

Navigating the Digital Frontier: Singapore's Strategy for Data Interoperability and AI in Government

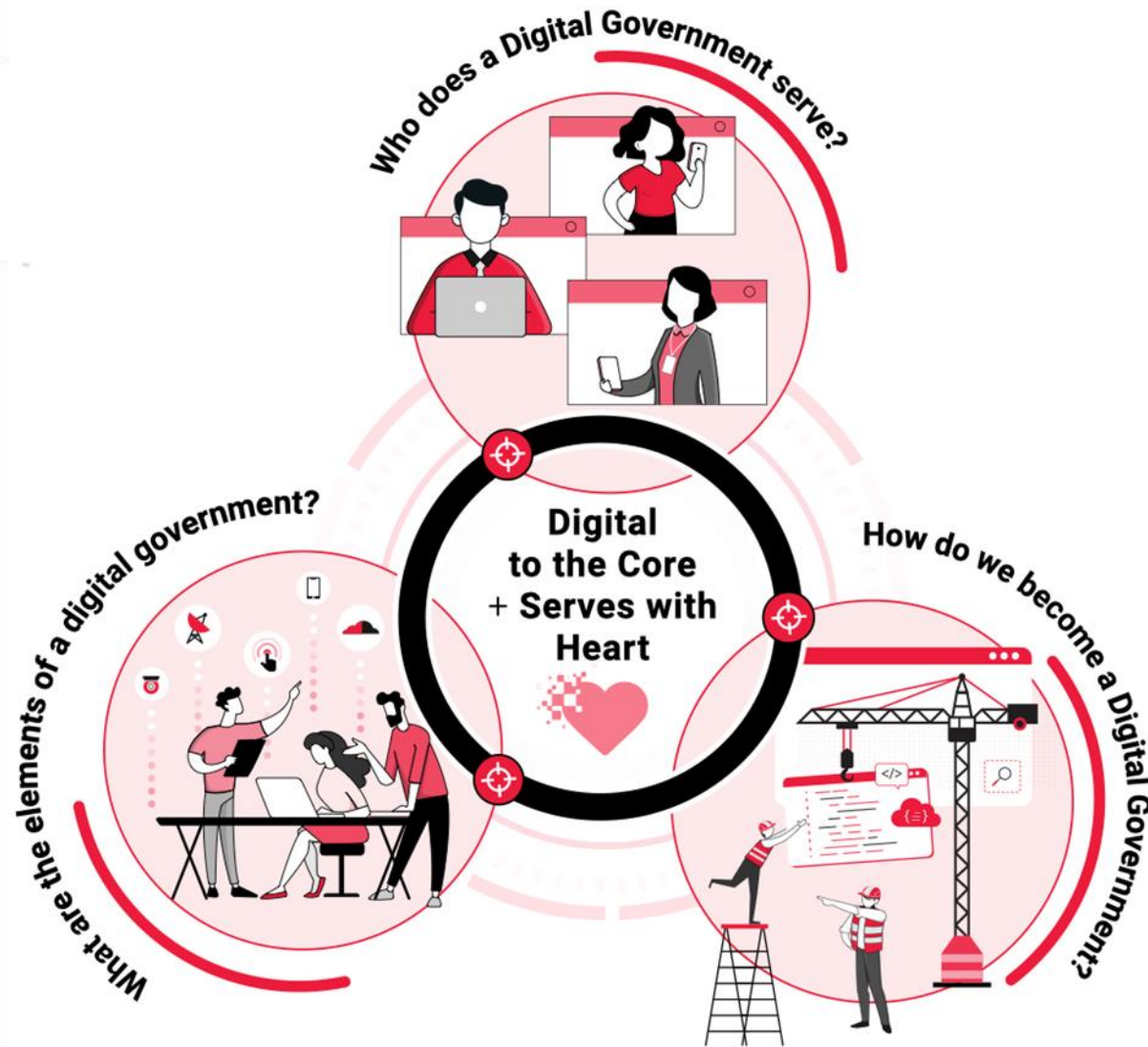
Mr. Sim Feng-Ji

Deputy Secretary (Digital Government)
Ministry of Digital Development and
Information, Singapore

22 May 2025



Singapore's Digital Government Blueprint



To create a government that is **Digital to the Core, and Serves with Heart**

Build **stakeholder-centric services** that cater to citizen and business needs

Transacting with a Digital Government will be **seamless and secure**

Public officers will be able to **continually upskill, adapt to new challenges, and work effectively** across stakeholders

