

country report

Jan 2024

Regional Programme Political Dialogue Asia
Singapore



Singapore's National Strategy in the Global Race for AI

A brief overview of the new Singapore's National AI Strategy and latest development of the regulatory frameworks.

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Background

Since the launch of ChatGPT in December 2022, the world has witnessed the transformative power of artificial intelligence ("AI"), which is rapidly emerging as one of the most important technological advancements in human history. Its human-like intelligence has opened doors to countless possibilities in reshaping industries and solving global challenges. On the other hand, the rapid evolution of AI is an uncharted territory, in which regulations and standards are not yet in place to mitigate the risks of potential misuse of AI. Policymakers have identified the urgency to come up with national AI strategies, hoping to steer the development and deployment of AI technologies to harness the benefits, while working to develop AI governance framework and standards in response to the rising concerns of AI risks.

Singapore, eyeing to become a world leader in AI development, introduced its first version of National AI Strategy in 2019 and has recently released an updated version in December 2023. This report aims to provide a brief overview of the Singapore's National AI Strategy (NAIS). Furthermore, it also provides a glance towards the Singapore's effort in the development of AI governance.

Singapore National AI Strategy (NAIS)

NAIS 1.0 (2019)

Since the launch of its [Smart Nation Initiatives](#) in 2014, Singapore underwent remarkable digital transformation in key sectors including health, transport, finance, education and public sector. As AI plays a crucial role in these Initiatives, Singapore launched the [National AI Strategy \(NAIS\)](#) in 2019, under the Smart Nation and Digital Government Office's National AI Office. **NAIS** outlined three key visions:

- To develop Singapore as a global hub for AI at a national level.
- To generate new business models and deliver innovative services to improve lives.
- To equip the workforce to adapt in the future of AI economy.

NAIS focused on two main areas:

- 5 National AI projects: **healthcare (chronic disease), municipal solutions, education, custom (border clearance operations) and logistics (freight)**.
- 5 Key enablers that are crucial for a thriving AI ecosystem: multi-stakeholder partnerships (government, researchers, industry), data architecture, trusted environment, talent and education and international collaboration.

Since the launch of NAIS, Singaporean government has made invested more than S\$500 million through AI Singapore (AISG) under the Research, Innovation and Enterprise (RIE). It has led to the establishment of about 150 teams working on research and development, and 1100 startups exploring new ideas with AI.

NAIS 2.0 (2023)

In response to the recent breakthrough of generative AI demonstrated by ChatGPT and increasing concern over safety and security of AI, as well as intensifying international competition for AI investments and talent resources, Singapore launched its second [National AI Strategy \(NAIS 2.0\)](#) in December 2023 with the title **"AI for the Public Good For Singapore and the World"**. Comparing to the NAIS 1.0 that prioritized on building national AI projects and expanding AI ecosystem, NAIS 2.0 has a broader coverage and more concrete targets. It also represents a shift from flagship projects to a systems approach, from AI as a "good to have" opportunity to a "must know" necessity and further secure Singapore's position to be an impactful world leader in the field.

NAIS 2.0 identifies and details 15 key actions across 3 systems (Activities Drivers, Communities and People and Infrastructure) and 10 enablers (e.g. industry, research, infrastructure, talent, the regulatory environment, international partnerships and more). These actions aim to meet NAIS 2.0's goals of developing "peaks of excellence" in AI, and empowering people and businesses to use AI with confidence. Some key actions are:

- Establish new AI Centres of Excellence (CoEs) across companies.
- Strengthen AI startup ecosystem.
- Accelerate public sector adoption of AI.
- Triple the number of AI talent to 15,000.
- Update AI R&D plan.
- Establish an iconic site to nurture AI community.
- Unlock government data for public good.
- Ensure fit-for-purpose regulatory environment for AI.
- Enhance cybersecurity and resilience to AI-related risks.
- Establish Singapore as an international partner on AI innovation and governance.

Singapore's AI Governance Landscape

Last year, AI governance and regulation has gained global attention due to the increasing popularity of the generative AI systems. Singapore is adopting a pragmatic approach and has [no intention to set mandatory rules for AI](#) yet. Nevertheless, Singapore is proactive in promoting responsible AI practices through various initiatives and projects through collaboration with industry, research organizations and other governments. The three Key stakeholders of drafting the AI Framework are the Personal Data Protection Commission (PDPC), the Infocomm Media Development Authority (IMDA) and Advisory Council on the Ethical Use of AI and Data (Advisory Council). Below is the overview of the Model AI Governance Framework and the AI Verify, which is the world's first AI testing toolkit.

