REGULATORS' PERSPECTIVES ON AI, TECHNOLOGY AND PERSONAL DATA PROTECTION:

SINGAPORE'S APPROACH TO DEVELOPING TRUSTWORTHY AI

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Singapore's National AI Strategy

VISION

By 2030, Singapore will be a leader in developing and deploying scalable, impactful AI solutions, in key sectors of high value and relevance to our citizens and businesses.
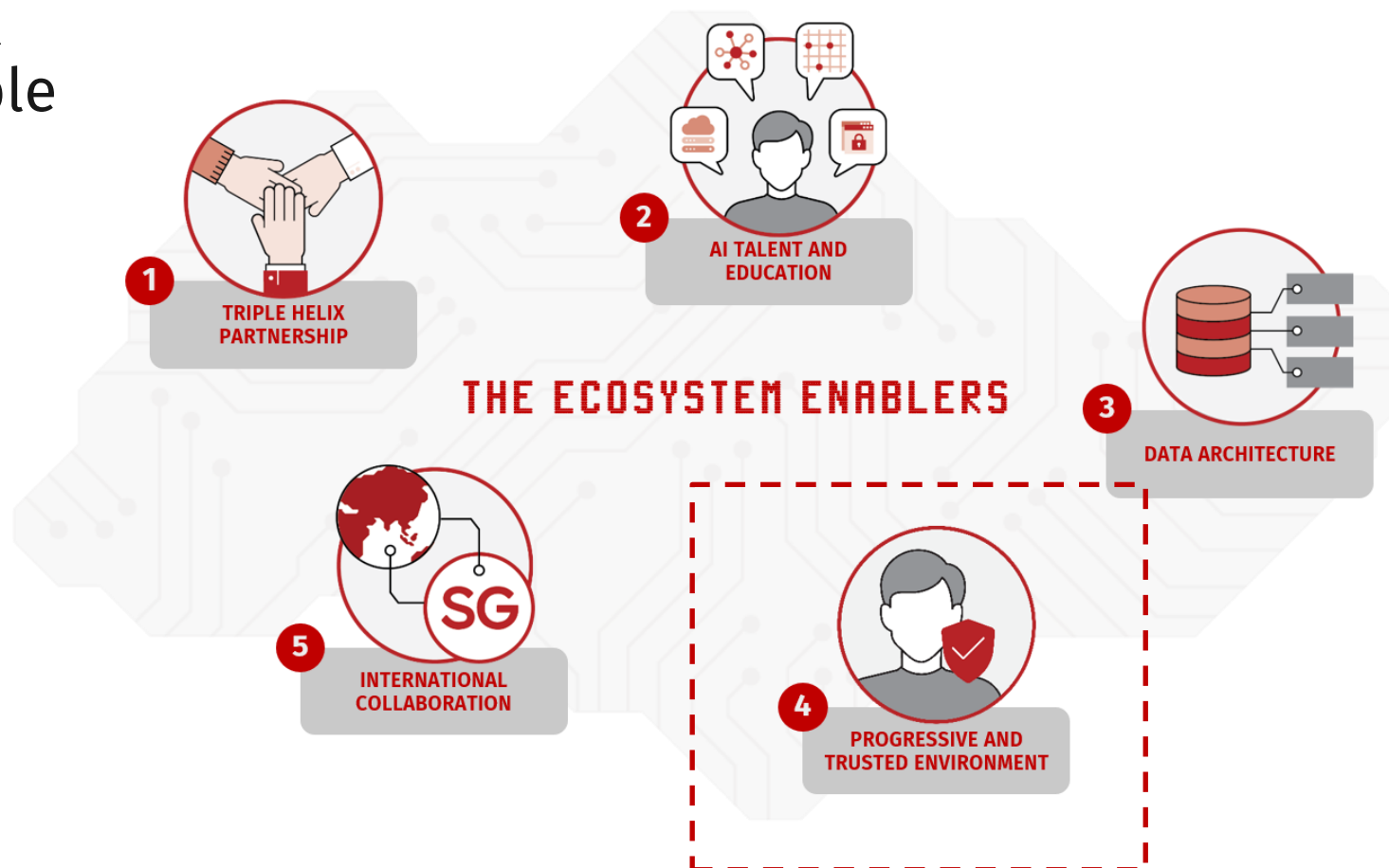
NATIONAL AI PROJECTS