We have made good progress in our Government Digitalisation Journey

99%

of all government transactions
are completed digitally



99%

of all government services
offer e-payment

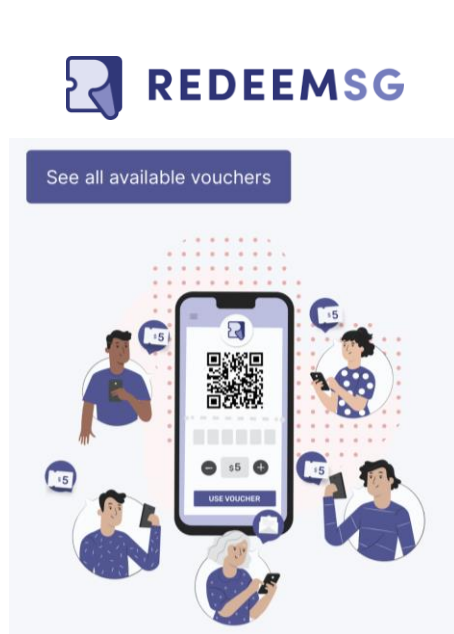


83%

of citizens and businesses are
satisfied with government's e-
services

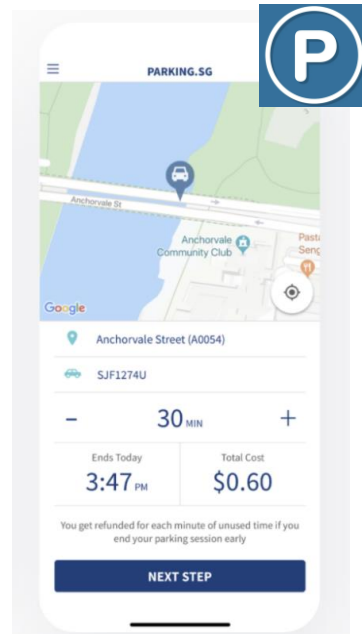


A large part of Government services are delivered through Citizen-centric Digital Products



