

Japan's AI Strategy toward Society 5.0

Takao Nitta / Cabinet Office of Japan

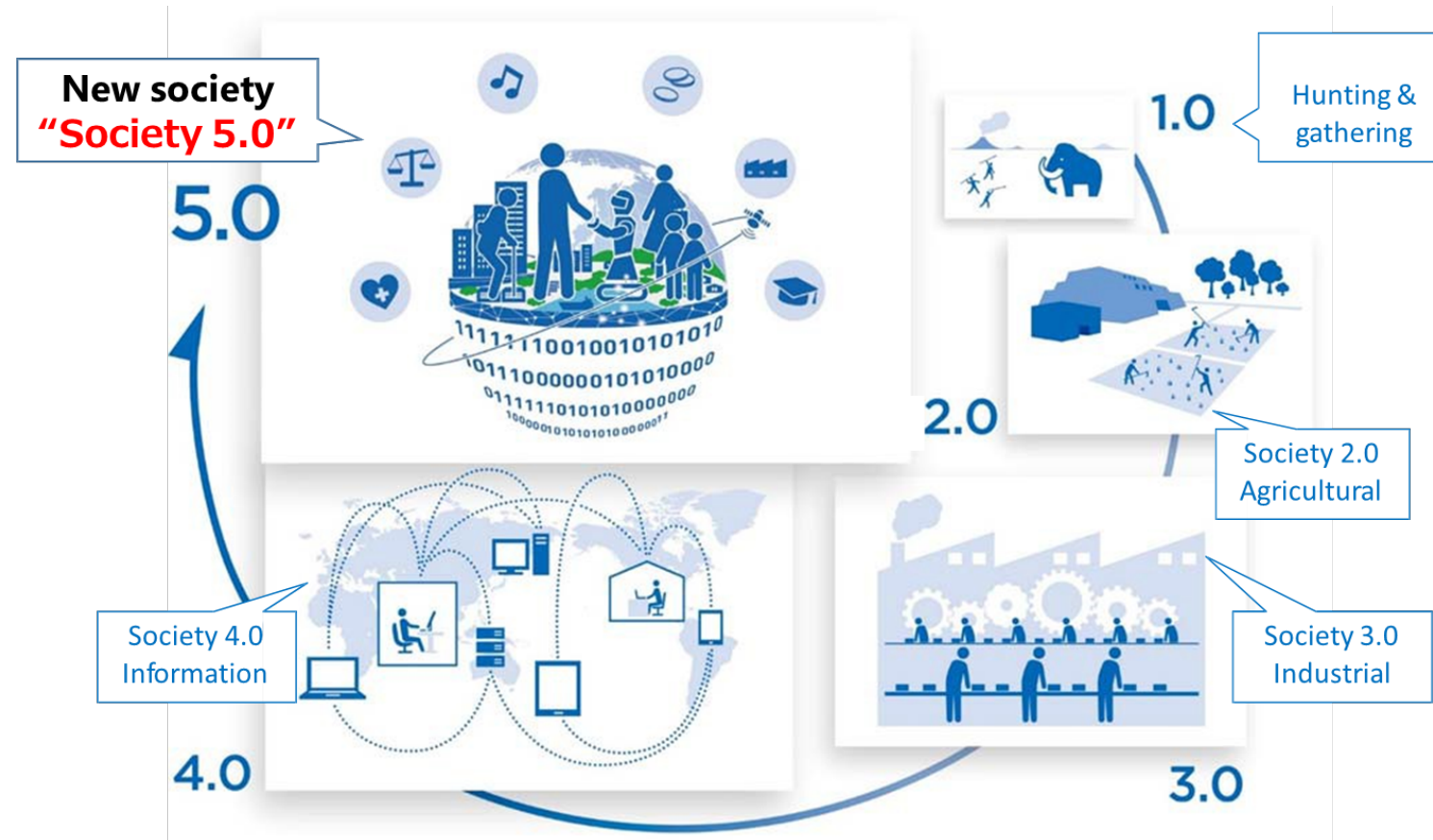
Artificial intelligence and the next generation of competences :
How Digital – and Artificial Intelligence will impact jobs and competences profiles?

