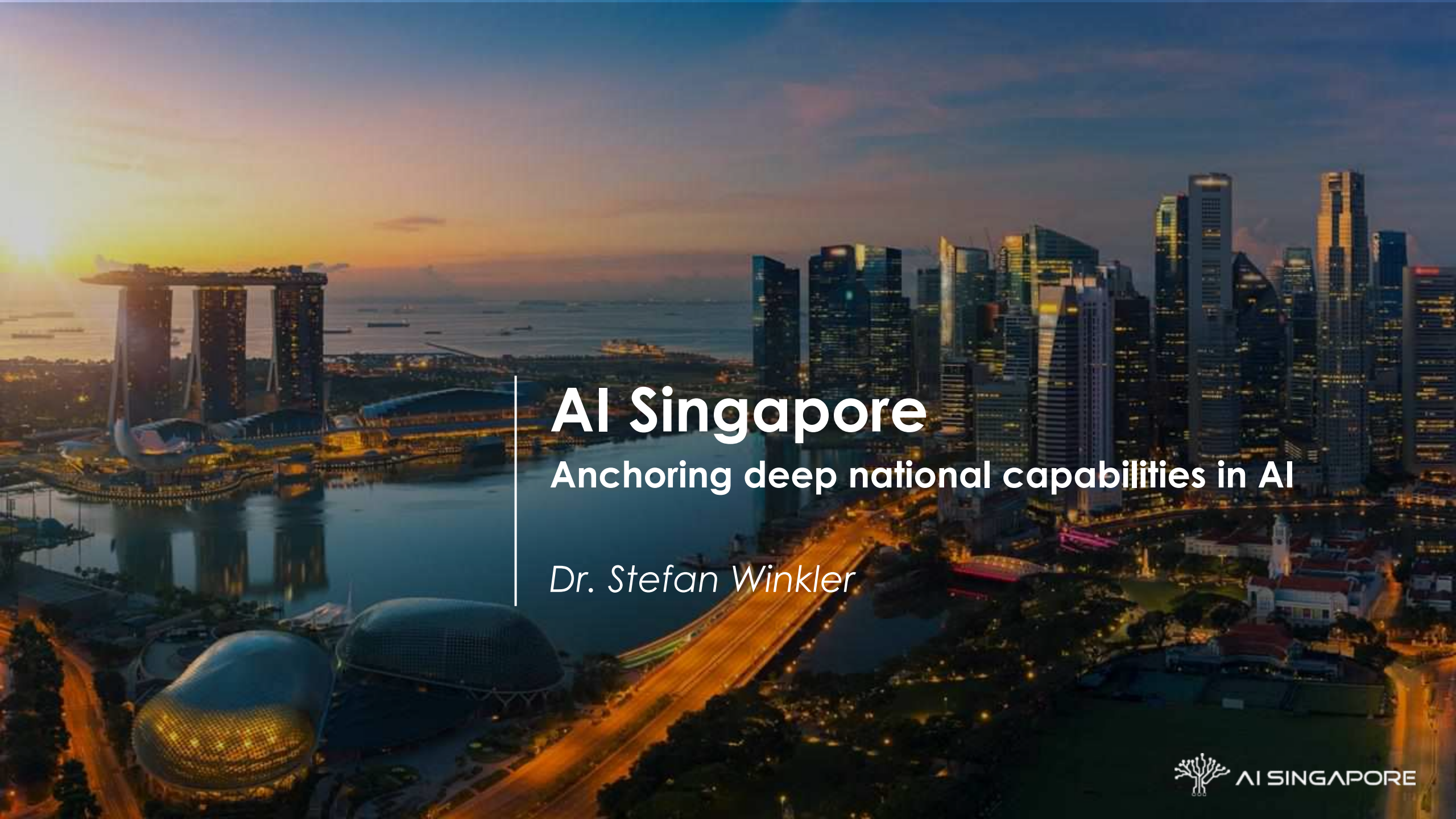


AI Singapore

Anchoring deep national capabilities in AI

Dr. Stefan Winkler

AI SINGAPORE

About AI Singapore (AISG)