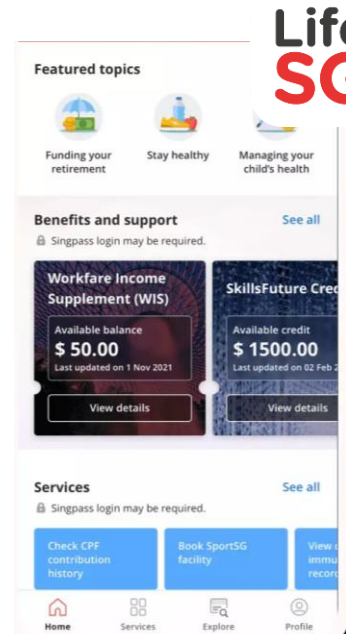
RedeemSG

Digital Voucher System for government campaigns



Parking.SG

Allows users to pay for short-term parking charges through mobile



LifeSG

Providing a simplified experience across government services



CPF Mobile App

Provides access to CPF services and information on the go



TraceTogether & SafeEntry

TT/SE were crucial in helping fight COVID-19, supporting cluster identification

The Singpass app provides a consumer gateway to Government e-services

For Individuals

97% Account Penetration Rate

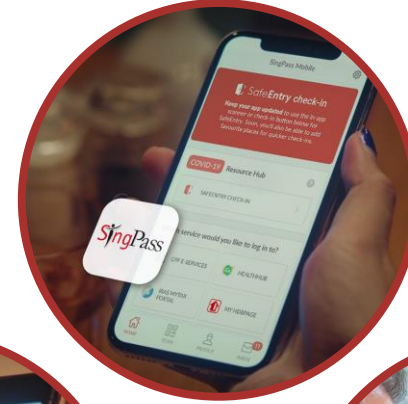
4.2M App Users

90% Transactions through app

4.8 App rating



>2700
services using
Singpass



800 agencies
and private
organisations
using Singpass

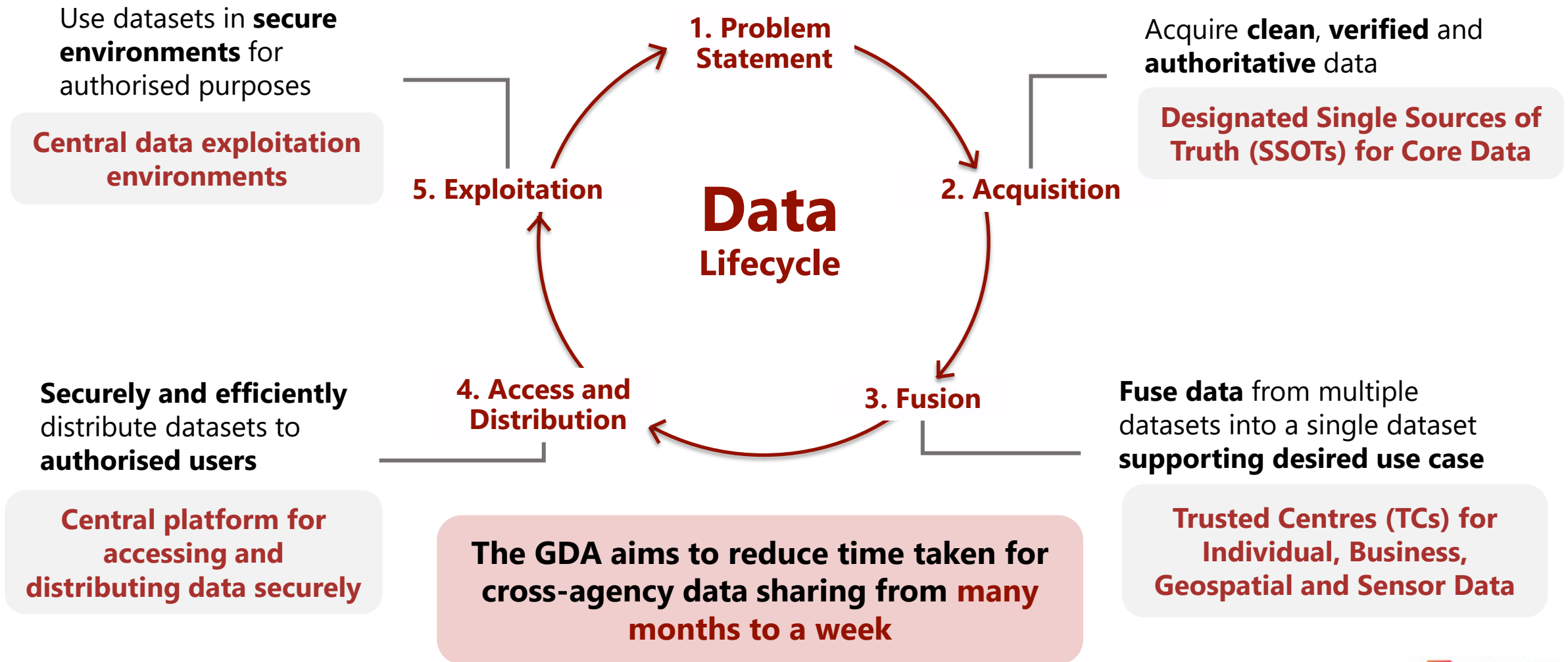


500 Million
transactions



80%
reduction in
transaction time
for businesses

We established the Government Data Architecture for secure, faster data sharing across agencies



This includes the use of central platforms to facilitate data flows while ensuring the responsible use of data

We recognize that improving data discoverability and accessibility is vital for supporting informed decision-making ...



DataHive



DATA.GOV.SG

DataHive is the Whole-of-Government platform for discovering and requesting datasets. DataHive allows data providers to share data with confidence, by providing an integrated request workflow and higher visibility of data sharing.

Data.gov.sg is a centralized platform where public agencies share their open government data for public use. Data.gov.sg simplifies the process of data discovery and facilitates analysis and research on verified government datasets.

... whilst ensuring the continued responsible use of data in accordance with established regulations and policies

The Government has put in place strong personal data protection laws and policies to safeguard sensitive data. The high standards of data protection apply to both the Government and third parties that agencies work with to deliver services to citizens.

Government Personal Data Protection Policies

Jul 2021

The publication of this document is solely for the information of the public. The policies are subject to the requirements of law, contract, and other Government policies and are subject to change. The Government may, in its sole discretion, update the policies set out in this document without publishing such updates. This document will not be liable for any loss or damage that may be incurred or actions arising from any information contained in this document.