The World Conference on Intellectual Capital for Communities

UNESCO, 11 & 12 July 2019

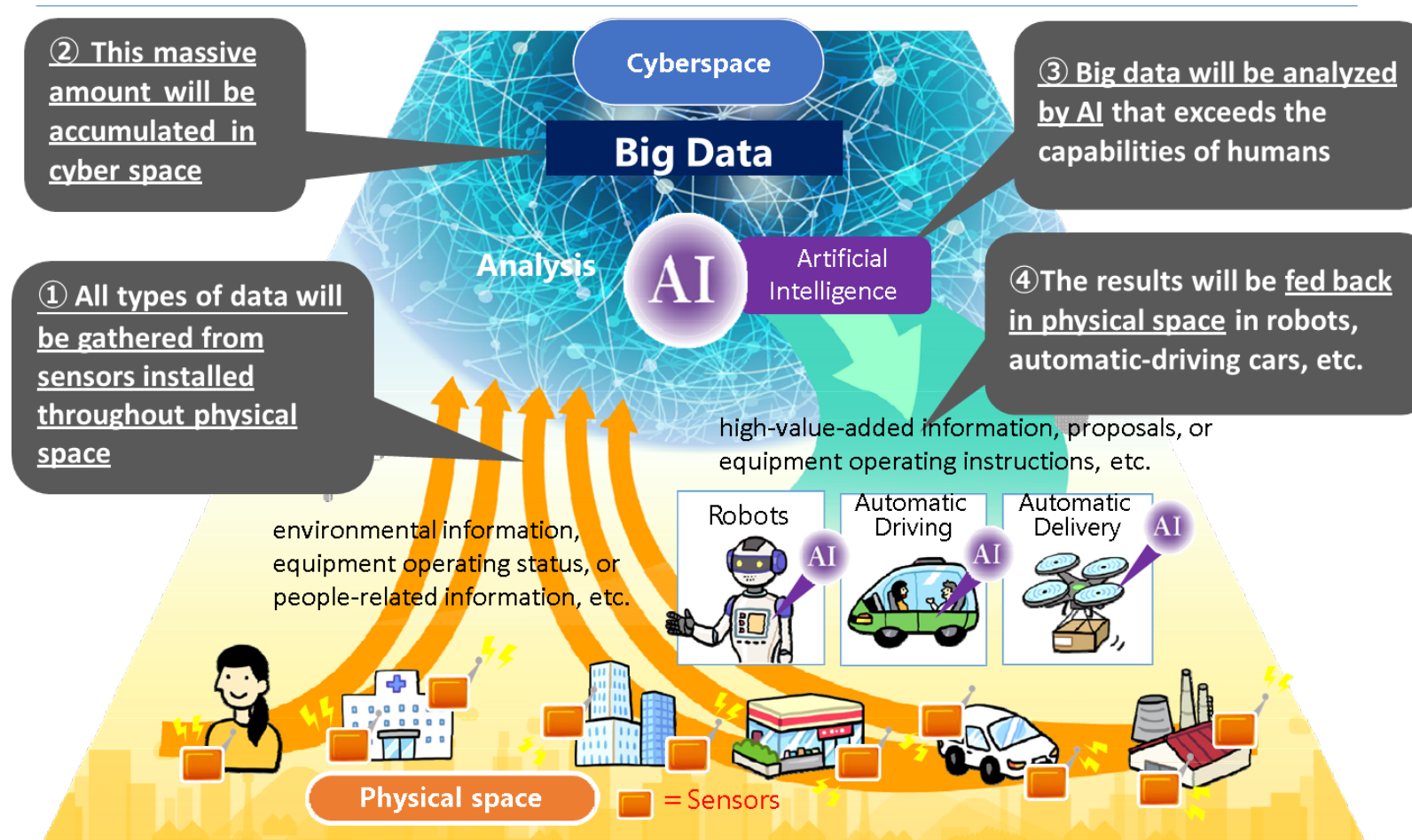
What is Society 5.0?

- Realize the advanced fusion of cyberspace and physical space
- To balance economic advancement with the resolution of social problems
- Bring about a human-centric society

