society. Further strengthening trust in the ecosystem are third-party independent assessments rather than relying solely on self-assessment.
- ***Developing capabilities for sovereign AI***, too, received high response from participants, especially in high-risk use cases. There is an argument made on cybersecurity, whether it is assurance for the technical safety of the model or to control its impact on society. Building Malaysia's own AI could address these concerns. However, this would require resources and attaining the right data for the AI.
- In line with the search for an ecosystem to harness AI, it was recommended to form a ***central AI hub for users, creators and mediators*** at the national level.

The time is right for thorough considerations of what approaches suit Malaysia, given its national ambitions and aspirations, to ensure competitiveness while addressing risks and governance concerns in a proportionate and appropriate manner.

Institutions

No.	Points	Votes
	Ideals	
1.	Data governance and ethics regulation body	NA
2.	Multistakeholder agency approach	NA
3.	Baseline maturity for AI usage and adoption across sectors	NA
4.	Enough resources in talents and cybersecurity practices	NA
5.	Operationalise the principles of AI ethics and AI usage	NA
6.	Should have a voice internationally and develop capacity for it	NA
7.	Clear vision, coordination and alignment with terms of references	NA
8.	Balance tech adoption among SMEs	NA
9.	Centralised communication	NA
10.	Be in-line with international commitments	NA
	Challenges	
1.	Fragmentation in communication and synergy	5
2.	Managing data and other related issues on misinformation and data interoperability	4
3.	Lack of transparency in the entire supply chain	1
4.	Decision-making too slow	0
5.	Agencies work in silos and confusion over jurisdictions	0
6.	Intellectual property rights (IPO)	1
	Solutions	
1.	Data governance and ethics centre	7
2.	Multi-stakeholder communication platform	2
3.	Ministries' clear strategy and policy direction (stock-taking exercises)	0

Legal

No.	Points	Votes
	Ideals	
1.	Gender-sensitive policies	1
2.	Transparency on training data	1
3.	Rights-based approach	1
4.	Higher punishments for harms	0
5.	New hard law	0
6.	Institution to impose accountability	0
7.	Explainability	0
8.	Contextualising the seven principles of AI to Malaysia	0
	Challenges	
1.	Accountability for AI decisions	6
2.	Lack of research to back policymaking	3
3.	Laws like PDPA drafted for commercial purposes, ill-fitting for human rights	2
4.	Fast pace of technology makes it hard for laws and policy to catch up	2
5.	Federal constitution does not provide for right to privacy	1
6.	Lack of talent to build and assess AI	1
7.	No quantitative metrics to measure transparency	0
8.	Proving intent or malice for AI	0
9.	Lack of duty of care by tech owners	0
10.	Personal data protection to be enforced	0
	Solutions	
1.	Standardised high-quality transparency instead of trade secrets	6
2.	Long lead time for some policies kicking in	3
3.	Strategic trade act dual-use technology	2
4.	Registration to know who misusing the technology	2
5.	Sandbox for new technology to prevent larger societal harms	2
6.	Cross-border harmonised legislation like IP law and biotechnology	1
7.	Legal framework should include government and commercial unlike PDPA	1
8.	Third-party independent assessment of gaps in technology	0
9.	Law on blockchain	0

Ecosystem

No.	Points	Votes
	Ideals	
1.	Sustainable yet affordable infrastructure	NA
2.	AI that is secured/resilient and regulated (international and local)	NA
3.	Registration of model	NA
4.	Flexible law	NA
5.	Explainable AI	NA
6.	Right to object (privacy) must be similar with other developed countries	NA
7.	Right to be forgotten (privacy)	NA
8.	Data security and data privacy (security)	NA
9.	AI-driven cyber threats (security)	NA
10.	Secure and trusted AI	NA
11.	AI syllabus	NA
12.	AI council and centralised policy	NA
	Challenges	
1.	AI safety (finetuned to local context)	7
2.	Balance in regulating the data	5
3.	Data sharing	3
4.	Adoption rate	2
5.	IP rights for AI algorithms	2
6.	Lack of public awareness on rights (education/low digital literacy)	2
7.	Policy changes when governments change	2
8.	Shortage of proficient workers	1
9.	Increasing frauds and scams	1
10.	No quantitative metrics to measure transparency	0
11.	Proving intent or malice for AI	0
12.	Lack of duty of care by tech owners	0
13.	Personal data protection to be enforced	0
14.	Different locations have different rights	0
15.	Consumer has no access to redress and rights for compensation	0
16.	Cybersecurity	0

17.	How to identify risks	0
18.	Vulnerabilities along supply chain	0
19.	Decentralised policy	0
20.	Accountability	0
Solutions		
1.	Programmes on awareness AI, safety, ethical AI, transition and upskilling	9
2.	Sovereign AI for high-risk use cases (sectoral)	6
3.	AI hub for users, creators, and mediators	5
4.	Cross-sector collaboration	4
5.	Minimal legislative framework supported by standards	3
6.	My GPT	0
7.	Platform for data sharing	0
8.	Cybersecurity bill (MAMPU, NACSA)	0
9.	AI sandbox	0
10.	AI faculty UTM	0
11.	New Industrial Master (NIMP) 2030	0
12.	Coordination	0

Attendees

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37. Ma Sivanesan Marimuthu, Deputy Secretary-General, Strategic Policy, Ministry of Digital
38. Datuk Dr Mohd Nor Azman Hassan, Deputy Secretary-General, Technology Development, Ministry of Science, Technology and Innovation

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