SMART NATION
DIGITAL TRANSFORMATION

GOVERNMENT DATA SECURITY POLICIES

This document contains general information for the public only. It is not intended to be relied upon as a comprehensive or definitive guide on each agency's policies and practices. The data security measures implemented by each agency will differ depending on various factors such as the sensitivity of the data and the agency's assessment of data security risks. The Government may update the policies set out in this document without publishing such updates.



SMART NATION
DIGITAL TRANSFORMATION

Key Policies of the Government's Third-Party Management Framework

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Published on 16 April 2020

Building on a strong digital and data foundation, we can leverage emerging technologies like AI

We believe...

1. AI can be a **force multiplier** to uplift human potential
2. AI is **strategically important**

We want to...

**Build Capability and
Realise Public Good**

We need to...

Invest in Opportunities

We must...

Manage Risks

What's different about AI now?

**Recent AI breakthroughs
have resulted in..**

- Greater capabilities and accessibility
- Growing concerns over the safety and risks of AI

+

New Competitive Realities

- Scarcity of AI resources and talent
- Demand escalation for AI investments and talent

=

Key Shifts Needed



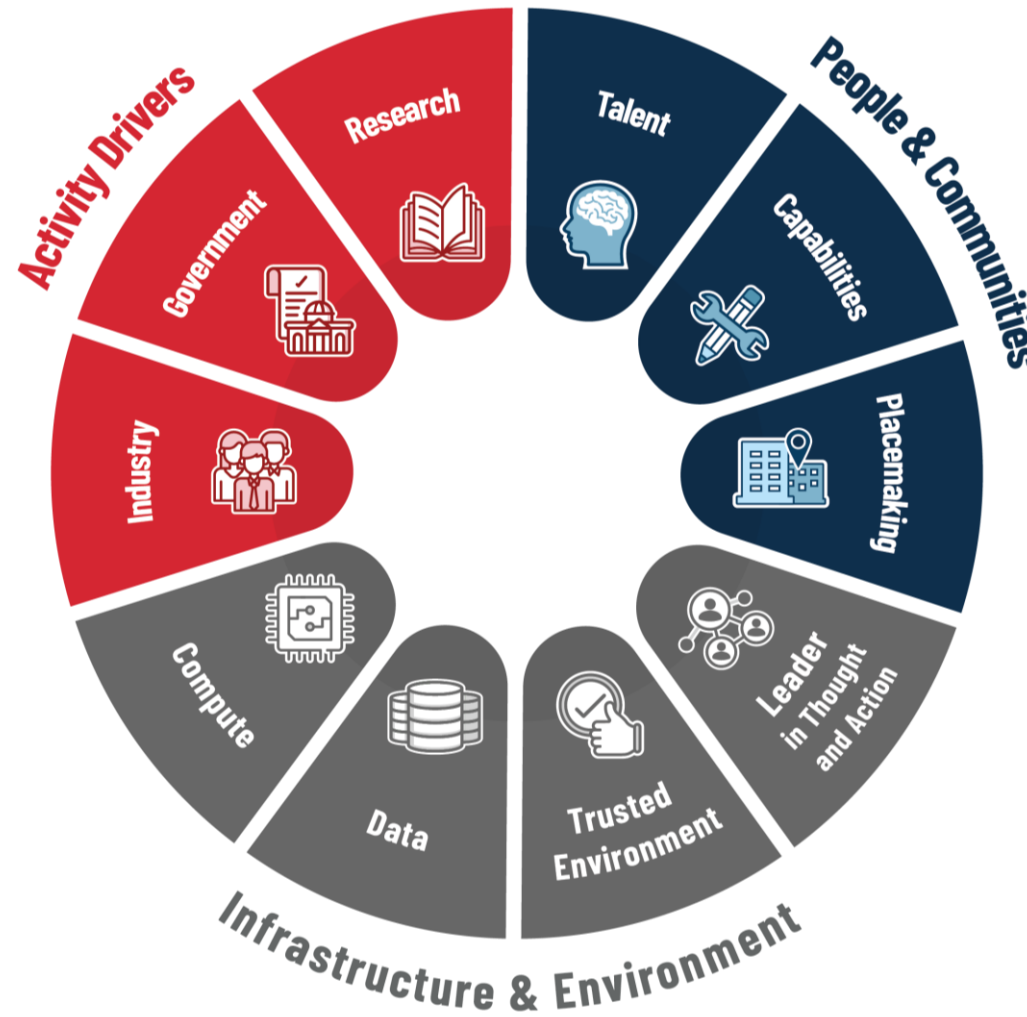
From Opportunity to Necessity

From Projects to Ecosystems

**Higher stakes to address
downsides and risks**

The National AI Strategy (NAIS) 2.0 is our framework for the future

NAIS 2.0
to unlock
Singapore's
AI potential



Activate
3 systems

Work through
10 enablers

What are we trying to do in Government?

