ABEJA, Inc. Presents

SIX2018

革新的AIの連鎖がはじまる日

ABEJA

Today's Global AI Strategy
世界のAI活用戦略の今

Sengmeng Koo AI Singapore Deputy Director / Head of Strategic Alliances

Hiroki Saito NVIDIA Director

Takuya Oikawa Engineering Adviser

Objective
本日のゴール

- **Know the global AI market**
  世界におけるAI活用の現状を知る

- **Understand the meanings to utilize AI into your business**
  日本企業のAI活用の意義を再理解する

ABEJA

Agenda
本日の流れ

1. The Introduction of AI Singapore
Sengmeng氏によるAI Singaporeの紹介

2. Talk Session
AI utilization in global グローバルにおけるAI活用
AI utilization in Japan market 海外から見る日本におけるAI活用
The future of AI utilization 産業のAI活用の未来と今企業がすべきこと

ABEJA

Speaker
登壇者

Guest
Sengmeng Koo

AI Singapore
Deputy Director

Guest
Hiroki Saito

NVIDIA
Director

Moderator
Takuya Oikawa

ABEJA, Inc.
Engineering Adviser

ABEJA

Presentation

Shaping an AI-powered Nation: A Singapore perspective
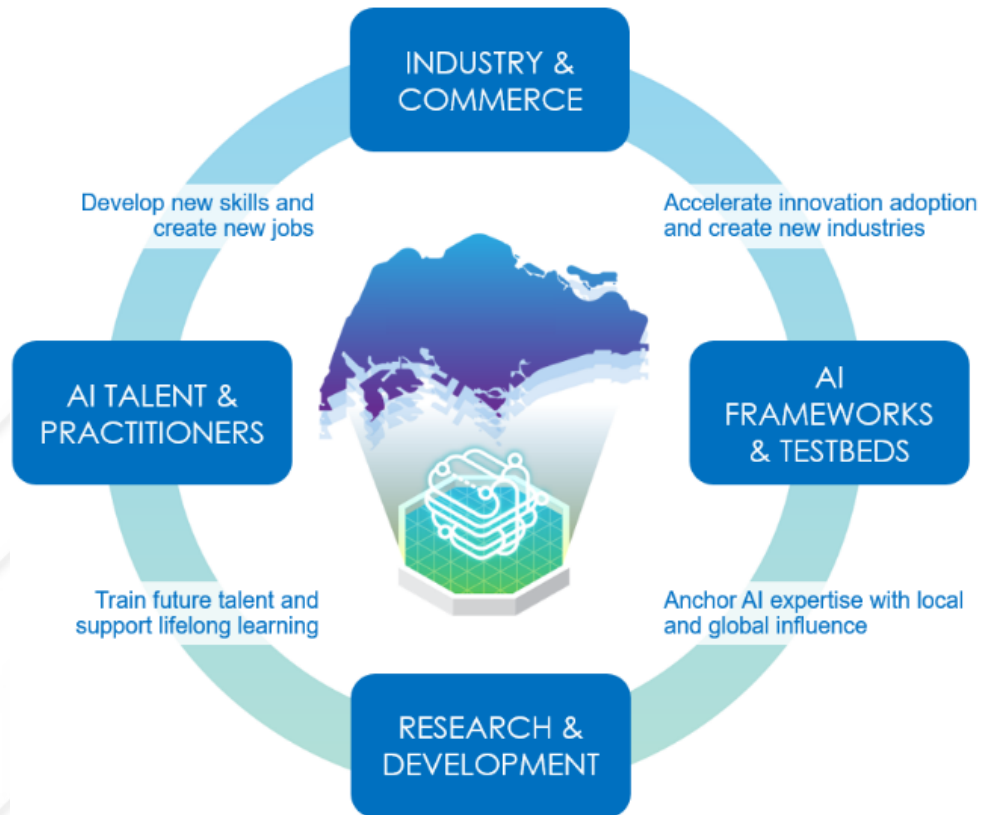
シンガポールから見たAI促進国

ABEJA

AI SINGAPORE

Shaping an AI-powered Nation: A Singapore perspective

Presented to ABEJA SIX 2018
Toranomon Hills Forum, Tokyo, Japan
22 February 2018

1. How to build a AI-ready economy for Singapore ?

2. How can we harness the promise of AI to deliver national impact ?

3. What kind of AI is important for Singapore ?

AI SINGAPORE

Delivering AI impact

Develop national capabilities in Artificial Intelligence to create economic and societal impact and put Singapore on the AI world map.