Model AI Governance Framework

In 2019 the PDPC released the first version of [Model AI Governance Framework](#) aiming to provide private sector organisations detailed and ready-implemented voluntary guidance on key ethical and governance issues when deploying AI solutions. In 2020, an updated version was released to further refine the original Model Framework for greater relevance and usability by adding an **Implementation and Self-Assessment Guide for Organisations (ISAGO)** and two volumes of [Compendium Use Cases](#). All has been developed in close collaboration between government agencies, corporations, major tech companies, and academia.

Aligned with global frameworks, The Model is based on two overarching guiding principles - 1) Decision made by AI should be explainable, transparent and fair; 2) AI solutions should be human-centric. These core principles are then developed into four areas of guidance: 1) internal governance structures and measures, 2) human involvement in AI-augmented decision-making, 3) operations management and 4) stakeholder interaction and communication.

In January 2024, a draft Model Framework specifically for [generative AI](#) was proposed by the Verify Foundation (AIVF) and IMDA in response to the new risks brought by generative AI (hallucination, copyright infringement, value alignment). The proposal framework identifies nine dimensions to support a trusted AI ecosystem (e.g. Accountability, Data, Testing and Assurance, Security, AI for Public Good etc.) The draft is currently under consultation phase and the finalized version is expected to be released in mid-2024.

AI Verify

Launched by the IMDA and the PDPC in 2022, [AI Verify](#) is an AI governance testing framework and software toolkit that allows to test AI systems under a set of principles developed by international AI frameworks such as those from EU and OECD. By using AI Verify, organizations can use a combination of technical tests and process-based checks to conduct a voluntary self-assessment of their AI systems within their own operating environment. The system, in turn, helps companies attempt to objectively and verifiably demonstrate to stakeholders that their AI systems have been implemented in a responsible and trustworthy manner.

AI Verify consists of two parts. The first is a Testing Framework, which references eleven internationally accepted AI ethics and governance principles (e.g. transparency, explainability, security). The second is a Toolkit that organizations use to execute technical tests and to record process checks from the Testing Framework.

To further develop open source AI testing tools to enable responsible AI, the [AI Verify Foundation](#) has been established by the IMDA. The Foundation aims to boost testing capabilities and assurance to meet the needs of companies and regulators worldwide. It also serves as a community and platform for networking, collaboration and education. The

Foundation has seven premier members including tech giants like Google, IBM and Microsoft, who will set strategic directions and development roadmap of AI Verify.

Global AI Race

With the huge potential for AI to transform and disrupt societies and economies, the race for AI has just begun and will certainly intensify in the coming years. Singapore, with its highly efficient government and reputation as the melting pot of technological innovation, has strong competitive advantages in Asia to attract global talents and investment. Its success is reflected by the high ranking among the top AI hubs in different indexes, including the [Government AI Readiness Index](#) (2023), [The Global AI Index](#) (2023) as well as [Asia Pacific AI Readiness Index](#) (2023).

On the other hand, Singapore has demonstrated its ability to contribute to global discourse on AI governance and regulation through the experience of Model Framework and AI Verify. As the Chair of the ASEAN Digital Ministers' Meeting (ADGMIN) and Related Meetings in 2024, Singapore is taking a leading role to draft the [ASEAN AI Guide](#), which is expected to be released in early 2024. The drafted ASEAN AI Guide will provide guidance for domestic regulations and leaves specifics to companies and local regulators. It encourages consideration of countries' cultural differences in drafting AI regulations. The ASEAN AI Guide is regarded as a direct response to the upcoming EU AI Act, which takes a more stringent approach and will be legal binding to all EU member states. The drafting of the final text of the EU AI Act is still in progress and is expected to be released in mid-2024. How Singapore will adjust its AI governance approach to the EU AI Act remains to be seen.

Nevertheless, Singapore is active in international collaboration. Singapore has shown interest in developing "interoperability on AI governance, AI standards and testing frameworks" with the EU as shown in the [EU-Singapore Digital Partnership Agreement \(EUSDP\)](#). On the other hand, In October 2023, Singapore published [Interoperable AI Governance Framework](#) with the US, the first-of-its-kind agreement, with alignment of the AI Verify and the US's AI Risk Management Framework (RMF). All these show Singapore's pragmatic approach on the international level in addressing interoperability with key emerging global AI regulatory frameworks and its ambition to become a key player in shaping the global AI landscape.

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