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Singapore's Digital AI Toolbox

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FOREWORD

Artificial intelligence (AI) has become an indispensable part of modern life, powering systems from conversational agents to autonomous vehicles and complex financial infrastructures. While these innovations offer tremendous opportunities, they also introduce complex risks that extend beyond technical vulnerabilities, affecting national security, economic stability, and public safety and trust.

The Global Alliance for Taiwan Technology Diplomacy (GATTD) seeks to facilitate cooperation, helping governments, industry, and academia confront these challenges together. Our mission is to strengthen global and regional security through research, partnerships, talent development, and commercialization, while fostering economic growth through collaboration between Taiwan and other technology-driven economies. In partnership with, and under the leadership of, the Taipei Representative Office in Singapore, we aim to share insights widely and connect audiences across Taiwan, Singapore, and beyond.

This report features Singapore's AI strategies and tools used in its workforce and implemented into its public transportation systems.

We welcome your feedback and comments, which will help us improve and expand future reports in this series.

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EXECUTIVE SUMMARY

Singapore has positioned itself as a global pioneer in using artificial intelligence to enhance both urban mobility and public governance. Confronted with land constraints, it leverages AI as an “invisible capacity” to optimize transport systems through smart traffic management, predictive maintenance, and safer public transit, all under the Smart Mobility 2030 blueprint. Simultaneously, the government has institutionalized AI across the public sector through a Whole-of-Government strategy, led by GovTech, ensuring shared infrastructure, data governance, and cybersecurity safeguards.

Tools such as Pair and AIBots have empowered tens of thousands of civil servants to draft documents, analyze data, and deliver faster, more accurate services. On the public-facing side, AI-powered platforms like VICA and Support GoWhere provide citizens with efficient, personalized assistance while improving transparency and trust. Together, these initiatives illustrate how Singapore uses AI not merely for efficiency, but as a foundation for sustainable, responsible, and citizen-centered innovation.

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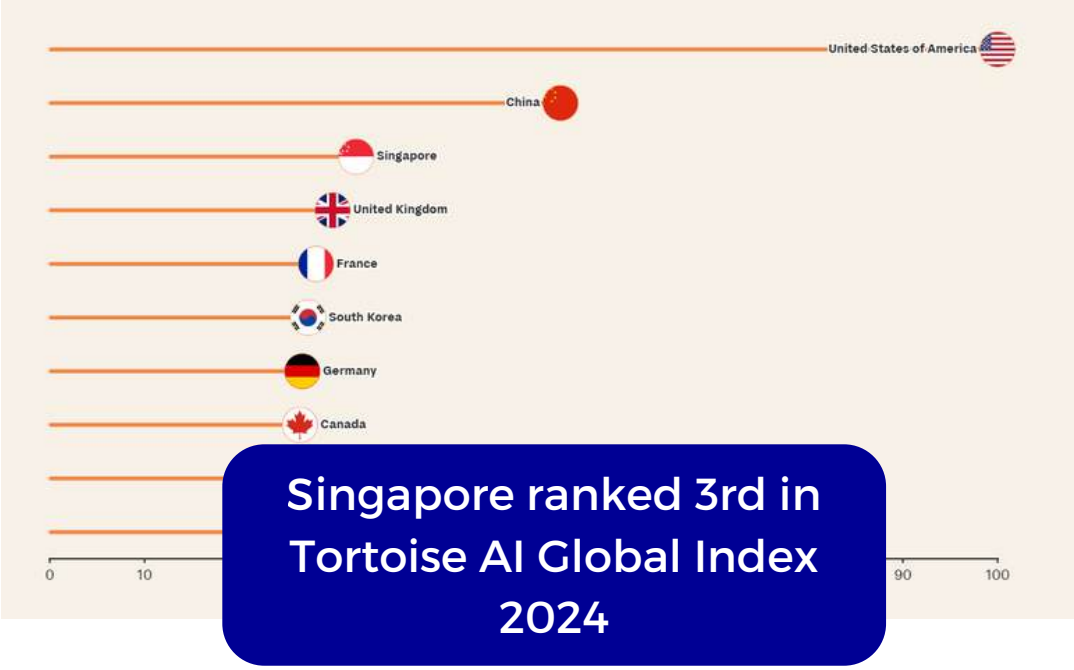
SINGAPORE'S DIGITAL TOOLBOX FOR CIVIL SERVANTS: HARNESSING AI TO ENHANCE GOVERNANCE

In 2024, the Tortoise Global AI Index ranked Singapore third worldwide, just behind the United States and China. In the same year, Salesforce's Global Government AI Readiness Index placed Singapore second globally with a score of 84.25, including 93.14 in the "Data and Infrastructure" pillar and 90.96 in the "Government" pillar.