ECONOMY IMPACT

- Industry R&D Jobs
- Manpower spin-off to Industry
- Value-add Contributions to Economy

SCIENTIFIC IMPACT

- Top-tier Research Publications
- Smart Technologies Deployed
- Industry R&D Spending

Strategic Thrusts

AI RESEARCH

Invent AI technologies for the future. Conduct **Fundamental Research** and tackle important technical challenges. Gather top minds and nurture AI talents.

AI TECHNOLOGY

Create significant economic and social impact. Identify and focus attention on well-defined **AI Grand Challenges**, and promote bold ideas and innovation approaches to solving them.

AI INNOVATION

Launch **100 AI-Experiments** for end-users, facilitate access to AI talents, create shared AI tools and resources to accelerate industry innovations.
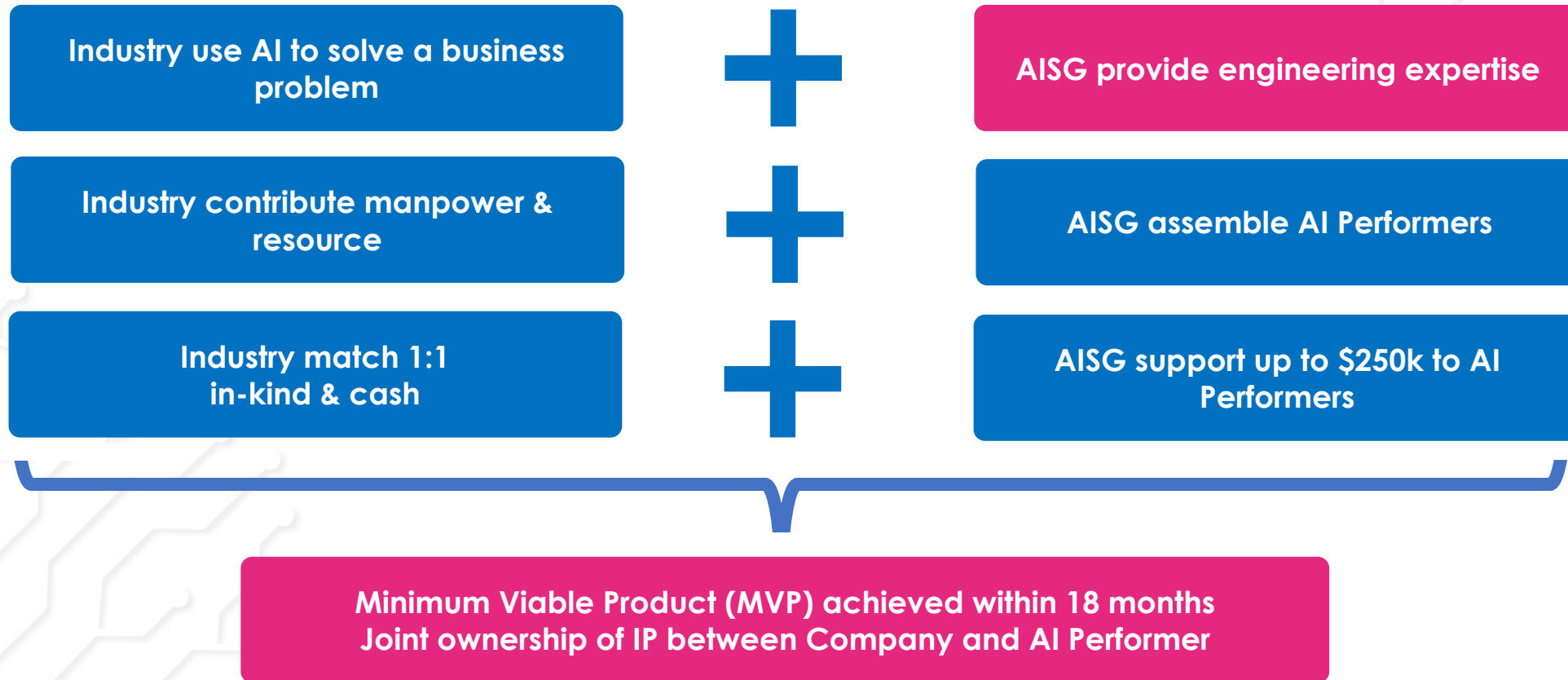
AI SINGAPORE