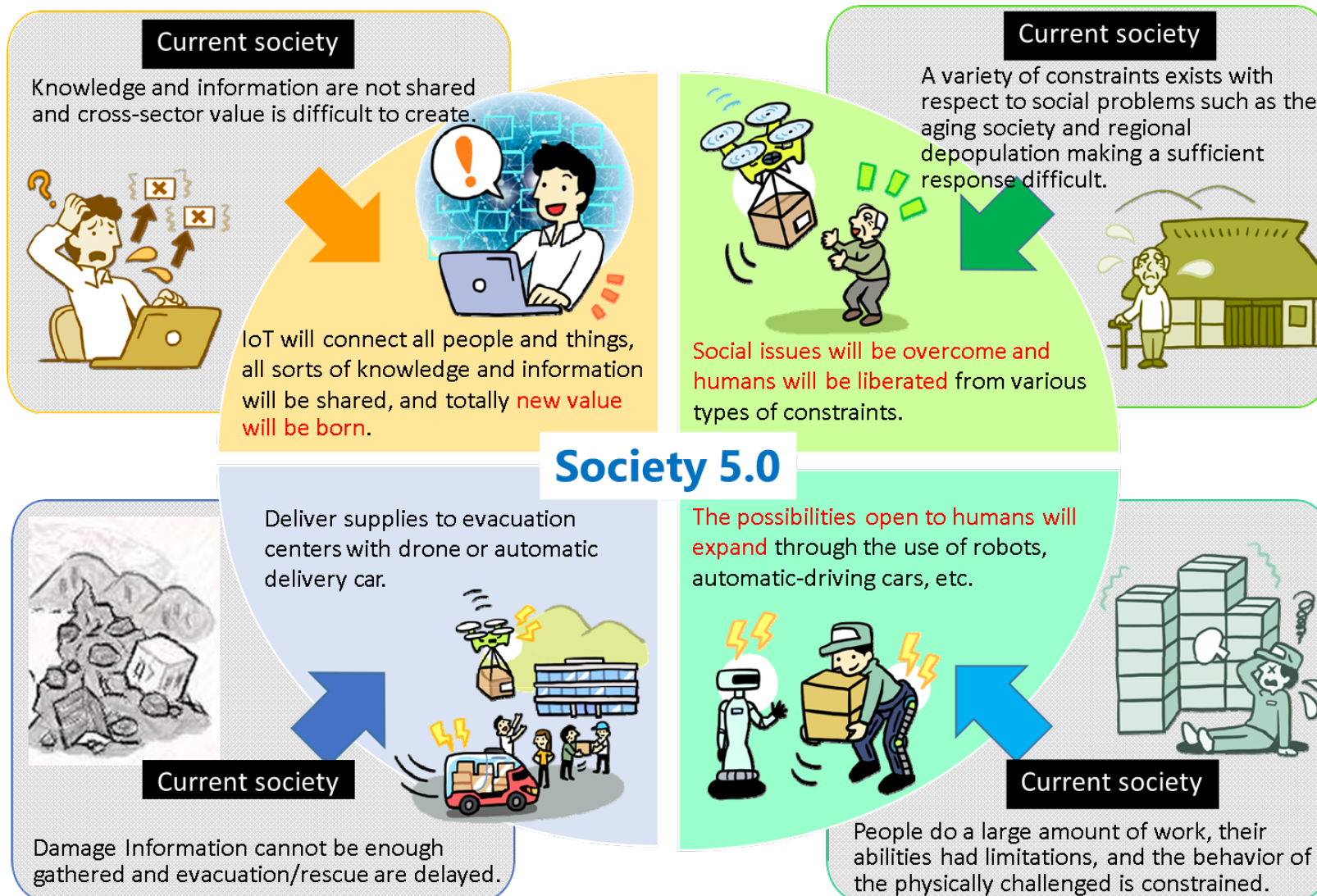


Advanced Fusion of CPS (Cyber and Physical Space)

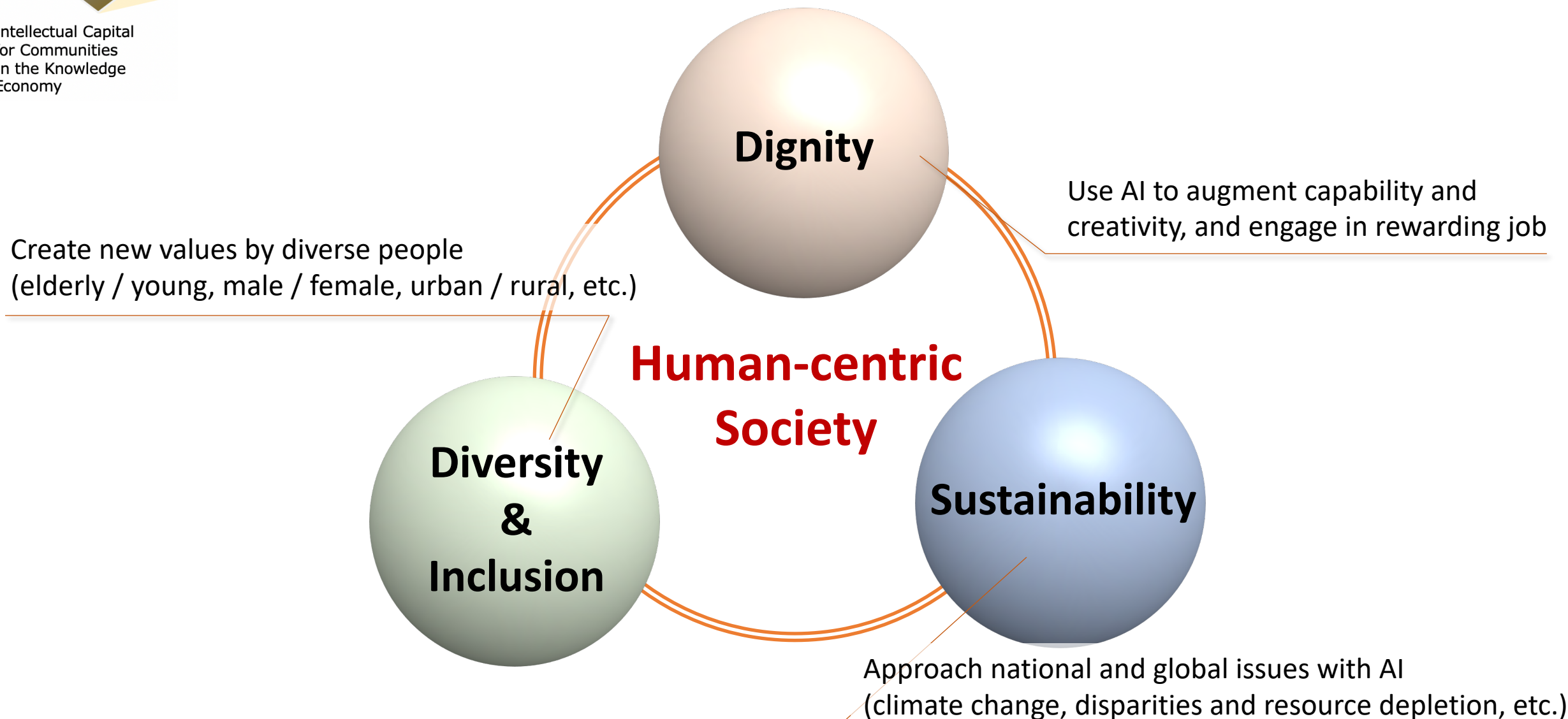
- All types of data will be gathered from **sensors** installed throughout physical space via **IoT**.
- This **Big Data** will be analyzed by **AI**, and the results will then be **fed back in physical space**.