Vision: Leveraging AI to Enable a More Effective and Efficient Public Service

Broad-based Adoption

Getting everyone to use AI

1.1 Develop & drive awareness of suite of central and domain-specific products

1.2 Enable rapid & widespread product development

1.3 Education & Change Management to democratise access to AI for all

Domain Transformation

Applying AI impactfully in specific domains

2.1 Integrating AI into existing products and systems

2.2 Development of new AI models or capabilities to drive domain transformation

Build Vibrant Eco-system

Necessary foundation to foster the development, adoption and utilisation of AI

3.1 Governance

3.2 AI Resources
(Data, Compute, Funding)

3.3 Capacity Building

3.4 Sensemaking

Broad-based Adoption: Making every Public Officer a “Technologist” by building up AI efficiency

General Productivity Tools



AI Bots

A platform where users create and share their own RAG* chatbots



Fast & secure ChatGPT-version



Automated Govt Minutes Generator



Document Parser using OCR to Automate Info Extraction



Generate insights across Large Sets of Textual Documents



Speech-to-Text for Transcribing & Summarisation

Domain-specific Knowledge

Education



- Language Feedback Assistant to provide students with feedback in areas like spelling & grammar
- Speech Evaluation Tool for teachers to auto-grade students' submission

Maritime



Automate Info Extraction from Unstructured Documents

Legal



Auto-generate Summaries of unreported judgments



Generate Draft Legal Memos, Contracts and Court Documents

Environment



Automate Animal Identification from Audio Data

*RAG refers to Retrieval-Augmented Generation, a technique that involves retrieving relevant information from a pre-existing knowledge base or external dataset and uses the retrieved information to augment the generative process.

Broad-based Adoption: Empowering our Public Officers to be "Builders"

Central Developer Platforms



Platform providing LLM-as-a-Service and RAG-as-a-Service, managing API keys and helping developers to speed up developments of advanced AI tools.



AI/Machine-learning Ops Platform to help agencies productionise advanced use cases and automate workflows in a secure environment.

Innovation Programmes



An annual month-long fixture where Public Officers engage in iterative idea generation and user research to develop working prototypes to address Public Good problems. In recent years, >50% of solutions use AI.



- **AI Incubator:** A 12-wk programme to promote rapid experimentation and empower Agencies to validate AI uses cases to address real-world challenges.
- **OpenAI x GovTech Hackathon:** A high-intensity, 4-hr event enabling developers to use the latest OpenAI API and o1 reasoning model to develop innovation solutions across domains such as Education, Healthcare, Service Delivery and Government Services.

Broad-based Adoption: Investing in Education & Training across different user segments

Public Officers

Guides & Playbooks

- Data & AI Literacy ePrimer
- Prompt Engineering Playbook
- RAG Playbook

Workshops & Courses

- Tech Up
- Civil Service College's AI Ignite Series
- Competitions



Tech Engineers

Community Engagement

- Lorong AI & AI Wednesdays
- Neural Networking

Elaboration on slide 15

Applied Coursework

- AI Champions Bootcamp
- Digital Academy AI courses



Leaders

Leadership Engagement

- Digital Training on AI Risks and Governance for PSeS
- Leading Digital Transformation Course for Directors



Domain Transformation: Close Collaboration with Domain Leads to apply AI meaningfully

Eight Domains with High Potential to Leverage AI

- Education
- Healthcare
- Legal
- Service Delivery
- Cybersecurity
- Built Environment
- Homeland Security & Enforcement
- Software Development
- ...and others

AI Use Cases range across different levels of difficulty to operationalise



Transformation can take place in two ways:

1

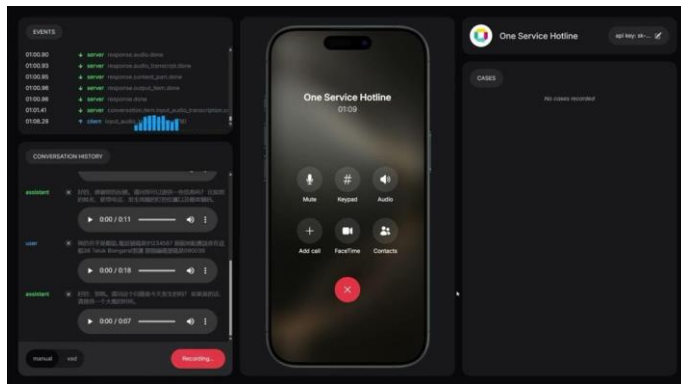
Integration of AI into existing & Products Systems

2

Development of New AI Models or Capabilities,
e.g. In-house Fine-tuning

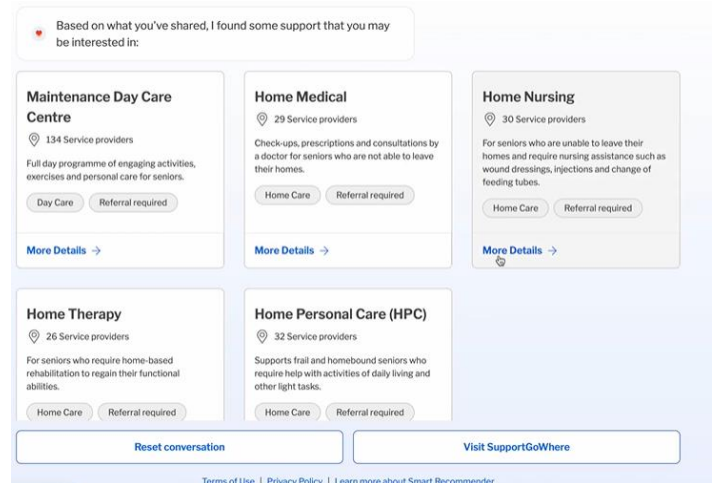
Domain Transformation: Transforming Service Delivery to Citizens

Prototype: Multilingual Hotline Service for Elderly



Assist users to report municipal issues or submit feedback without navigating the OneService app, addressing the digital literacy challenges often faced by elderly.

Beta: ServiceSG AI Hybrid Recommender



Provide personalised, proactive and omnichannel recommendations on relevant Government schemes to citizens.

Deployed: Passport-less Clearance at Changi Airport



Clear immigration without passports, using Computer Vision for facial recognition. Used by >1.5M travellers in first 3 months; average clearance time reduced from 25s to 10s per traveller.

Vibrant Ecosystem: Fostering the Development, Adoption and Utilisation of AI

Research



NRF
SINGAPORE

AISG: AI National Programme that brings together researchers and companies to develop AI solutions and grow industry AI talent pipeline.

NRF: Supports the translation of research outcomes into products and services.

Industry

Trailblazers



SEA-LION



Google Trailblazers: SG's first GenAI Innovative Sandboxes to accelerate development of AI solutions to address real-world challenges.

SEA-LION: An open-source LLM to better understand South East Asia's diverse contexts, languages and culture. Outperformed leading models such as Llama, Gemma and Mistral models. Garnered strong interests from regional countries (Indo, Thai) and big tech companies (AWS, GCP).

Government

AI Wednesdays



Lorong AI



AI Weds: Flagship weekly gathering for AI practitioners, researchers and innovators to share knowledge and collaborate. Averaging >70 attendees per session.

Lorong AI: A co-working hub to encourage collaboration and drive knowledge exchange among AI practitioners across Govt, Industry and Research.

Robust Governance crucial to ensure AI development aligns with societal, ethical and economic objectives

While AI presents us with many opportunities, it also introduces new risks

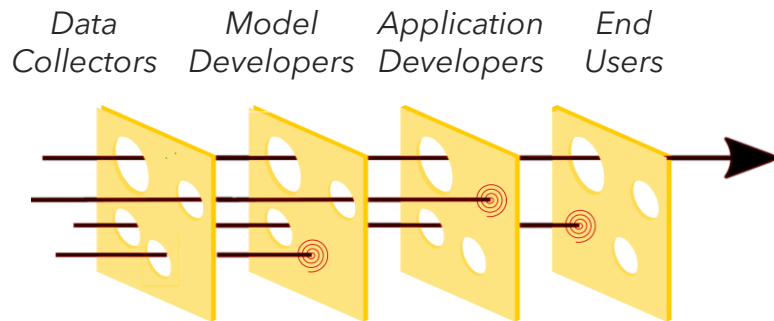
Risk Categories

Misinformed Use

Malicious Use

Systemic Impact

Catastrophic Risk



We need a Swiss Cheese approach to manage risks

We have introduced Targeted Regulations, Frameworks & Tools

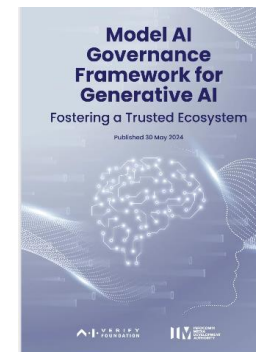


Regulations

Targeted Legislation for Specific Harms e.g. Elections (Integrity of Online Advertising) Amendment Bill