These rankings underscore how Singapore has created an enabling environment for advancing AI in governance. The country has progressively integrated AI into public administration and service delivery, aiming to strengthen administrative efficiency and enhance the quality of public services.



Tortoise Global AI Index 2024

02

GOVERNMENT STRATEGY AND RESPONSIBLE GOVERNANCE

At the heart of this transformation is the Government Technology Agency (GovTech), which has championed a Whole-of-Government (WOG) strategy. Instead of siloed, bespoke systems, agencies share common infrastructure and platforms. This ecosystem allows government bodies to develop, test, and deploy AI applications within a unified framework—enabling both scalability and systemic efficiency.

To ensure adoption is not driven by efficiency alone, Singapore has embedded **three** key safeguards:

- **Policy: An AI Taskforce was established to regulate civil servants' use of large language models, with formal guidelines institutionalized through circulars.**
- **Education: AI has been integrated into the Data and AI Literacy Playbook, while a nationwide training program equips all 150,000 civil servants with the knowledge to use AI responsibly.**
- **Cybersecurity: Defenses have been reinforced against emerging threats such as "prompt injection attacks," while AI technologies are deployed to bolster existing security systems.**

These measures ensure AI is positioned not only as an efficiency tool, but as a secure, responsible, and institutionalized practice in governance.

THE AI TOOLBOX FOR CIVIL SERVANTS

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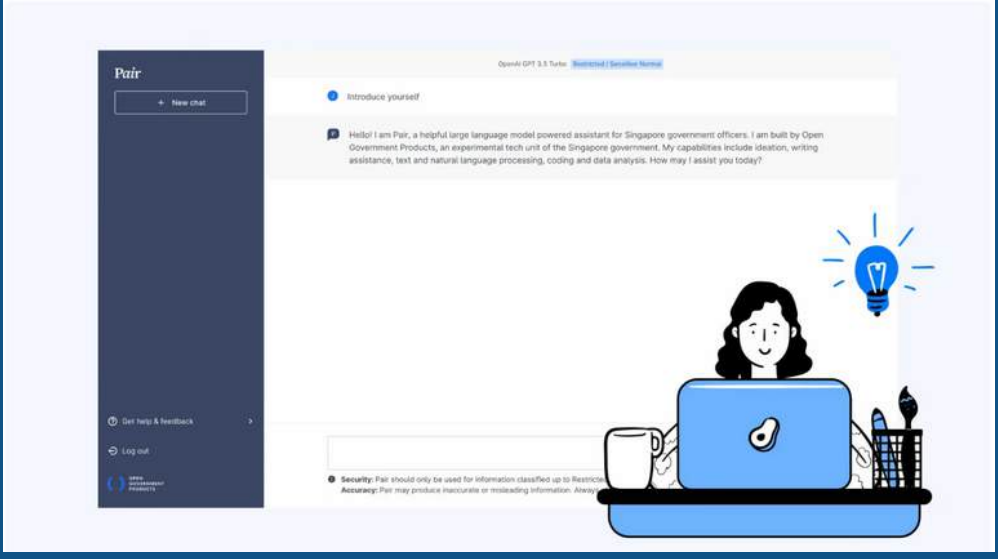
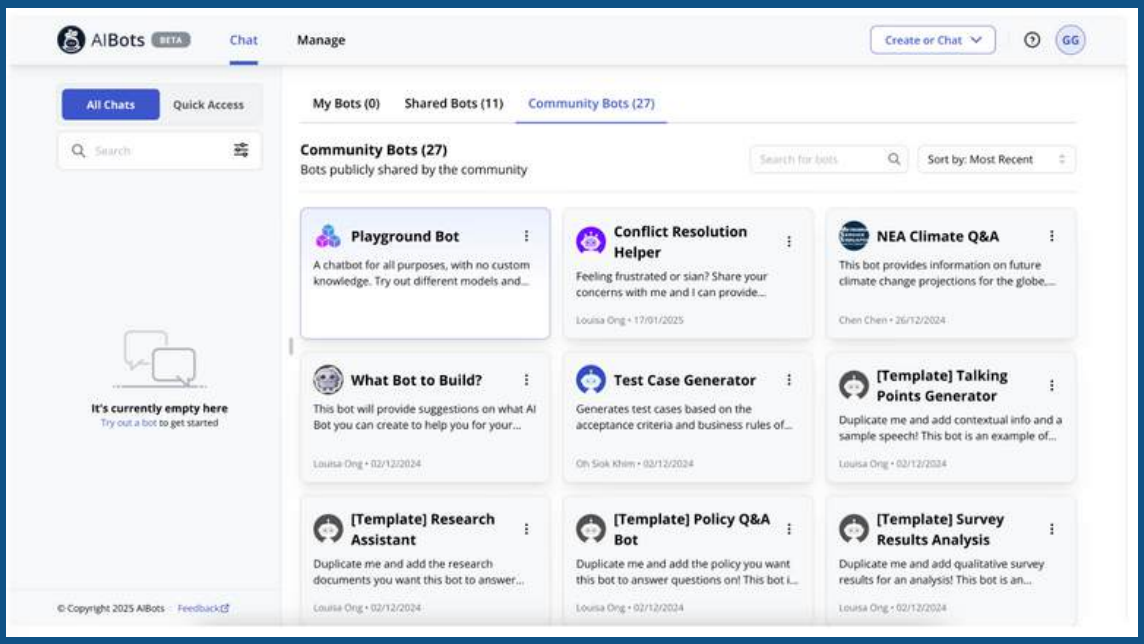
FOR CIVIL SERVANTS, AI HAS BECOME THE ESSENTIAL ASSISTANT.