Solution of Social Problems and Economic Growth



Human Centric Society



An Overview of National AI Strategies

France

President Macron announced "To boost AI research in France"

- France's AI strategy (2018/3)
 - Key sectors: Healthcare, Transport-mobility
 - GDPR against GAFAM, China, Russian Federation
 - Doubles the number of students in the AI major
- 42 (nonprofit and tuition-free computer programming school)
 - Training 10,000 students in 5 years

United states of America

GAFA lead the world, and the government also addresses AI as a priority for R&D

- National Artificial Intelligence Research and Development Strategic Plan (2016/10)
- White House Summit on AI for American Industry (2018/5)
 - Discussing the policy for the US to take the leading position in AI.
 - Establish a special committee under the NSTC and consider it
- President Trump released an executive order "Maintaining American Leadership in Artificial Intelligence" (2019/2)

China

Aim for the world's best with data enclosure and AI intensive investment

- A Next Generation Artificial Intelligence Development Plan (2017/7)
 - AI's core industry exceeding 7 trillion (JPY), and exceeding 70 trillion (JPY) as driven by the scale of related industries.
 - Enhancement of data localization by the Cybersecurity Law

Germany

Industry 4.0 platform construction centered on manufacturing

- Strategy on Artificial Intelligence (2018/11)
 - provide around €3 billion for the implementation of the strategy (~2025)
 - Establish a national network of at least twelve centers and application hubs.
 - Competence center for small and medium-sized companies

Singapore

Enhance the national programs to gather talents from all over the world, and STEM education

- AI Singapore (2017/3)
 - Founding national programs for fundamental researches, grand challenges, 100 experiments (100E), human resource development, to collect talent from all over the world
- Enhancement of STEM education for primary and middle schools
 - All primary schools to have applied learning program (ALP) by 2023.

Japan's AI Strategy toward Society 5.0

Educational Reform - Foundation for human resource development

Research & Development - Attractive Research & Development environment

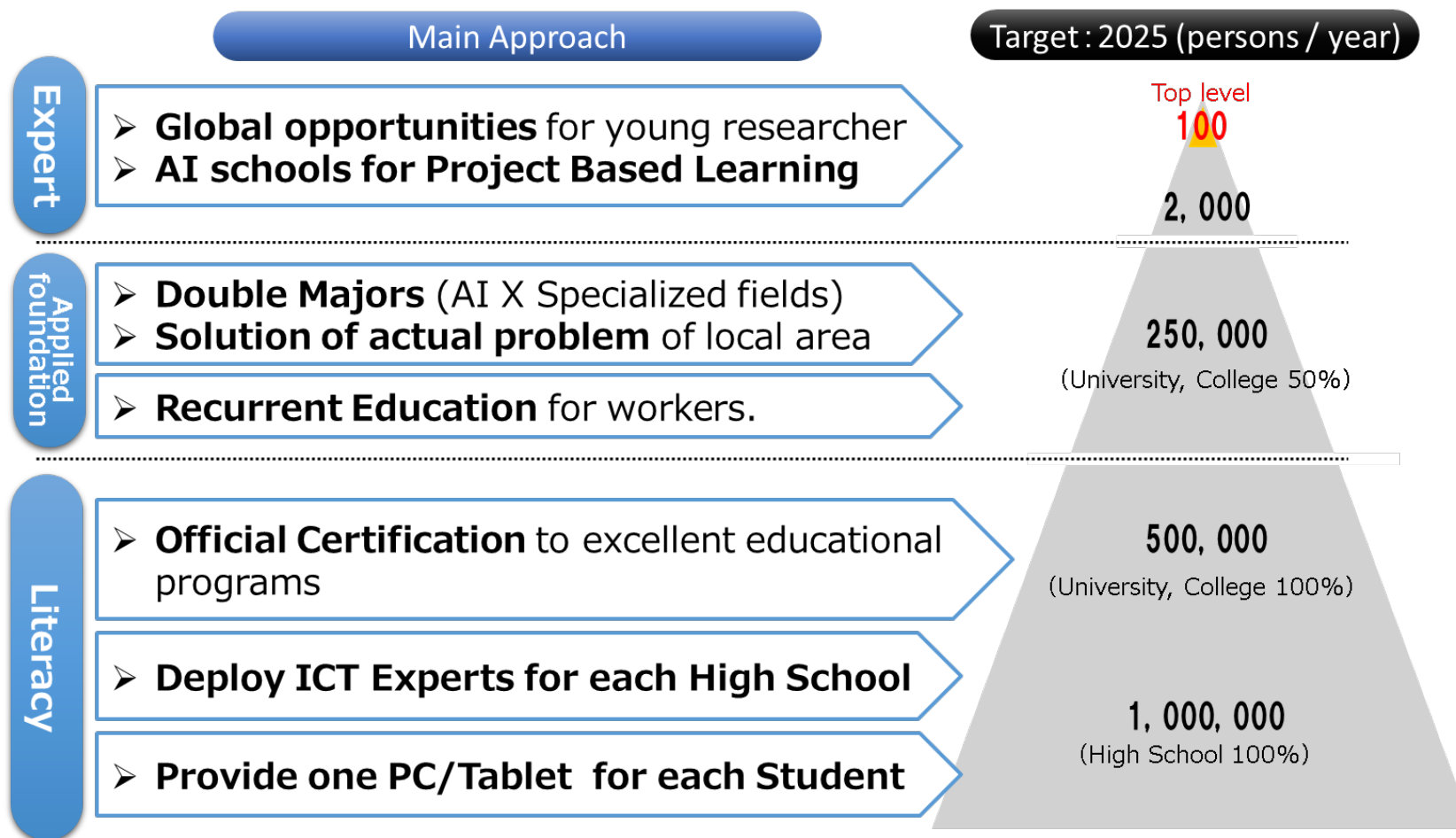
Deployment to Real-World - Fusion of AI and data