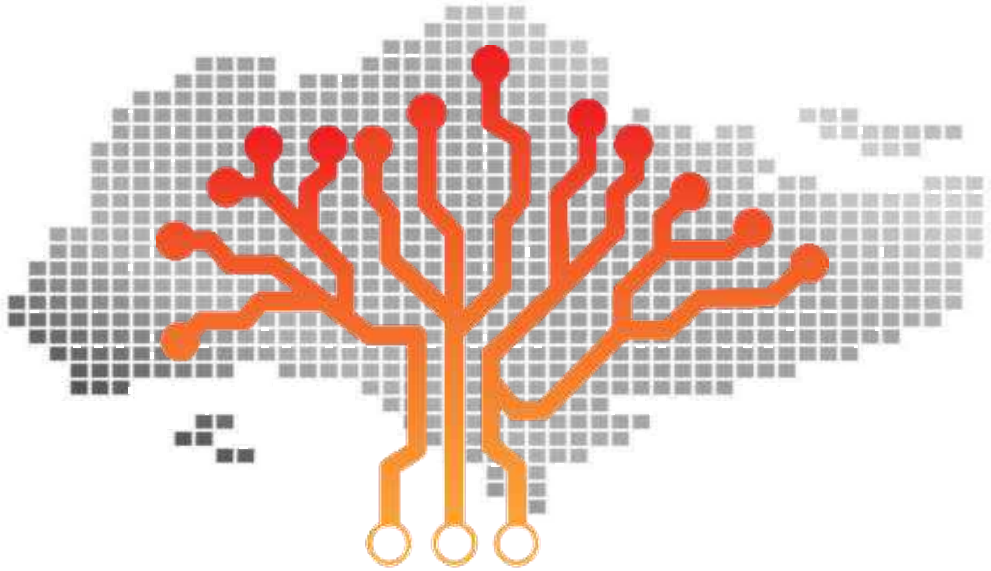
To anchor **deep national capabilities** in AI, thereby creating **social and economic impacts**, grow **local talent**, build an **AI ecosystem** and put Singapore on the world map

Programme Coordinating Agencies

National Research Foundation
Prime Minister's Office
Singapore

IMDA Infocomm Media Development Authority · EDB Singapore · IHiS

Smart Nation & Digital Government Office · SGInnovate



AI SINGAPORE

Funded Universities & Research Institutions

NUS National University of Singapore · Nanyang Technological University Singapore

Singapore University of Technology and Design · A*STAR Agency for Science, Technology and Research

SMU Singapore Management University · SUSS Singapore University of Social Sciences · SIT Singapore Institute of Technology

AI SINGAPORE

Overview of AI Singapore Activities

AI RESEARCH

Invent next generation AI techniques/ algorithms

AI TECHNOLOGY

Create significant economic and social impact through **solving national challenges**

AI INNOVATION

Catalysing AI Innovation in the Industry through projects and talents pipeline

AI MAKERSPACE

Platform and suite of **AI bricks, open datasets, training,** and **consulting** services

AI Research

AI RESEARCH

Expected outcome: Maintain position as world #1 in AI research by FWCI per capita

Mission:

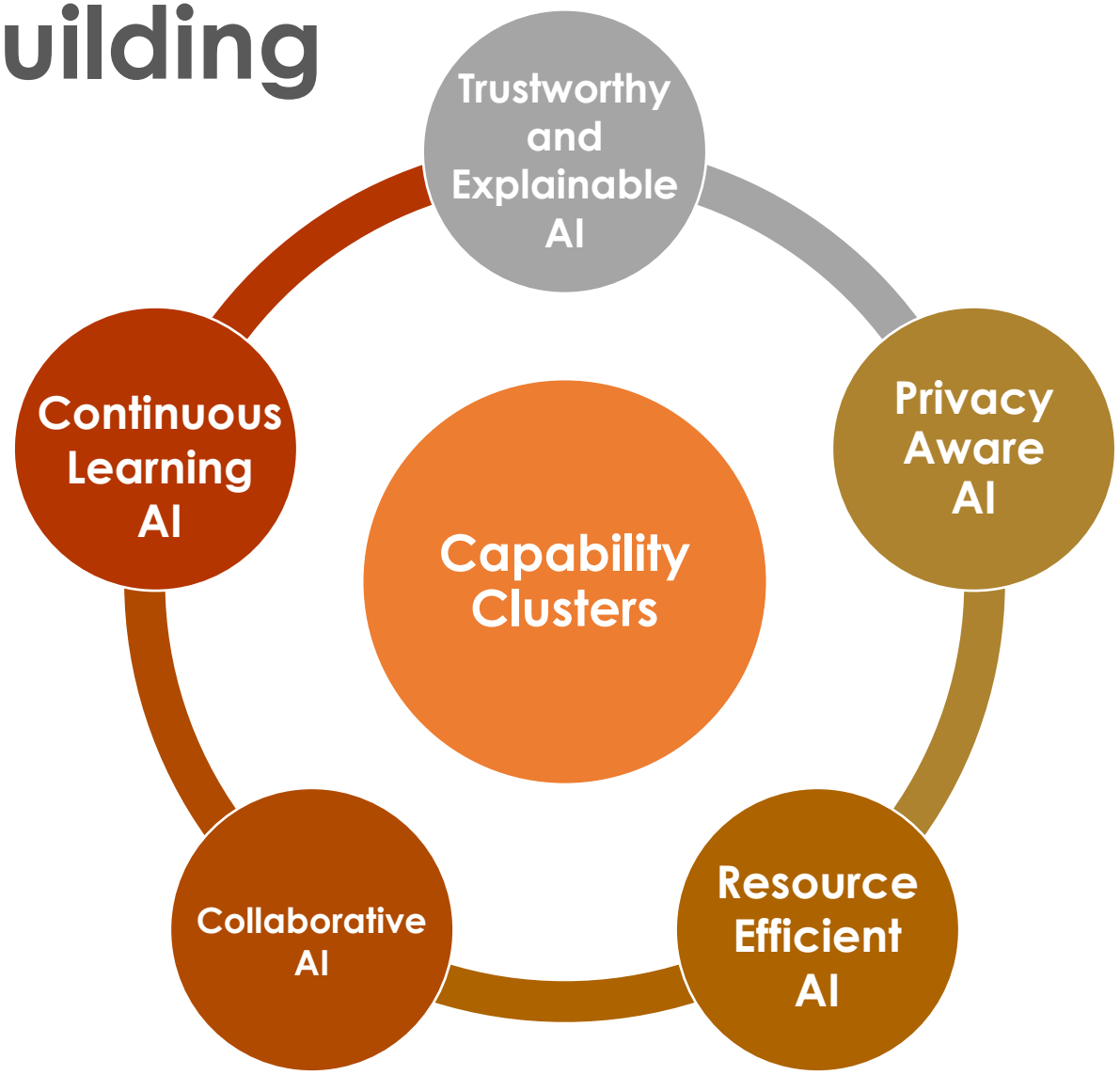
Create impact and ensure Singapore stays at the forefront of global **AI thought leadership**

- Support **fundamental research** to tackle important technical challenges
- Nurture local AI talent **(PhD Fellowship Programme)**
- Encourage national collaborations

AI SINGAPORE

Targeted Capability Building

- Trustworthy and explainable AI
  - Boost AI adoption
  - Build on Singapore's "trust" brand
- Privacy-aware AI
  - Demand from regulators and consumers
  - Learn from sensitive datasets, while preserving privacy of individuals
- Resource-efficient AI
  - Small country – small dataset
  - Learning from small but quality data-sets
- Collaborative AI
  - Strengths in NLP and diversity as a testbed
- Continuous Learning AI
  - Autonomous incremental learning AI towards Artificial General Intelligence



AI SINGAPORE

AI Technology

AI TECHNOLOGY

Expected outcome:
Put Singapore on the AI world map with high-signature, high-impact projects

Mission:
Create significant economic and social impact through **solving national challenges**

- **Grand Challenges**
- Prize-based Challenges
- Technology Challenges
- Ideation Challenges
- Industry-sponsored PhD programme

AI SINGAPORE

What are AI Grand Challenges?

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

HEALTHCARE

EDUCATION?

URBAN SOLUTIONS?

FINANCE?

Inspiring – impactful – measurable

Guided by thought leaders, aligned with national priorities, leading to sectoral transformation