AI Innovation

100 Experiments (100E)

Proving the business value of AI

AI SINGAPORE

100 Experiments (100E)

"Growing our own timber"

Industry use AI to solve a business problem	**+**	AISG provide engineering expertise
Industry contribute manpower & resource	**+**	AISG assemble AI Performers
Industry match 1:1 in-kind & cash	**+**	AISG support up to $250k to AI Performers

Minimum Viable Product (MVP) achieved within 18 months
Joint ownership of IP between Company and AI Performer

AI SINGAPORE

AI Apprenticeship Programme (AIAP)

Produce 200 professionals with practical AI skills and knowledge in the next 3 years

Develop pipeline of AI professionals for industry	9 months of Company-Led Training (CLT) under the TechSkills Accelerator (TeSA), targeting fresh professionals	Trainees undertake AI courses and practical OJT conducted by AISG and its affiliated educational organisations	Graduates rejoin industry

3 months : Online classroom and hands-on mini projects

6 months : Work on actual industry projects (100E) as part of capstone, mentored by AISG senior AI professionals

Engaged Industry Partners (and growing...)

AI Technology

AI Grand Challenges

Long term, national research goals

AI SINGAPORE

Defining AI Grand Challenges

Important issues and problems faced by Singapore and the world, that can be effectively addressed with AI technologies and innovation.
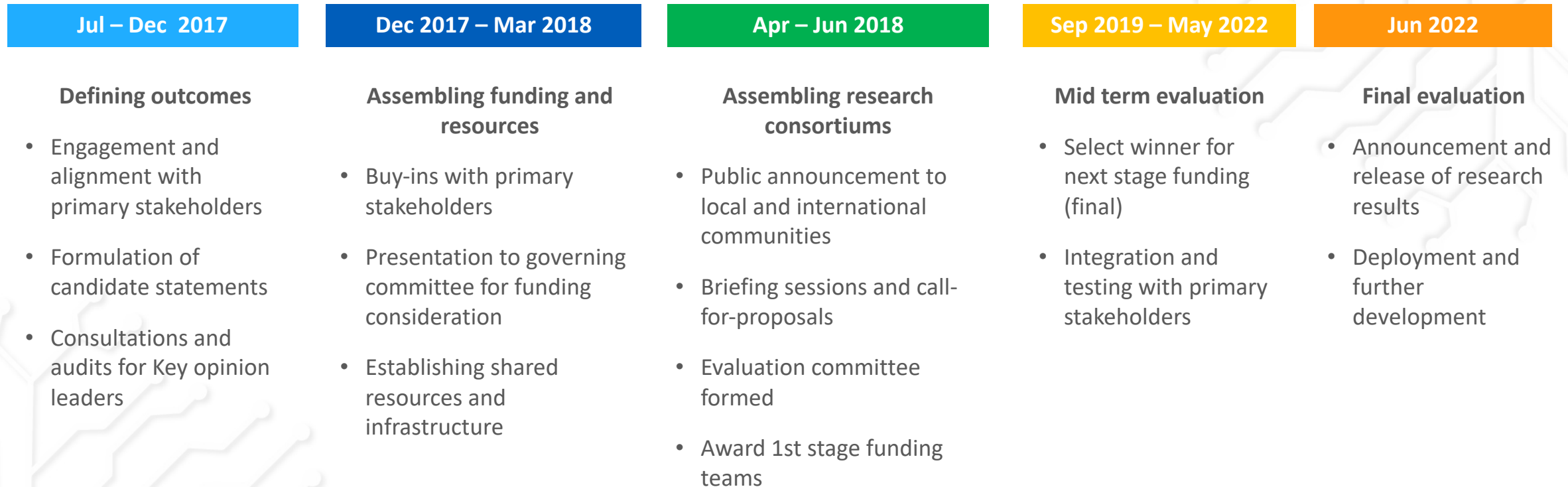
HEALTHCARE

URBAN SOLUTIONS

FINANCE

AISG engineers large-scale, long-term research goals to demonstrate breakthroughs,
undercover technical bottlenecks and commercial surprises
to bring about sectoral transformations.