Around one-third of civil servants regularly use AI tools, the most prominent being **Pair**—a secure AI chat assistant tailored for government. Pair supports brainstorming, summarization, text rewriting, and drafting official documents. Because it can handle sensitive data, it has been dubbed the “public service version of ChatGPT”, quickly becoming an indispensable part of daily workflows.



AI Tool: Pair

Complementing this, the AIBots platform allows civil servants to create custom chatbots with minimal coding. Equipped with file-upload and retrieval-augmented generation, these bots can swiftly answer queries based on agency-specific knowledge bases.



AI Tool: AI Bots Platform

By the end of 2024, more than 40,000 users across 115 agencies had built 12,000 chatbots, processing over 1 million messages. Applications range from HR policy inquiries to policy clarifications and even text analytics for public opinion surveys—substantially reducing administrative burdens.

DIVERSE AI APPLICATIONS IN GOVERNANCE

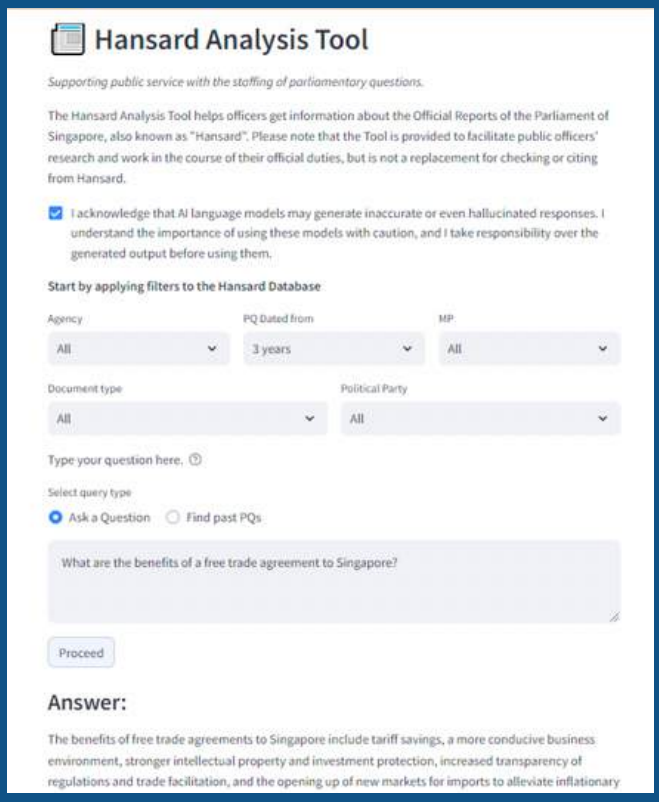
04

Singapore's AI adoption spans both internal administration and citizen-facing services, reflecting the breadth of the WOG approach:

- Policy research and parliamentary work: The ***Hansard Analysis Tool*** streamlines the review of parliamentary records. It summarizes past inquiries, identifies MPs' policy interests, and generates draft responses to new questions—delivering quicker, sharper policy feedback.