AI SINGAPORE

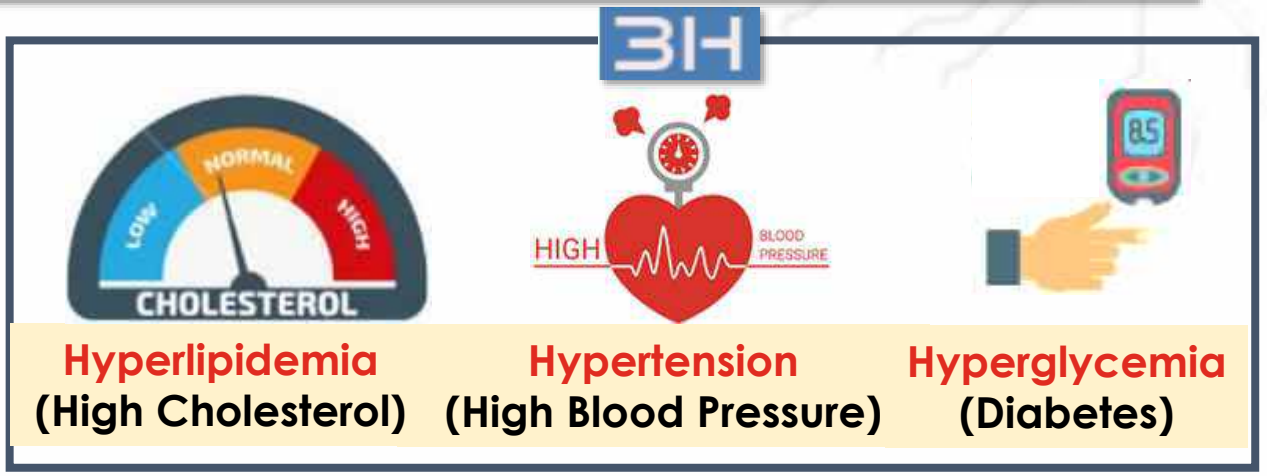
AI in Health Grand Challenge

"How can Artificial Intelligence (AI) help primary care teams stop or slow disease progression and complication development in 3H – patients by 20% in 5 years?"

Aligned with National AI Strategy: chronic disease prediction and management

Program Highlights:

- 5 years in 2 stages
- Total budget: S$35m
- 3 multidisciplinary consortia



- Top 3 chronic diseases
- Top 3 causes of polyclinic attendance
- Top 3 in 18-69 years age group
- Estimated 1.5M residents affected by 2020

AI SINGAPORE

AI Innovation

AI Innovation

Expected outcome:
Propel Singapore's industry forward through applications of innovative AI technology

Mission:
Catalysing AI Innovation in the Industry through projects and talents pipeline

- **100Experiments**
- **AIAP**
- **AI4I / AI4E/ AI4S / AI4K**

100 Experiments (100E) + AIAP®

"Growing our own timber"

Industry

- Use AI to solve business problem
- Contribute manpower and datasets
- Match 1:1 in kind and cash

+

AI Singapore

- Provide AI Researchers
- Assemble engineering team and AI Apprentices
- Support up to $250k

Minimum Viable Model within 9 - 18 months
2 - 4 x AI Engineers trained

AI SINGAPORE


Predictive Lift Maintenance

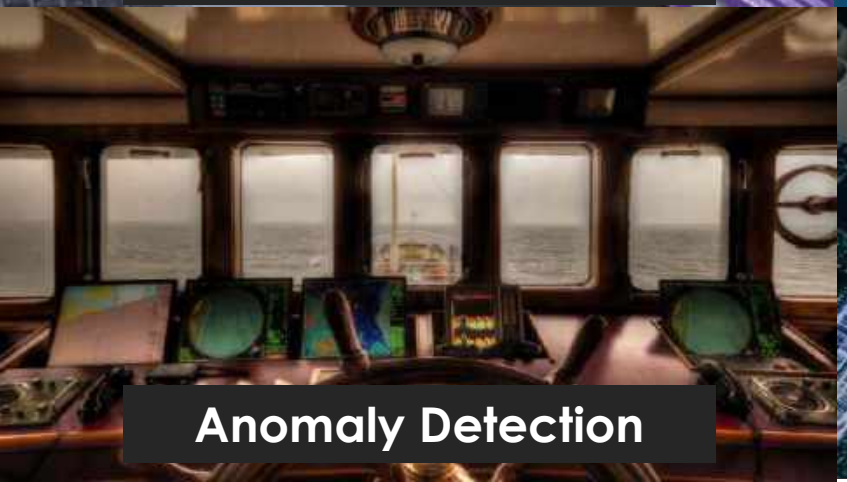

Credit Scoring


Driver Scoring


Chronic Wound Management


100


NLP - Code Switching


Anomaly Detection


Equipment Return Prediction


沖縄そば
NLP - Japanese

Automatic Assessment of Chronic Wounds in Diabetic and Elderly Patients

KroniKare, a local start-up, is an award-winning AI-driven system that automates the assessment & management of chronic wounds.