AI SINGAPORE

Designing a national research goal

Jul – Dec 2017	Dec 2017 – Mar 2018	Apr – Jun 2018	Sep 2019 – May 2022	Jun 2022

Defining outcomes

- Engagement and alignment with primary stakeholders
- Formulation of candidate statements
- Consultations and audits for Key opinion leaders

Assembling funding and resources

- Buy-ins with primary stakeholders
- Presentation to governing committee for funding consideration
- Establishing shared resources and infrastructure

Assembling research consortiums

- Public announcement to local and international communities
- Briefing sessions and call-for-proposals
- Evaluation committee formed
- Award 1st stage funding teams

Mid term evaluation

- Select winner for next stage funding (final)
- Integration and testing with primary stakeholders

Final evaluation

- Announcement and release of research results
- Deployment and further development

AI SINGAPORE

Considerations

1. **How can this be done in 4-5 years?**

   - Every statement identifies **a grand objective** achievable in 10-15 years time
   - Every statement includes **a challenge** achievable in 4-5 years time

2. **How do you measure success?**

   - Each statement defines a set of clearly measurable success criteria
   - Each challenge defines an "end point" or target to meet

3. **How can you tell the improvements are all due to the AI?**

   - For each challenge, a comparison with or without AI can be set up
   - The main focus is on human-AI collaboration, coordination, and cooperation

AI SINGAPORE

Considerations (cont)

4. **Hasn't this been done by someone else?**
   - Not in the integrated way to generate the full solutions – there are individual systems that address specific parts of the problems
   - Not in the translational research setting built into the AISG Grand Challenge Program
   - No effective working solutions in Singapore or the world – as far as we know
   - And yes, we have done extensive background and literature search

5. **What if the project fails at the end, after spending so much money?**
   - Target domains and technology anchors are carefully selected so that the solutions can be generalized to other health domains and applications
   - Even if the final challenge target is not met – there will be incremental results and deliverables that are useful
   - E.g., Even if the rocket cannot launch – the propulsion engine technologies developed along the way are still very useful

AI SINGAPORE

AI Research

Fundamental research

Investing in strategic research vital to Singapore

AI SINGAPORE

Goals for AI Research Pillar

What are the gaps in current AI technologies?

- Technical surprises that might lead to jump in AI's capabilities?

