

Strategic Plan toward Society 5.0

Koichi AKAISHI

Director General for Science, Technology and Innovation
Director General for Atomic Energy Policy

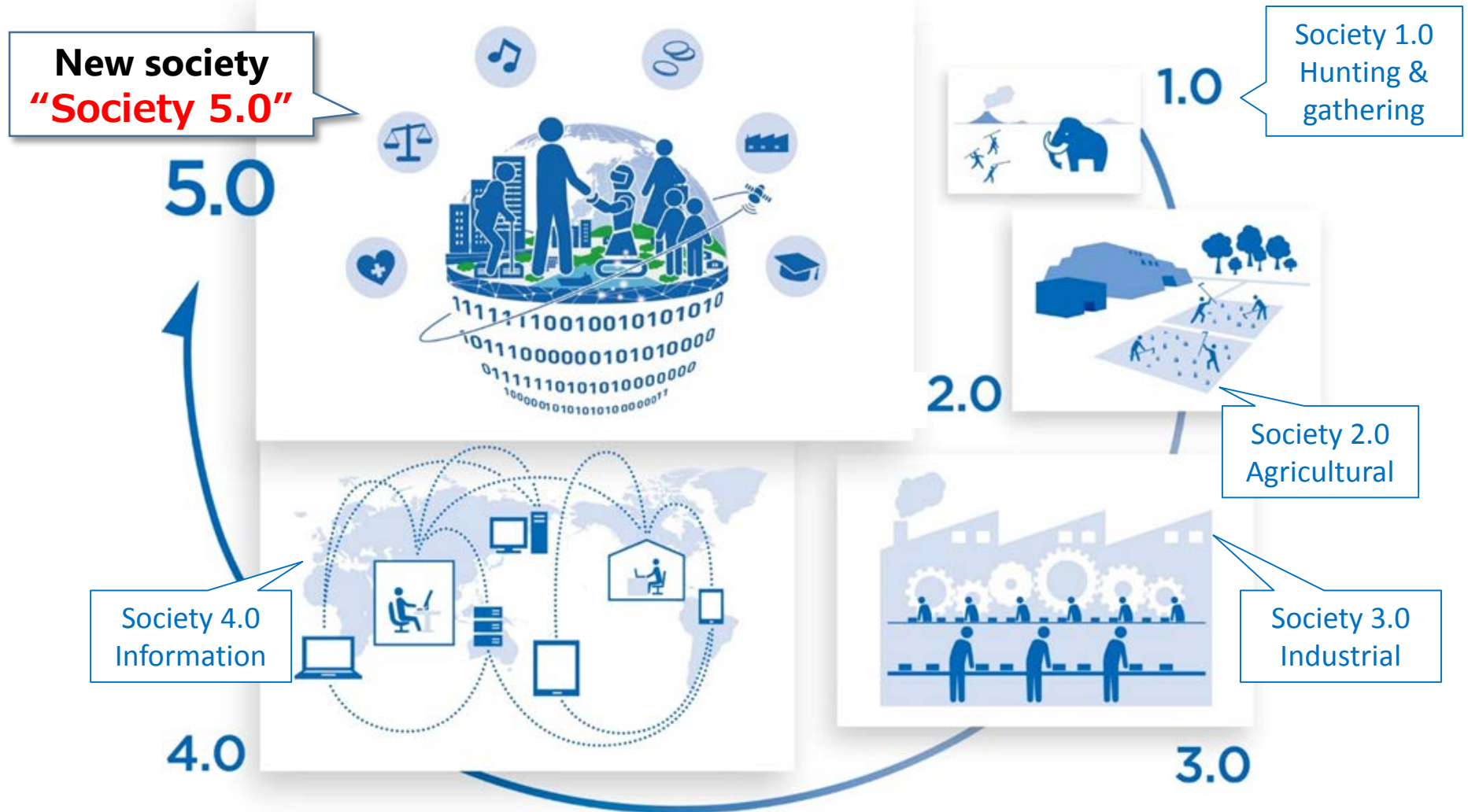


Agenda

1. Society 5.0 and the Innovation Strategy
2. Current Stage for Society 5.0
3. Challenges for Next Stage (Big Data and AI)