"Collaboration with AISG helped us augment our AI capabilities quickly through the 100E and AI Apprenticeship Programmes, while ensuring that we work with qualified, trained talents in AI."

Hossein Nejati, Co-founder & CTO

BACKGROUND

- Current practice of wound assessment takes an average of 30 minutes per wound, and hence is time-consuming
- Quality of information gathered is also subjective (depends on nurse's expertise)
- Only 2% of Singapore's nurse population are qualified wound nurses - not possible to offer adequate care to chronic wound patients with current practices

BUSINESS CHALLENGE

How can KroniKare enable healthcare institutions to better triage patients and allocate resources for wound management in diabetic and elderly patients

AI SOLUTION DEPLOYED

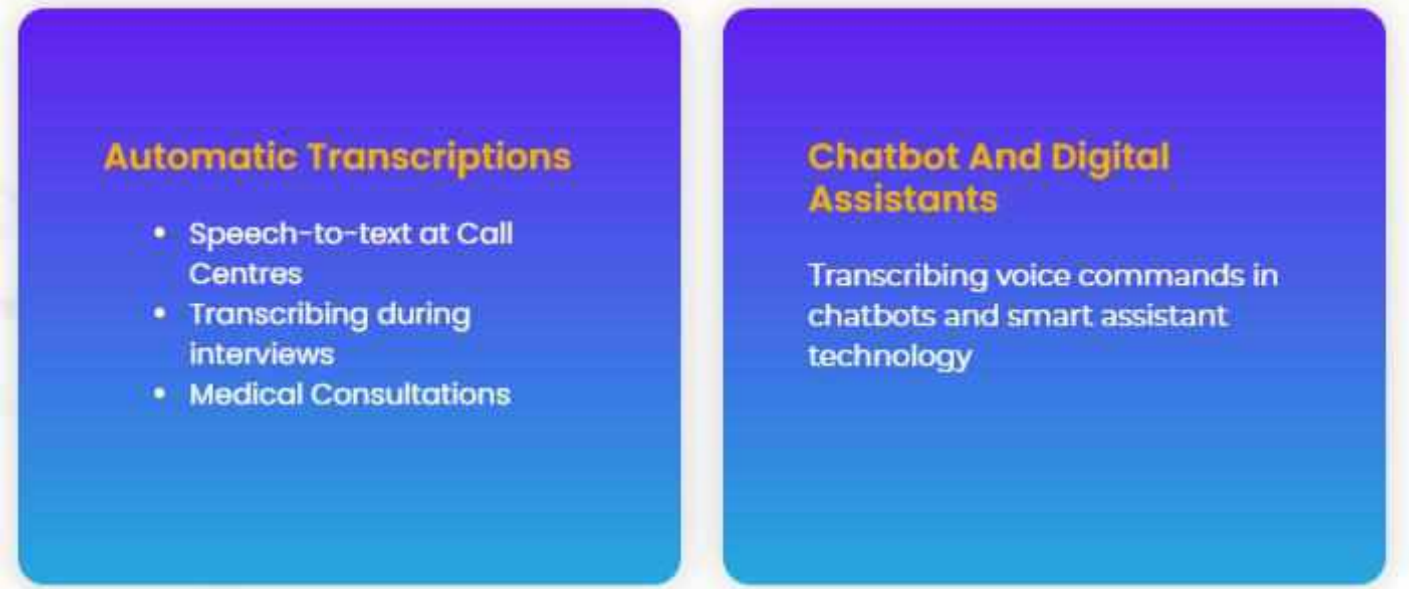
An AI-driven Integrated Wound Scanner System comprising a mobile and web platform was developed. This system, which mimics wound analysis by a human specialist, uses computer vision, image processing and semantic segmentation to capture, analyse and diagnose chronic wound conditions.