What are the new AI advances with positive economic and societal impacts?
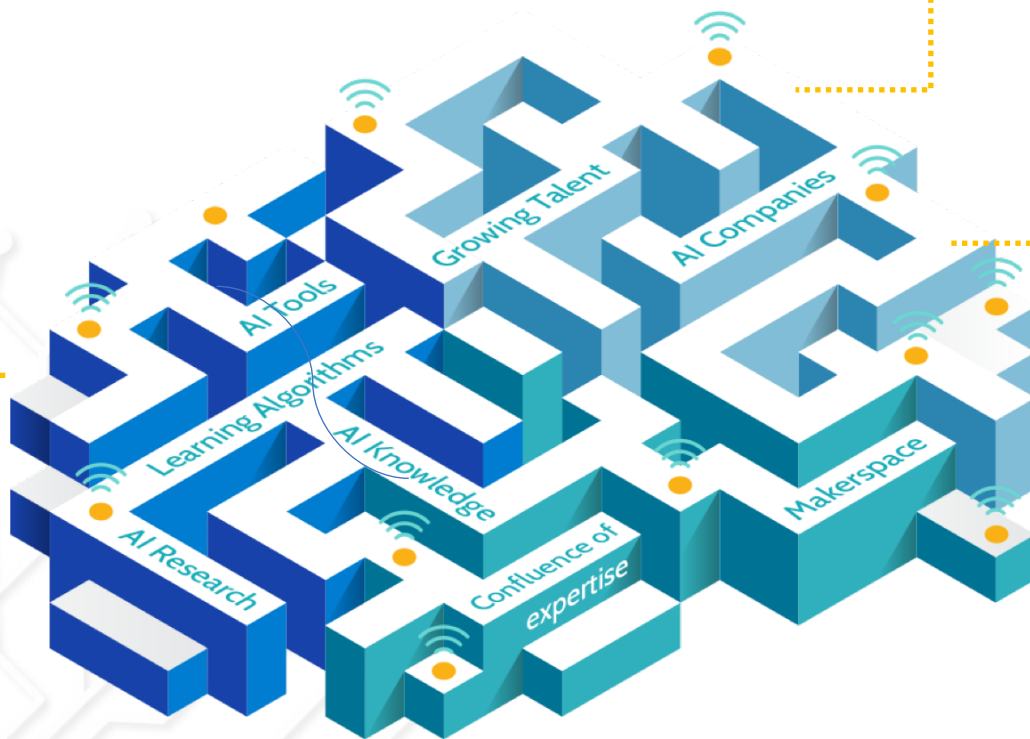
- Problems and bottlenecks that are ripe for being solved or addressed with AI

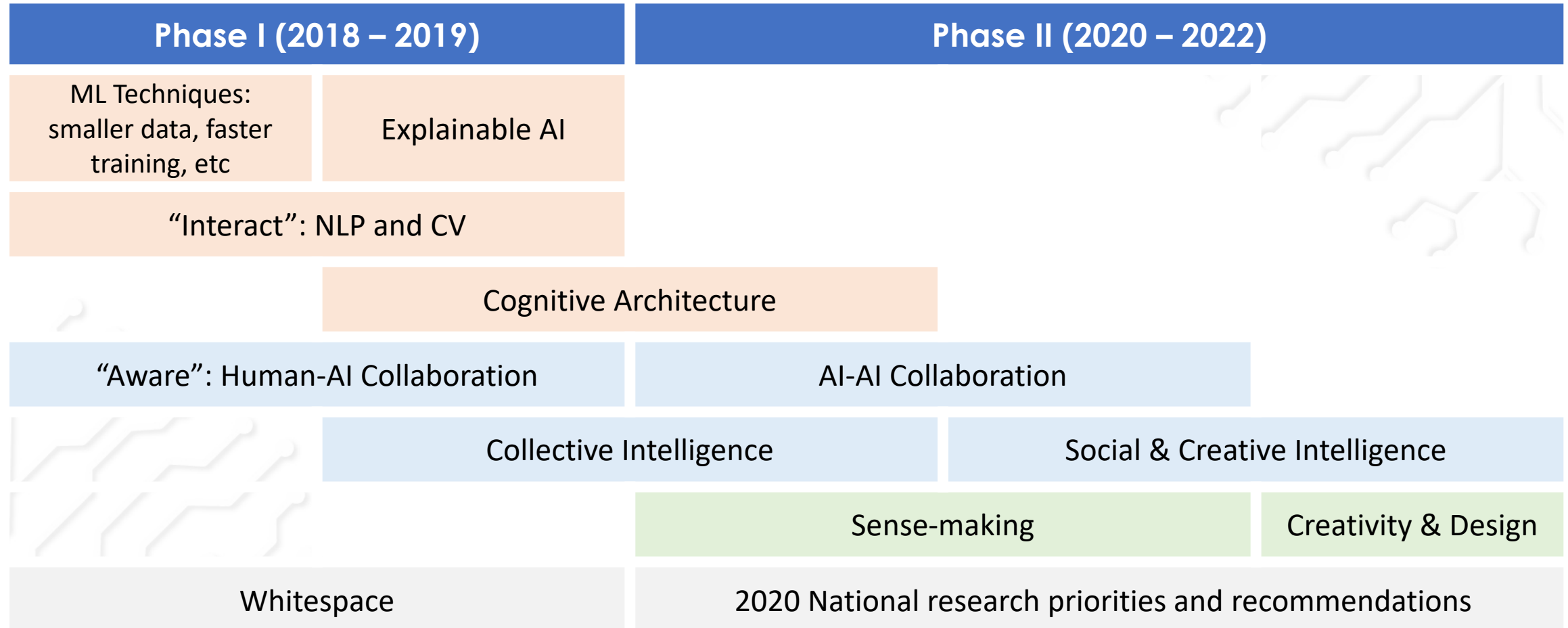**How can we use AI safely and securely?**