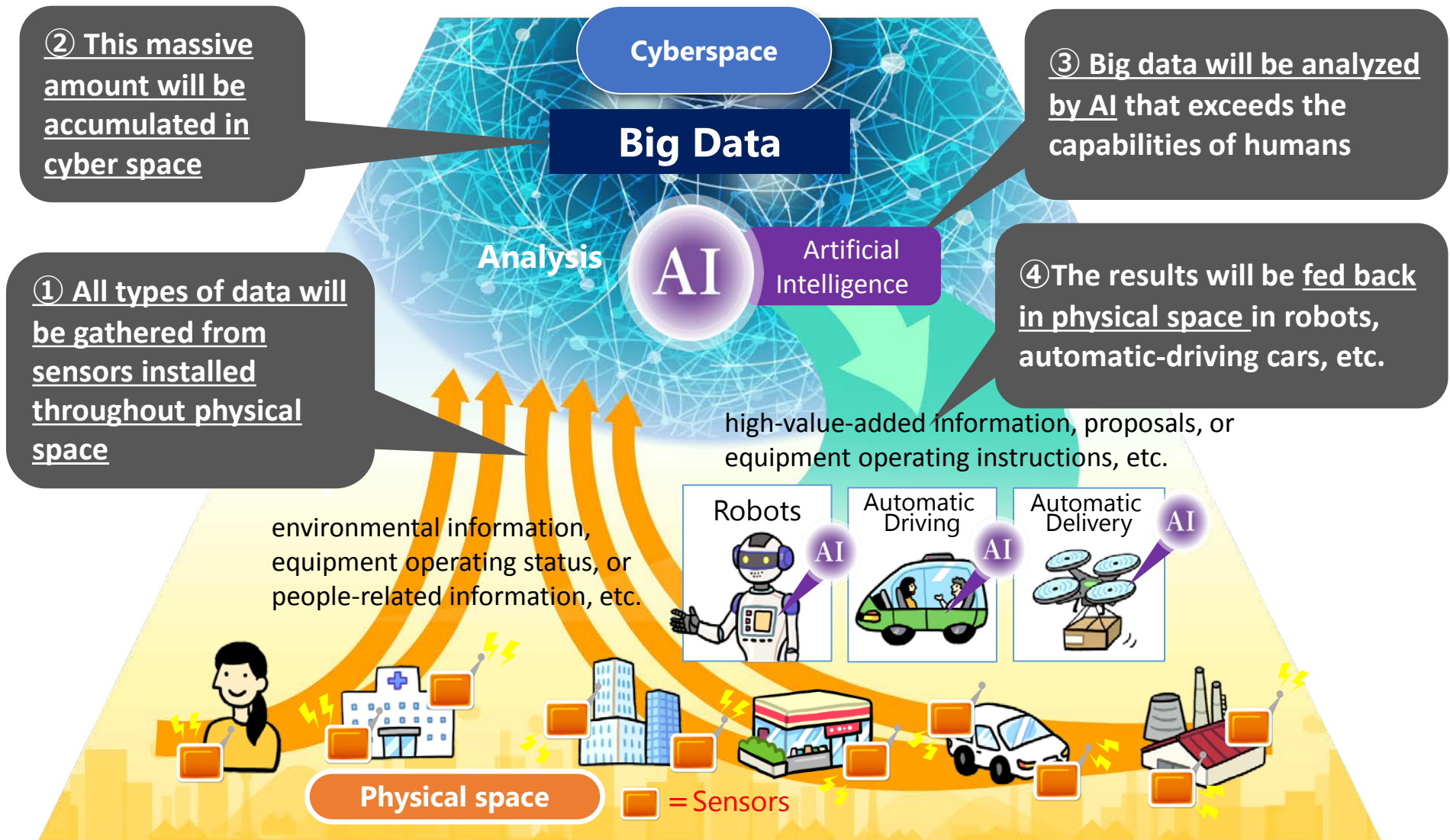
What is "Society 5.0"?