1. **TRANSPORT AND LOGISTICS**
2. **SMART CITIES & ESTATES**
3. **HEALTHCARE**
4. **EDUCATION**
5. **SAFETY & SECURITY**

ECOSYSTEM ENABLERS

1. **TRIPLE HELIX PARTNERSHIP**
2. **AI TALENT & EDUCATION**
3. **DATA ARCHITECTURE**
4. **PROGRESSIVE & TRUSTED ENVIRONMENT**
5. **INTERNATIONAL COLLABORATION**
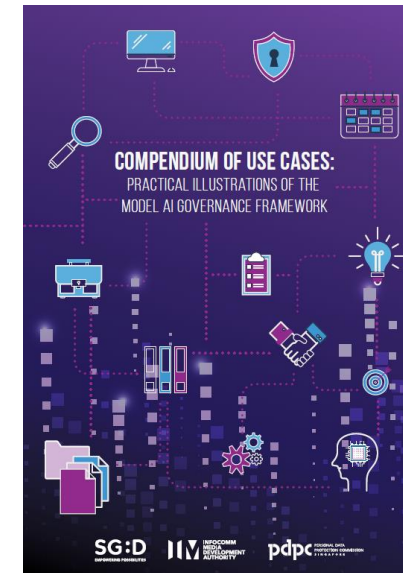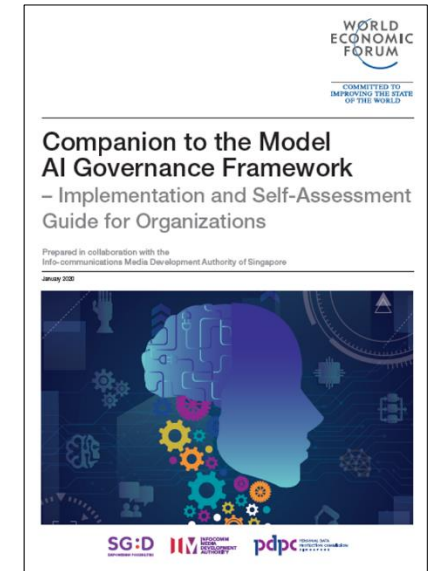
Building the AI Ecosystem

Even as Singapore embarks on National AI Projects, we must build a vibrant and sustainable AI ecosystem to anchor AI innovation and adoption across the economy.

We have identified five ecosystem enablers:

THE ECOSYSTEM ENABLERS

1 TRIPLE HELIX PARTNERSHIP

2 AI TALENT AND EDUCATION

3 DATA ARCHITECTURE

4 PROGRESSIVE AND TRUSTED ENVIRONMENT

5 INTERNATIONAL COLLABORATION

Singapore's Approach to AI Governance

- Industry **voluntary** adoption of responsible AI with detailed **government guidance**

- **Government guidance**

  - **Model AI Governance Framework (2nd edition)**

  - **Implementation & Self-Assessment Guide for Organisations**

  - **2 volumes of Compendium of Use Cases**

- **Multi-stakeholder approach**

  - Living documents that will evolve with tech development

  - Input and feedback from >60 companies of different sizes, from different sectors, locally and internationally

  - Worked with int'l organizations like WEF, OECD

www.imda.gov.sg/infocomm-media-landscape/SGDigital/tech-pillars/Artificial -Intelligence
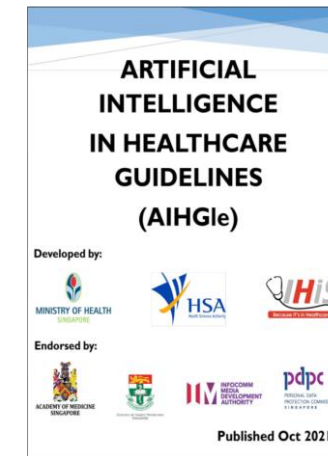
Model AI Framework is a Baseline

- **Accountability-based framework to engender trust:** Helps companies be transparent about their governance practices in developing & deploying AI systems

- **Takes AI ethics into corporate governance, risk management and operational structures**

- **Baseline** for other sectors to build on

- **Key characteristics**
  - Sector-agnostic
  - Technology-agnostic
  - Algorithm-agnostic
  - Scale- and business-model-agnostic
  - From principles to practice: practical, implementable
  - Does not define ethical standards

Published
MAS FEAT Principles

Published
AI in Healthcare Guidelines

Principles to Promote Fairness, Ethics, Accountability and Transparency (FEAT) in the Use of Artificial Intelligence and Data Analytics in Singapore's Financial Sector