- Meetings and documentation: TRANSCRIBE provides real-time transcription, speaker recognition, and summary generation for both physical and virtual meetings. SmartCompose extracts key points from citizen feedback or complaints and drafts professional replies in accessible language.

- Document analysis: AISAY, an API, extracts data from unstructured documents for numerical comparisons and policy checks, proving especially useful in grant evaluation and compliance reviews.



AI Tool: Hansard Analysis Tool

Cross-agency collaboration is also strengthened through shared AI platforms:

- GovText enables large-scale analysis of official documents and citizen submissions.
- MAESTRO, an AI/ML platform, provides a secure and compliant development environment, breaking down data and system silos while scaling AI deployment.

On the public services front, AI's impact is even more visible. Singapore began experimenting with cross-agency chatbots as early as 2014, gradually evolving into the VICA platform (Virtual Intelligent Chat Assistant).

Today, VICA powers more than 100 government chatbots, handling about 800,000 queries monthly, ranging from tax filing and residency to various applications. Complex cases are seamlessly escalated to human officers with full dialogue records, expediting case resolution.

Meanwhile, Support GoWhere is being enhanced into a key digital service. By allowing citizens to describe their circumstances in natural language, the system uses multi-turn dialogue to refine understanding and recommend suitable schemes and services—delivering personalized, accurate, and user-friendly guidance.

AI also supports community governance. Through the OneService platform and the Kaki chatbot, residents can report issues such as foul odors or facility damage. The system automatically categorizes cases, routes them to the right agency, and tracks resolution progress, ensuring timely responses.

In tax administration, the Inland Revenue Authority of Singapore (IRAS) deploys an intelligent chatbot that provides real-time answers, account balance checks, and installment arrangements. Each year, it handles about 70,000 queries, saving taxpayers an estimated 11,666 hours.

Singapore's experience demonstrates that AI in governance delivers concrete benefits:

1. **Efficiency gains: Faster transcription, drafting, and query handling free civil servants to focus on higher-value work.**
2. **Enhanced citizen experience: Smart customer service and automated case routing provide quicker, more precise responses.**
3. **Cross-agency synergy: Shared platforms minimize duplication and enable resource integration.**

Yet challenges persist. Ensuring AI adheres to ethical standards and mitigating algorithmic bias in decision-making remain ongoing priorities. Overreliance on automation could undermine professional judgment and governance capacity. Balancing efficiency with accountability will require sustained efforts in policy, education, and cybersecurity.

CONCLUSION: ENHANCING GOVERNANCE EFFICIENCY AND CITIZEN EXPERIENCE THROUGH AI

Singapore's approach to AI governance illustrates a "whole-of-government, responsibility-driven" model. With shared platforms and clear guardrails, AI has already delivered tangible improvements in administration and public services. While challenges remain, Singapore's framework shows that when AI is embedded into institutional planning, it can elevate efficiency, service quality, and governance capacity—ultimately enriching the citizen experience.

Small Nation, Big Experiment: How Singapore Uses AI to Build a Smart Mobility Model

05

Singapore is a city tightly constrained by land. Roads already occupy 12% of its territory, and further expansion would come at the expense of housing, green space, or industry. As the physical limits of infrastructure draw near, the only way forward is to make existing resources more efficient.

Artificial intelligence has thus been framed as an “invisible capacity.” It does not create new roads out of thin air, but instead uses data and algorithms to enable existing infrastructure to carry more traffic, allow public transport to serve more passengers, and even deploy autonomous shuttles for short-distance needs.

It was against this backdrop that the Smart Mobility 2030 blueprint was launched in 2014. This plan treated transport management as a data-driven systems project, aiming not only for efficiency but also transparency and public trust. Cross-agency coordination, public–private partnerships, and attention to trust and safety were identified as the foundation for innovation at scale.

AI Monitoring and Traffic Management

06

Smart traffic signals were the first step. The CRUISE system, developed by Singapore's Agency for Science, Technology and Research, integrates sensor networks with traffic and pedestrian data, using AI to adjust light timings in real time. Public buses and emergency vehicles gain priority passage, while accidents or blockages are quickly detected and addressed.

Enforcement has also transformed: violations in bus lanes—once requiring manual review—can now be flagged instantly through computer vision. In the near future, onboard cameras in buses will feed into the AI monitoring network, dramatically increasing enforcement efficiency.