Frameworks



Tools

AI-VERIFY

Project Moonshot
An LLM Evaluation Toolkit



Litmus



Sentinel

Agencies must look Inward & Outward to manage AI risks

Dual Roles of Sector Agencies

As **users**, ensure responsible in-house development and deployment of AI

Inward
Within Agencies

Outward
Towards Sectors

As **sector leads**,

- Encourage AI innovation by industry
- Update policies and levers to manage AI risks within sector

The Ministry of Digital Development and Information (MDDI)-family will provide support to agencies:

Within Agencies

- **Establish policy framework** for public sector use and/or development through Circulars.
- **Monitor and govern** Deployment across WOG through AI Development Group (AIDG).
- **Develop technical tools** for product teams to identify and/or mitigate risks.

Outward Towards Sectors

- **Establish baseline safety and security guidelines** across sectors.
- **Open feedback loop and info sharing** through AI Governance Roundtable.
- **Develop testing tools** as a resource for industry.

Addressing AI Risks: Inaugural AI Safety Challenge and Capture the Flag Competition

AI Safety: Red Teaming Challenge



- Brought together domain experts in culture and language across 9 Asian countries to **red team 4 LLMs for regional harms, focusing on harmful bias stereotypes**
- Conducted in English and regional languages
- Prelim findings show that:
 - LLMs still struggle with addressing regional bias
 - Inconsistent performance in regional languages → LLMs can be more susceptible to exploitation in regional languages

AI Security: Capture the Flag



- AI & Security experts performed **adversarial attacks to identify vulnerabilities in AI Security Guardrails**
- Learnings include:
 - AI Models can leak traces of sensitive information, which can be abused to recover the complete information
 - AI Guardrails are not a panacea, can be bypassed via adversarial ML algorithms
 - Traditional Cybersecurity practices are required to secure AI systems

Guardrails need to be continuously innovated in response to fast-moving threats and risks

Managing AI Risks is an Ongoing Process

Keep Innovating



"...regulating AI must be the art of the possible, the attainable, the **art of the next best**. We must **go for the next best**, which is to **get the most good out of AI and avoid the worst**."

President Tharman
ATxSummit Opening Gala
29 May 2024

Manage Risks



- Set up the right Governance structures
- Facilitate collaboration & exchanges:
 - AI Development Group
 - AI Governance Roundtable

Build Capabilities

- **Policy**
 - Awareness of how AI is used in sectors and the risks involved
 - Identify and address policy gaps
- **Legal**
 - Identify AI legal risks, possible regulatory responses and global AI Regulatory Landscape
- **Operations**
 - Find meaningful use cases to deploy AI
 - Establish robust systems for monitoring and managing risks
- **Tech**
 - Deploy Testing Tools and Guardrails
- **Cyber**
 - Identify AI cyber risks
 - Effect cyber risk mitigation measures

The Way Forward: AI in Singapore as a National Movement coordinated from the centre to drive **AI for Public Good**

Engage Industry



- **Work with partners, industry and research** to encourage AI experimentation
- **AI community** to spark innovation and drive knowledge exchange

Engage Citizens



- **Open communication** on our approach and principles to instil public trust
- **Three key goals of Smart Nation 2.0:** Trust, Growth and Community.

Engage Internationally



- **UN High-Level Advisory Body (HLAB)**
- **AI Safety Summit** Series
- **World Economic Forum** AI Governance Alliance
- **ASEAN** (Guide on AI Governance and Ethics)
- **Forum of Small States** (AI for Small States Playbook)

Takeaways



**Increasing ubiquity of AI:
From Opportunity to Necessity**



From Projects to Ecosystems



Manage the Downsides

Digital brings with it significant disruptive potential...but also unlimited opportunities.
The Public Sector plays a leading role.



Thank You