Data - Establishment of mechanism for ensuring trust of AI

ELSI - Social Principles of Human-centric AI

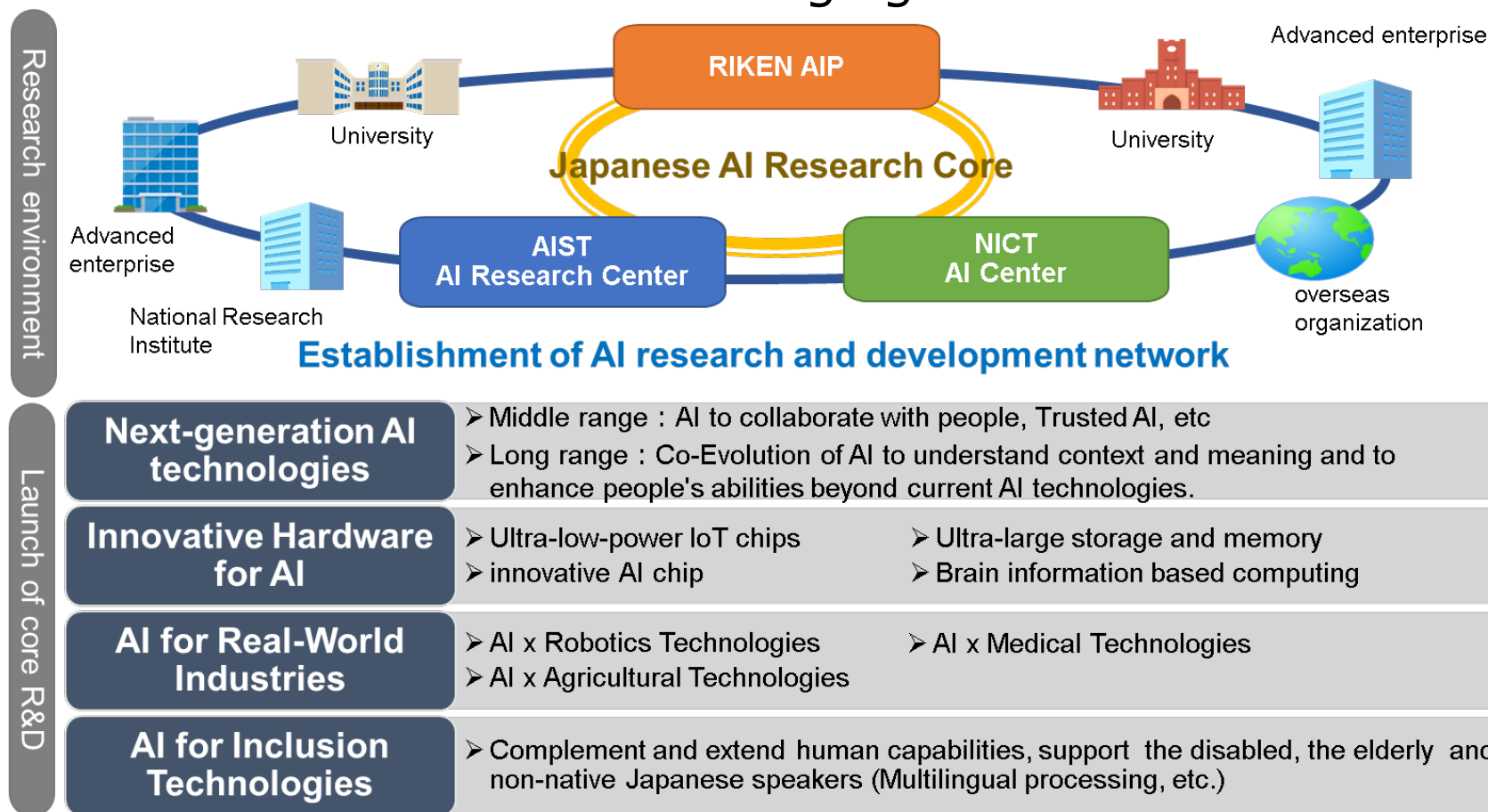
1 Education Reform

- Reform of educational system that everyone can acquire AI literacy for correct understanding and use of AI like "reading, writing and arithmetic" .



2 Research & Development

- Making Japan an **attractive base** for researchers from around the world.
- Strategic promotion of **next-generation AI technologies** and enabling environment for innovative emerging research.



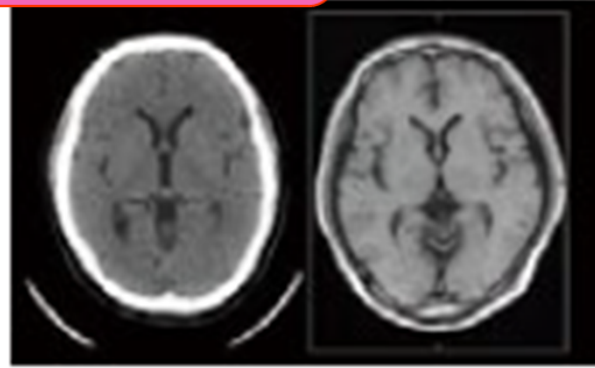
3 Deployment to Real-World

- Fusion of AI and data in Japan's strong areas to address social issues and consequently realize diverse and sustainable society.