- Understanding and overcoming risks and costs of deploying AI systems
- Designing secure AI systems
- Validation of AI systems – predictable and explainable AI

How to design AI to align to the ethical, legal and societal principles?

- Accountability, liability issues arising from AI
- Implementing norms and values in AI systems

Growing Talent

AI Companies

AI Tools

Learning Algorithms

AI Knowledge

Makerspace

AI Research

Confluence of expertise

AI SINGAPORE

Priority areas

Phase I (2018 – 2019)	Phase II (2020 – 2022)

ML Techniques: smaller data, faster training, etc	Explainable AI	

"Interact": NLP and CV

Cognitive Architecture

"Aware": Human-AI Collaboration	AI-AI Collaboration

Collective Intelligence	Social & Creative Intelligence

Sense-making	Creativity & Design

Whitespace	2020 National research priorities and recommendations

AI SINGAPORE

Thank you

Sengmeng
skoo@aisingapore.org

A KEY PILLAR IN SUPPORT OF SMART NATION

AI SINGAPORE

Artificial intelligence (AI) can lead to substantial economic growth and vastly improve our standard of living. AI Singapore (AISG) is a national initiative to nurture talents in AI, increase AI industry translation and commercialisation, drive innovation and position Singapore at the forefront of the global AI industry.

National Investment

Through AISG, the **National Research Foundation (NRF)** will invest $150 million over 5 years in building top-tier AI capabilities and other game-changing solutions.

$150 million

100 Experiments
- AI Projects + Proof of Concept

Grand Challenges
- Affecting Society + Industry

Emerging Research
- The next wave of scientific innovation

Objectives of AISG

- **Create impactful solutions** to major societal and industrial challenges
- **Seed AI innovation** in homegrown companies
- **Achieve breakthroughs** in AI research

Growing Talent
AI Tools
AI Companies
Learning Algorithms
AI Knowledge
AI Research
Confluence of expertise
Makerspace

- Government Agencies
- Large Local Enterprises
- SMEs & Start-ups
- MNCs
- Individuals
- Research Institutions

Agency for Science, Technology and Research
SINGAPORE

Focus Application Areas

AISG will perform use-inspired research to solve **global** challenges and improve Singaporeans' lives.

1 Health
Seamlessly integrated care environments powered by humans and machines, personalised treatments and accelerated drug discovery.

2 Smart Cities
Using technology, real-time monitoring and data acquisition to manage urban ecosystems, infrastructure and tackling inefficiency.

3 Finance
Automation and democratisation of financial services, machine learning-powered trading, risk modelling and compliance.

AISG Partners

- National Research Foundation
- Smart Nation & Digital Government Office
- Economic Development Board
- Infocomm Media Development Authority
- Integrated Health Information Systems
- SGInnovate

Institutes of Higher Learning

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN
SMU SINGAPORE MANAGEMENT UNIVERSITY
NUS National University of Singapore

AISG will leverage on the universities' areas of expertise in multidisciplinary capabilities and technologies that will aid research and innovation in AI.

Likewise, access to valuable databases and strengths in areas like machine learning, natural language processing (NLP) and robotics are crucial to the success of the AISG programme.