With the integration of cyberspace and physical space,
Realize the solution of social problems and economic growth, and
Create a human-centered society



Advanced Fusion of CPS (Cyber and Physical Space)

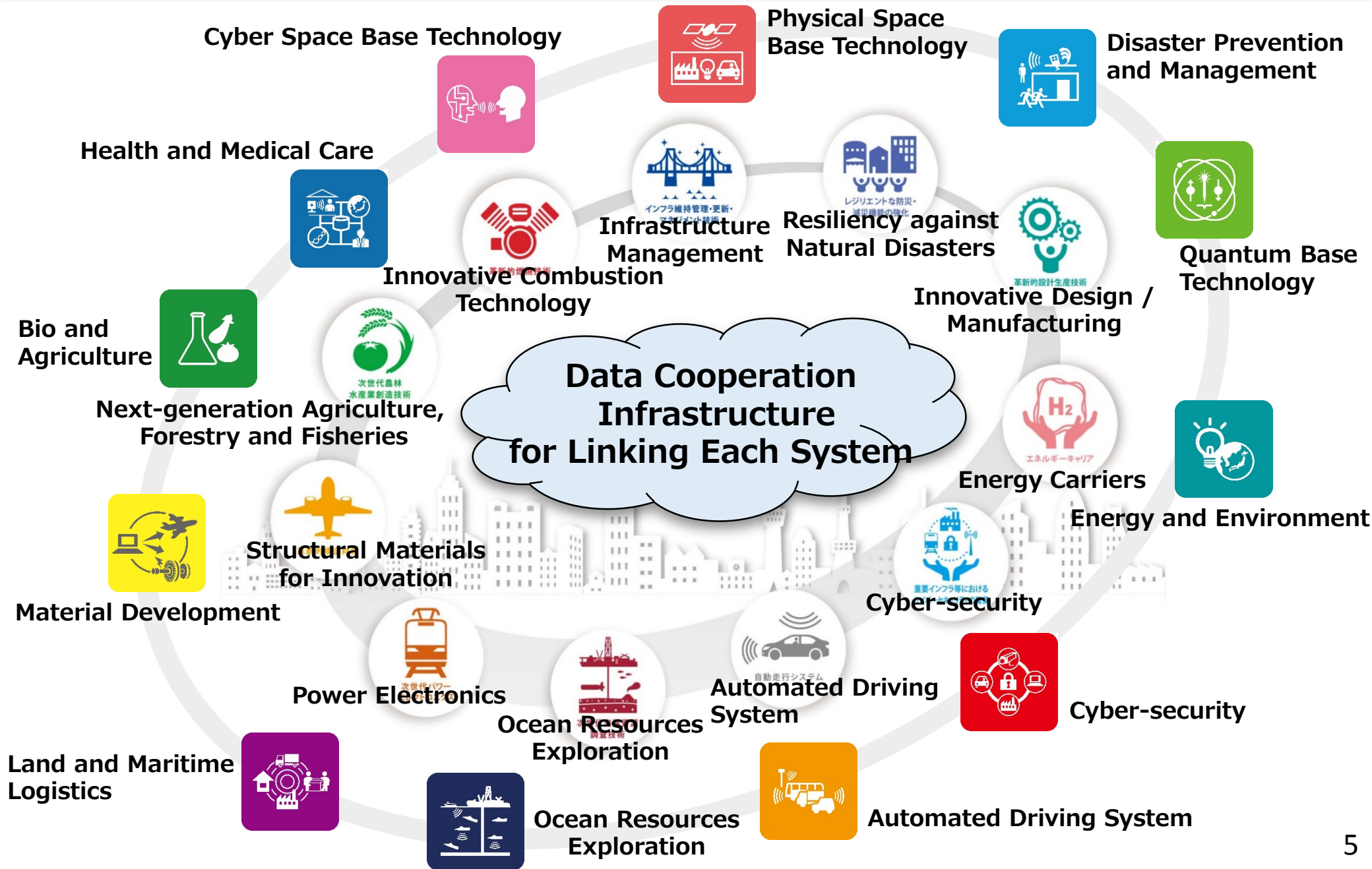
All types of data will be gathered from **sensors** installed throughout physical space via **IoT**. This **Big Data** will be analyzed by **AI**, and the results will then be **fed back in physical space**.