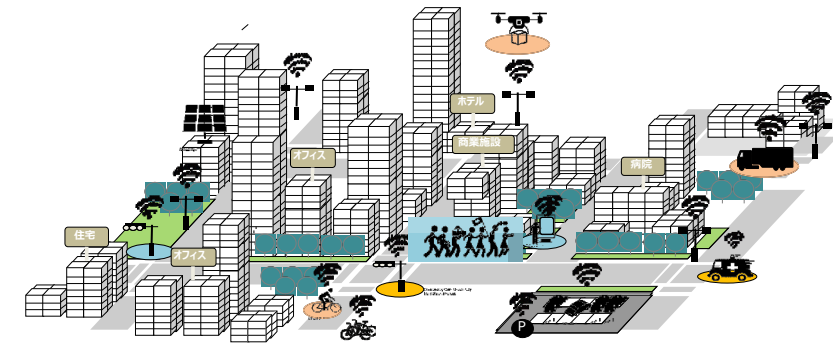
Agriculture



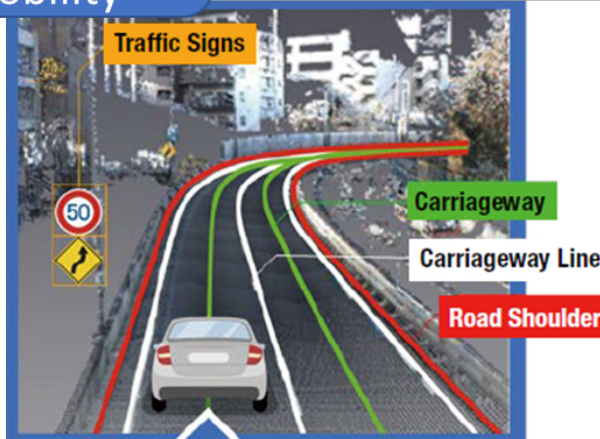
Healthcare



Smart City



Mobility

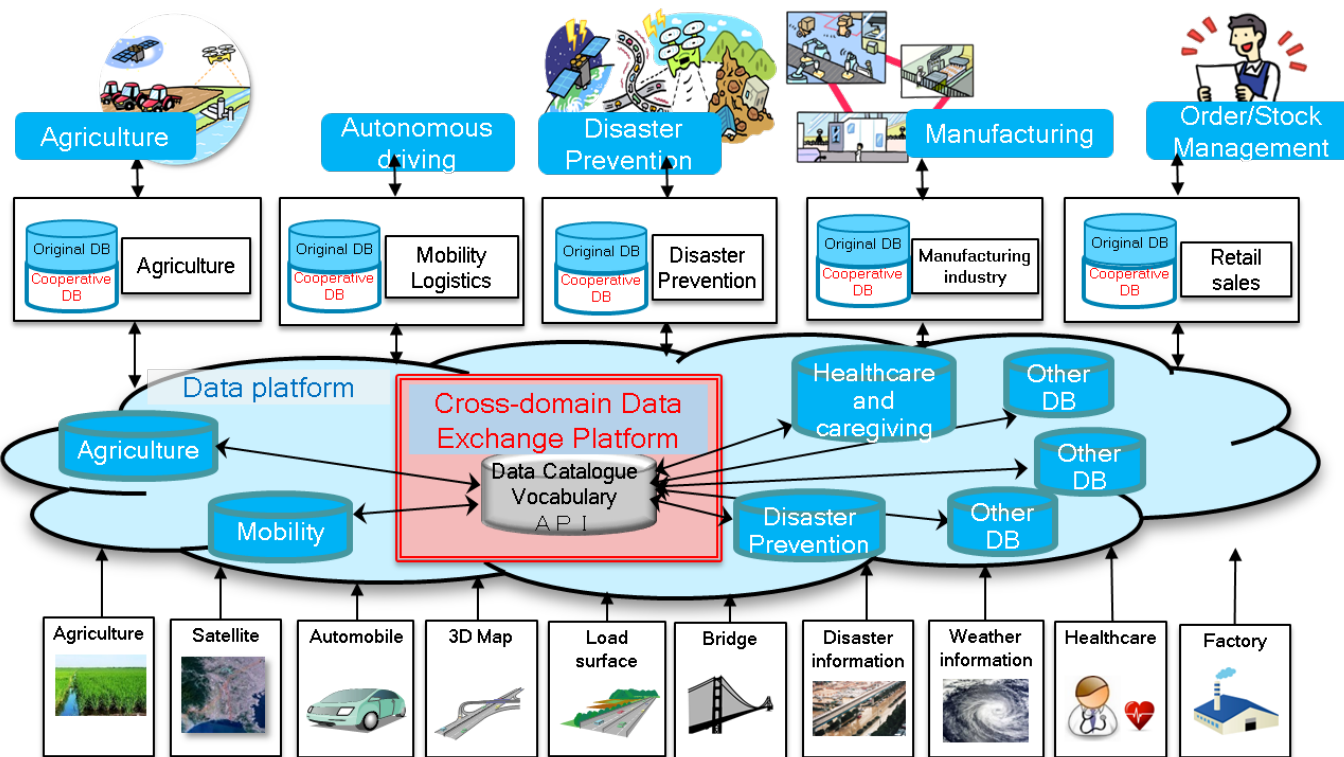


Resilience

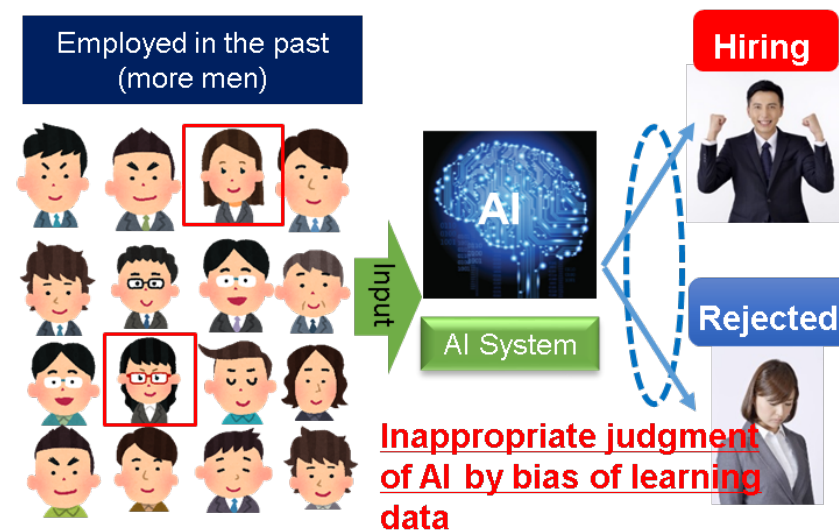


4 Data- Mechanism for Ensuring Trusted Data and AI

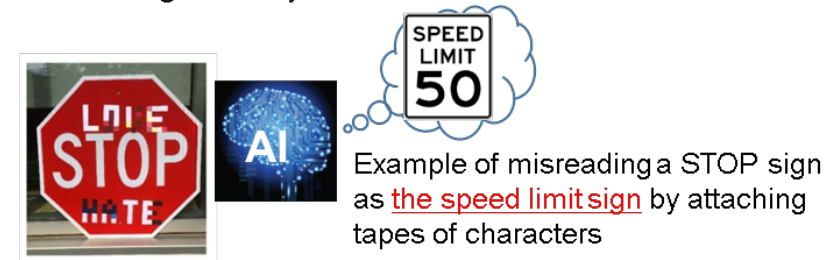
- Establishment of “Cross Domain Data Exchange Platform” that enables all data to be used safely and at an AI level.
- In order to implement safe and reliable social packaging of AI, reliable quality data is required to ensure reliability of AI products and services.