ARTIFICIAL INTELLIGENCE IN HEALTHCARE GUIDELINES (AIHGle)

Published Oct 2021

other sectors e.g. government

MODEL AI GOVERNANCE FRAMEWORK

Accountability-Based Practices & Measures

Guiding Principles

- Decision making process should be explainable, transparent and fair
- AI systems should be human-centric and fair

INTERNAL GOVERNANCE STRUCTURES AND MEASURES

- Corporate governance structures
- Oversight mechanisms
- Roles and responsibilities
- Monitoring and reporting systems and processes
- Periodic review

HUMAN INVOLVEMENT IN AI-AUGMENTED DECISION-MAKING

- Risk and impact assessments incorporating ethical considerations
- Degree of human intervention in AI decision-making
- Risk mitigating measures

CORPORATE

CORPORATE

OPERATIONS

CONSUMERS

OPERATIONS MANAGEMENT

- Data curation, model formulation, model selection, training and tuning
- Ensure quality, credibility of source, veracity, while mitigating inherent bias
- Explainability, repeatability & robustness
- Reproducibility, auditability for certain scenarios

STAKEHOLDER INTERACTION & COMMUNICATION

- Build and maintain open relationship with stakeholders that builds trust
- Communication appropriate to audience, purpose and context
- Communication channels

NEW: AI Governance Testing Framework

- **Demonstrate responsible AI** through testing AI system against ethical principles - objective, verifiable tests
- Help companies **build trust** with their stakeholders and **meet regulatory requirements**

UNDERSTANDING HOW AI MODEL REACHES DECISION — To know what it does and that results are consistent	SAFETY AND RESILIENCE OF AI SYSTEM — AI system is reliable and will not cause harm	FAIRNESS / NO UNINTENDED DISCRIMINATION — AI system does not unintentionally discriminate	MANAGEMENT AND OVERSIGHT OF AI SYSTEM — Human accountability and control
1. EXPLAINABILITY Ability to understand and interpret what the AI system is doing	**4. SAFETY** Check that it's safe: Known risks have been identified/mitigated	**7. FAIRNESS** Check that there is no unintended bias: AI systems makes same decision even if an attribute is changed	**9. ACCOUNTABILITY** Proper management oversight of AI system development
2. REPEATABILITY Check that it's consistent: Be able to replicate an AI system's results	**5. SECURITY** Cybersecurity of AI systems	**8. DATA GOVERNANCE** Know the source and quality of data: Good data governance practices when training AI models	**10. TRANSPARENCY** Appropriate info is provided to individuals impacted by AI system
3. REPRODUCIBILITY Ability to replicate an AI system's results (by independent 3rd-party)	**6. ROBUSTNESS** Ensuring that AI system can still function despite unexpected inputs		**11. HUMAN AGENCY AND OVERSIGHT** AI system designed in a way that will not decrease human ability to make decisions
			12. INCLUSIVE GROWTH, SOCIETAL & ENVIRONMENTAL WELL-BEING Beneficial outcomes for people and planet

Data is the Building Block of AI

- Trusted data flows are core to building an **AI ecosystem**

- **Personal Data Protection Act (PDPA)** and obligations such as consent, accountability, access/correction, retention limitation apply to AI systems relying on personal data

- Enhanced consent framework to enable organisations to harness data confidently to **increase business competitiveness** while strengthening **consumer trust** in Singapore's Digital Economy

Providing Greater Ease and Certainty to Use Data for Innovation:

Business Improvement Exception

(i) Operational efficiency & service improvements
(ii) Developing or enhancing products or services
(iii) Knowing the organisations' customers

Legitimate Interests Exception

Lawful interests of organisation or segment of public, such as anomaly detection in payment systems to prevent fraud or money-laundering

Summary of Singapore's Approach to AI Governance

- **Partnership:** Collaboration with key stakeholders in government, industry, consumers and academia,
  - e.g. WEF and its network, tech MNCs

- **Practicality:** Operationalisation of AI ethics principles through implementable practices
  - e.g. Organisations from various sectors, both local and overseas, putting in place the responsible AI practices outlined in the Framework

- **Participation**: Strong support for open and interoperable international environment and regime, enabling human-centric AI innovation and its adoption
  - e.g. contribution to international platforms like GPAI, OECD

Thank You

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