AISG

AI SINGAPORE

Presentation

Shaping an AI-powered Nation: A Singapore perspective

シンガポールから見たAI促進国
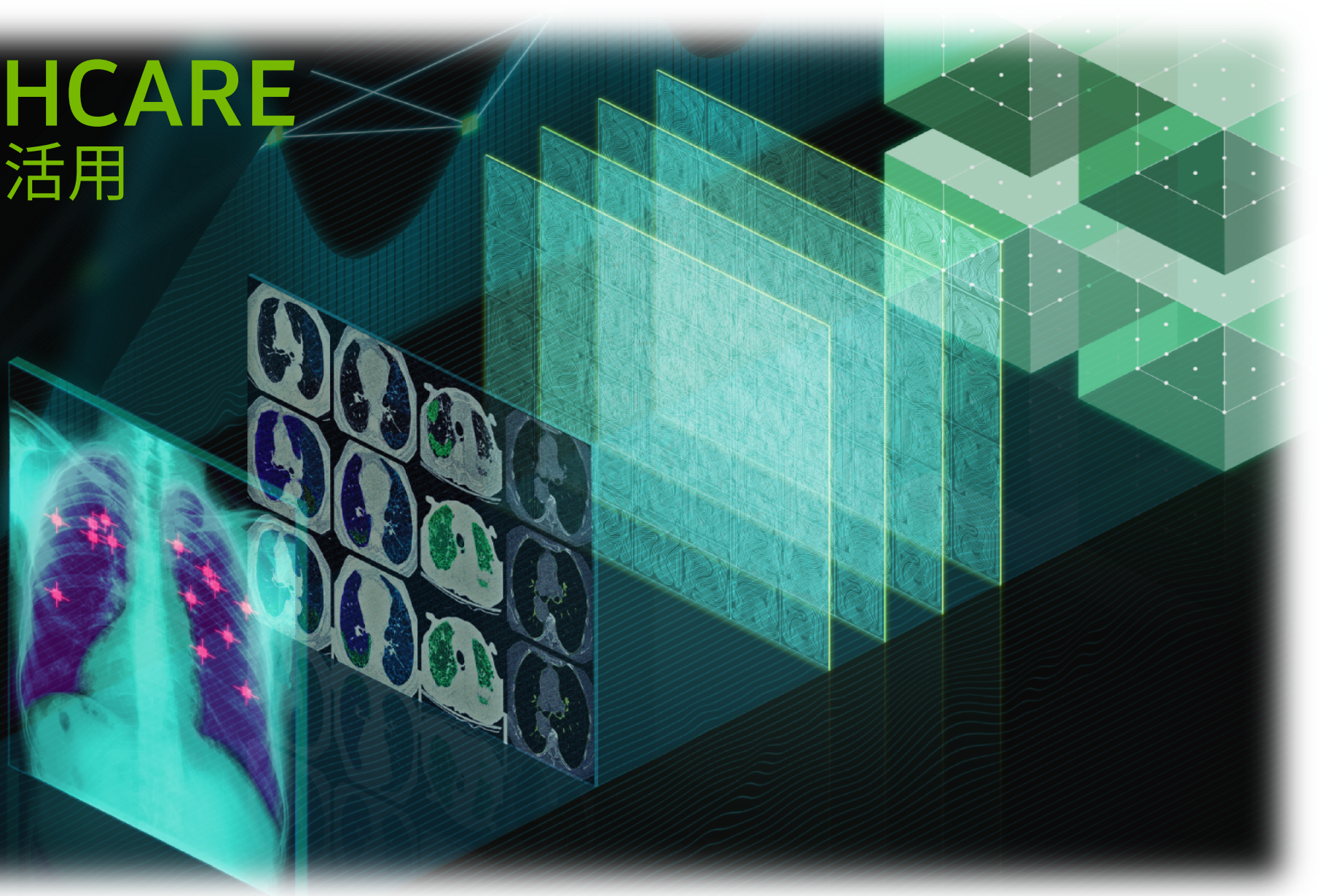
ABEJA

AI utilization in global
グローバルにおけるAI活用

ABEJA

AI CITY

ABEJA

AI IN HEALTHCARE
医療におけるAIの活用

ABEJA

INTELLIGENT MACHINE
AIの活用による
インテリジェントマシン

ABEJA

Talk Session

AI utilization in Japan market
海外から見る日本におけるAI活用

ABEJA

Talk Session

The future of AI utilization
産業のAI活用の未来と今企業がすべきこと

ABEJA

Wrap Up

ABEJA

Thank you

ABEJA