■ Improper judgment by past data

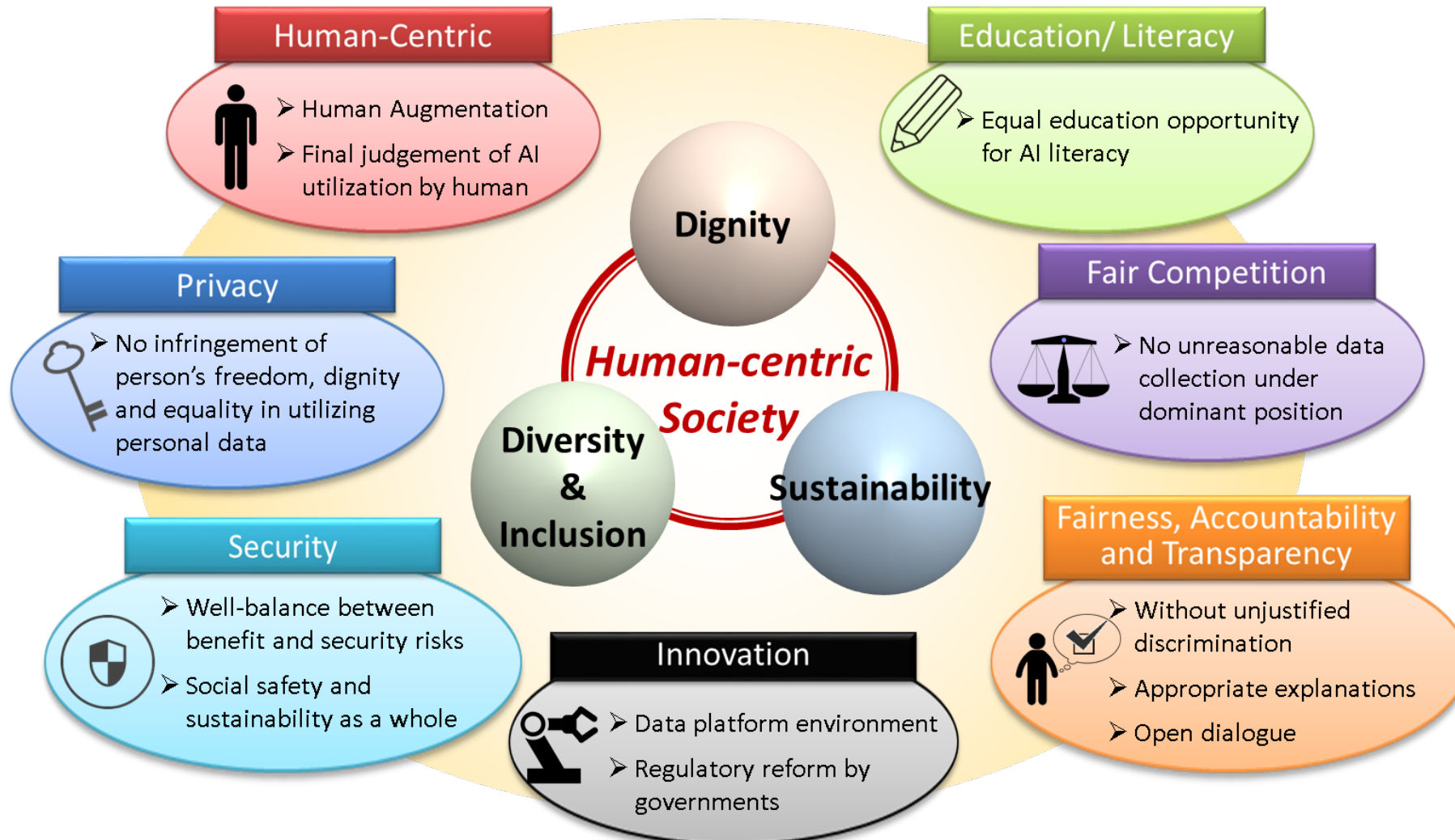


■ Misrecognition by a little noise



5 AI Ethics, Social Principles

- Three basic philosophies and seven principles



G20 Osaka Leaders' Declaration (28-29 June, 2019)

FOSTERING ROBUST GLOBAL ECONOMIC

Innovation: Digitalization, Data Free Flow with Trust

12. ...The responsible development and use of Artificial Intelligence (AI) can be a driving force to help advance the SDGs and to realize a sustainable and inclusive society. To foster public trust and confidence in AI technologies and fully realize their potential, we commit to a human-centered approach to AI, and welcome the non-binding G20 AI Principles, drawn from the Organization for Economic Cooperation and Development (OECD) Recommendation on AI. ...

G20 AI Principles

Section 1: Principles for responsible stewardship of trustworthy AI

- 1.1. Inclusive growth, sustainable development and well-being
- 1.2. Human-centered values and fairness
- 1.3. Transparency and explainability
- 1.4. Robustness, security and safety
- 1.5. Accountability

Section 2: National policies and international co-operation for trustworthy AI

Summary

1 Human-centric AI

- The third wave of AI has come into our society and has been changing our daily life drastically.
- The rapid expansion of AI utilization raises public concerns (“Light and shadow”).
- Human-centric approach is necessary to promote public trust for AI.

2 AI strategy for human-centric AI

- Japan’s government discussed and formulate social principles prior to AI strategy.
- AI strategy to promote AI implementation for the future society to be realized, with the concept of “Human-centric”.

3 International promotion

- Japan intends to lead the world in development of decent AI society by sharing social principles for human-centric AI with other countries.