Even road maintenance has seen a revolution in efficiency. Since 2023, AI video analysis has replaced manual inspection. Vehicle-mounted equipment now automatically detects potholes, cracks, faded markings, or damaged signs during routine operations, with accuracy exceeding 90%. What once required over 30 inspectors can now be done with half the manpower—boosting efficiency by 60% and cutting costs by 20%. Citizens' app-based defect reports are also cross-verified with AI findings, making road upkeep more comprehensive.

"In the near future, onboard cameras in buses will feed into the AI monitoring network, dramatically increasing enforcement efficiency."

07

SMARTER PUBLIC TRANSPORT

Public transport is where AI touches citizens' lives most directly. Bus arrival times—once a common source of frustration—are now predicted using models that factor in weather, traffic signals, dwell times, and road congestion, resulting in far greater accuracy.

In the MRT system, operators have teamed up with ST Engineering to use digital twin technology, mapping trains and stations into a virtual space to detect anomalies early and schedule preemptive maintenance, reducing service disruptions.

Safety has shifted from reactive to preventive. In 2023, Bukit Panjang LRT deployed the iSafe system, which issues instant alerts when passengers approach platform edges or intrude into tracks, with detection accuracy reaching 99.8%.

Looking ahead, SBS Transit plans to install the RABS intelligent braking system in selected buses. It can detect hazards 150 meters away and react within 40 milliseconds, reducing both accident risks and collision severity.

Photo Credit: SBS Transit

AUTONOMOUS DRIVING AND SMART PARKING

08

Singapore has taken a gradualist approach to autonomous vehicles. In 2024, Sentosa piloted driverless minibuses, serving tens of thousands of passengers without major incidents, giving the public its first real taste of autonomous convenience.

From September 2025, Punggol will host shuttle projects by Grab, WeRide, ComfortDelGro, and Pony.ai, with residential services expected in 2026. Safety officers will initially accompany rides, and residents are invited to trial rides—building trust step by step.

Parking has also been reshaped by AI. With edge computing and computer vision, car parks now achieve 99% license plate recognition accuracy while monitoring available spaces and illegal parking in real time, vastly improving management.

Sentosa

Photo Credit: Sentosa.com

Punggol

Photo Credit: NParks

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ACHIEVEMENTS AND CHALLENGES

Singapore is conducting a “big experiment in a small nation.” Within strict land constraints, it has turned every part of its transport system into a smart system: using algorithms to create capacity, governance to build trust, and data to ensure flow. The result is smarter signals, more reliable buses, safer trains, steadily growing adoption of autonomous vehicles, and more convenient parking. Urban mobility is quietly expanding under the drive of AI.

Yet challenges remain. The rapid growth of data calls for stricter sharing protocols and standardization. The tropical climate poses long-term stress on sensors. And public trust ultimately depends on transparent handling of incidents and clear frameworks of accountability.

Please feel free to reach out to the Economic Division of the Taipei Representative Office in Singapore should you have any enquiries or are seeking partnership opportunities of investment or collaboration in the field of semiconductors and AI in Taiwan.

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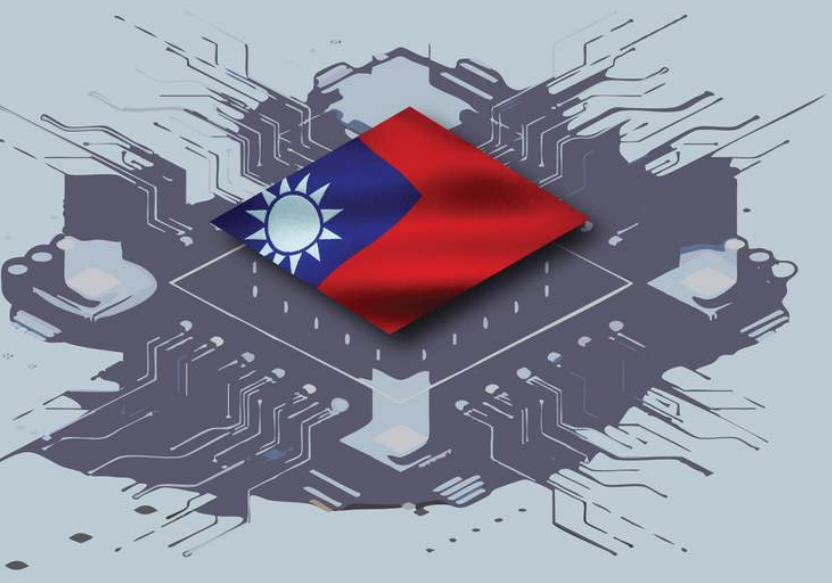

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