OUTCOMES

- Wound assessment time reduced between **50%-70%** (from 30 min down to 30 sec) - Equivalent to **>S$10,000**
- Consistent, accurate monitoring of wound progression and improved early detection
- Faster interventions for major wound complications and abnormalities
- Scanner deployed in St Andrew's Community Hospital and Kwong Wai Shiu Hospital
- Completed operational trials at Changi General Hospital with promising results

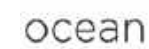
AI Speech Lab

- World's first Code-Switch (mixed-lingual) speech recognition engine using Deep Learning technology
  - Developed in collaboration with Prof. Li Haizhou (NUS) and A/Prof. Chng Eng Siong (NTU)
  - Recognises and transcribes English, Mandarin and Singlish
- Speech engine can be further customised for different domains



AI SINGAPORE

Our Industry Partners



AI Makerspace

AI Makerspace

Expected outcome:
SMEs and Start-ups AI Enablement

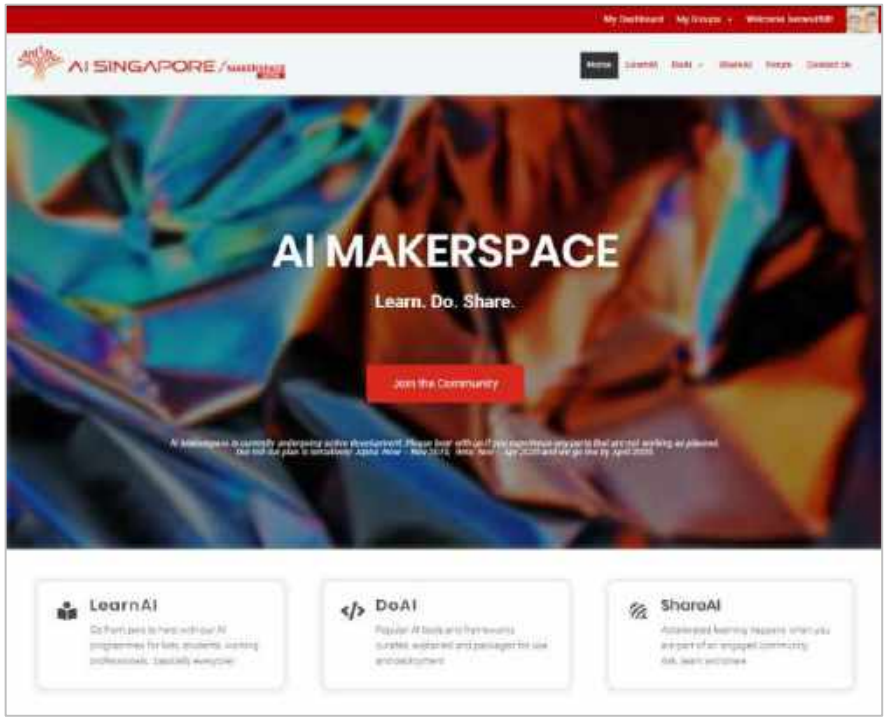
Mission:
Provide a platform and suite of **AI tools, APIs and bricks (pre-built solutions), open datasets, training, consulting and engineering services** to jumpstart your AI journey

- AI Quick Start Programme
- AI Bricks, Open datasets, Compute resource
- AI Enablement

AI SINGAPORE

AI Makerspace

https://makerspace.aisingapore.org

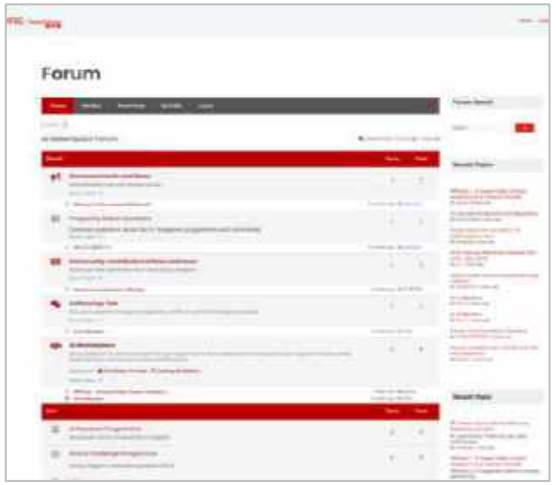


LearnAI

DoAI

ShareAI

Forum



AI "Bricks"

Initial bricks. New ones will be added as programme grows. We target to add 2- 4 bricks per month depending on use case.

RPA

Robotic Process Automation

TagUI helps you rapidly automate your repetitive or time-critical tasks.

- Process automation, data acquisition and testing of web apps
- Replace frequent manual tasks

NLP

Natural Language Processing (Text)

NLP helps you analyse and derive insights from human languages.

- Information extraction
- Summarization
- Question and Answer
- Sentiment analysis

S2T

Speech to text

S2T helps you transcribe code-switching English and Chinese (Singlish).

- Speech recognition for Call Centre and Business meeting room discussions

CV

Computer Vision

CV helps you process, analyse and understand digital images.

- Object detection and identification
- Semantic segmentation

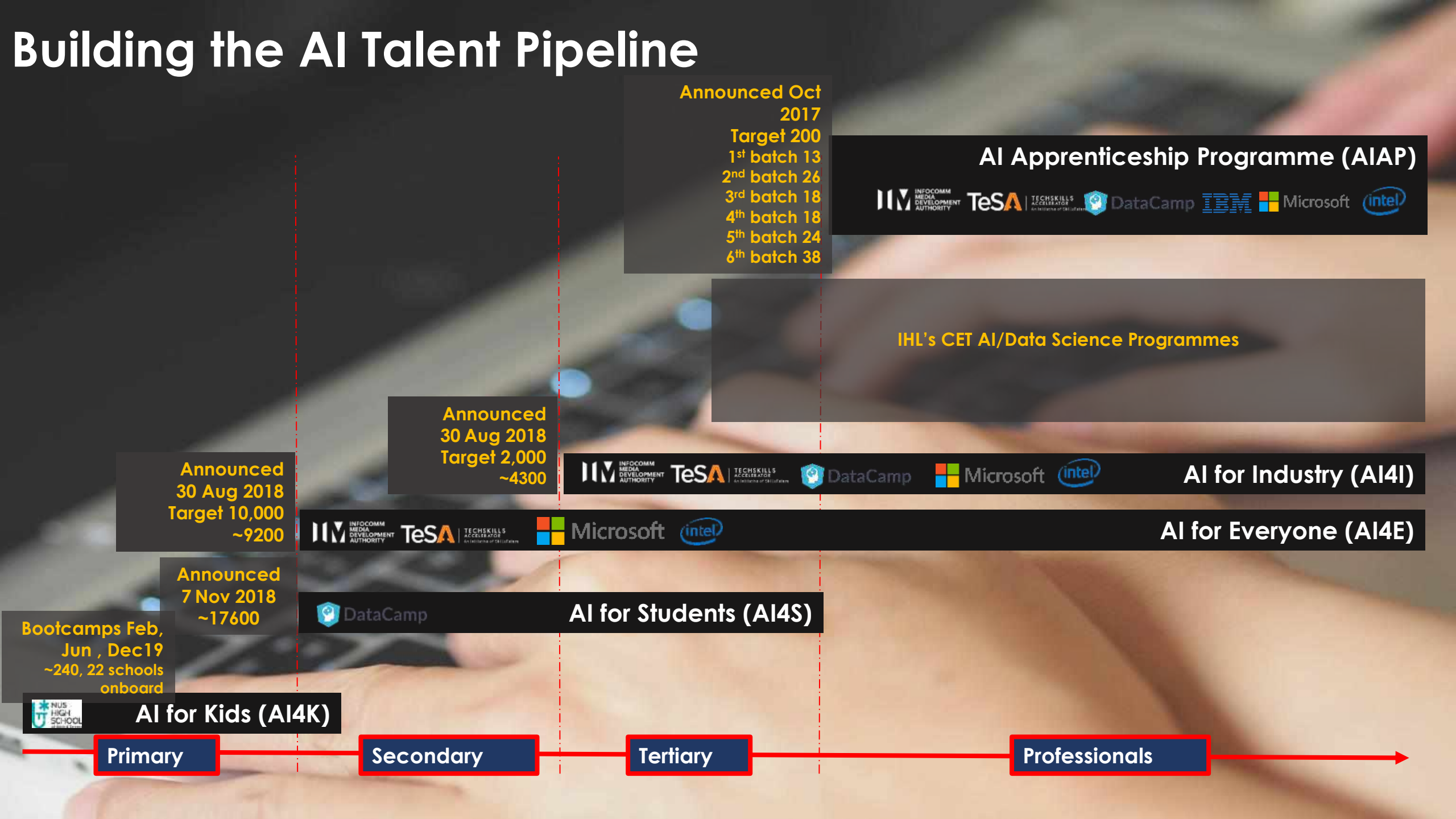
SCH

Transport logistics scheduling

Scheduling (SCH) helps you better plan your logistic delivery operations.

- Transport route planning and scheduling

Building the AI Talent Pipeline




Thank you
www.aisingapore.org