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Strategic Innovation Promotion Program (SIP)



Robot tractor

- Developed **multi-robot tractor system** that enables multiple robot tractors to work collaboratively, and **robot tractor** was **commercialized in Oct, 2018**.
- Developed **super-low price (about ¥100,000)** and **high-precision receiver** for Quasi-Zenith Satellites System (**QZSS**)



QZSS (Michibiki)



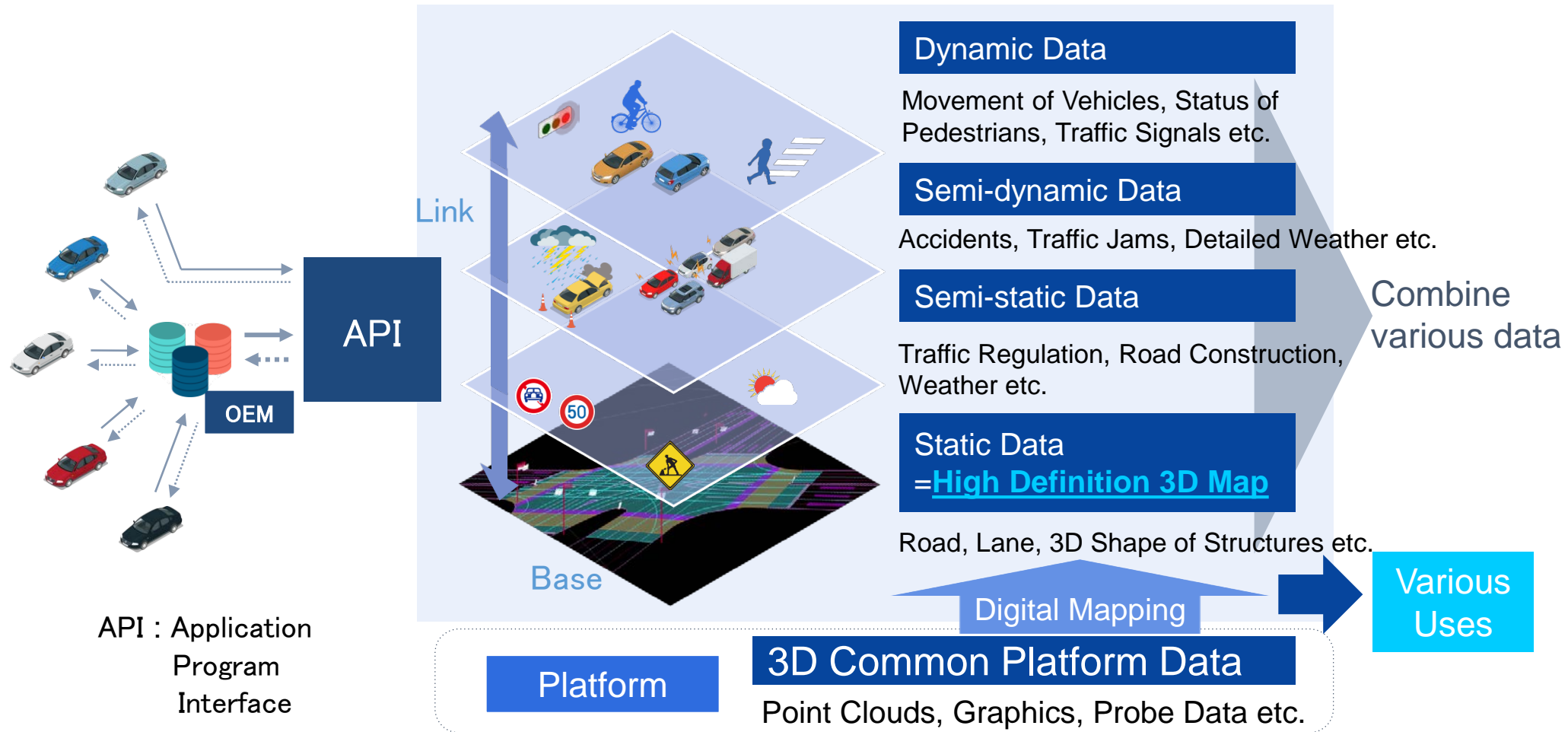
Unmanned multi-robot tractor



Low-price receiver for QZSS

- Confirmed less than 3 cm of horizontal error
Lowering price of robot agricultural machines
→ **dissemination around the country**

Dynamic Map for Automated Driving

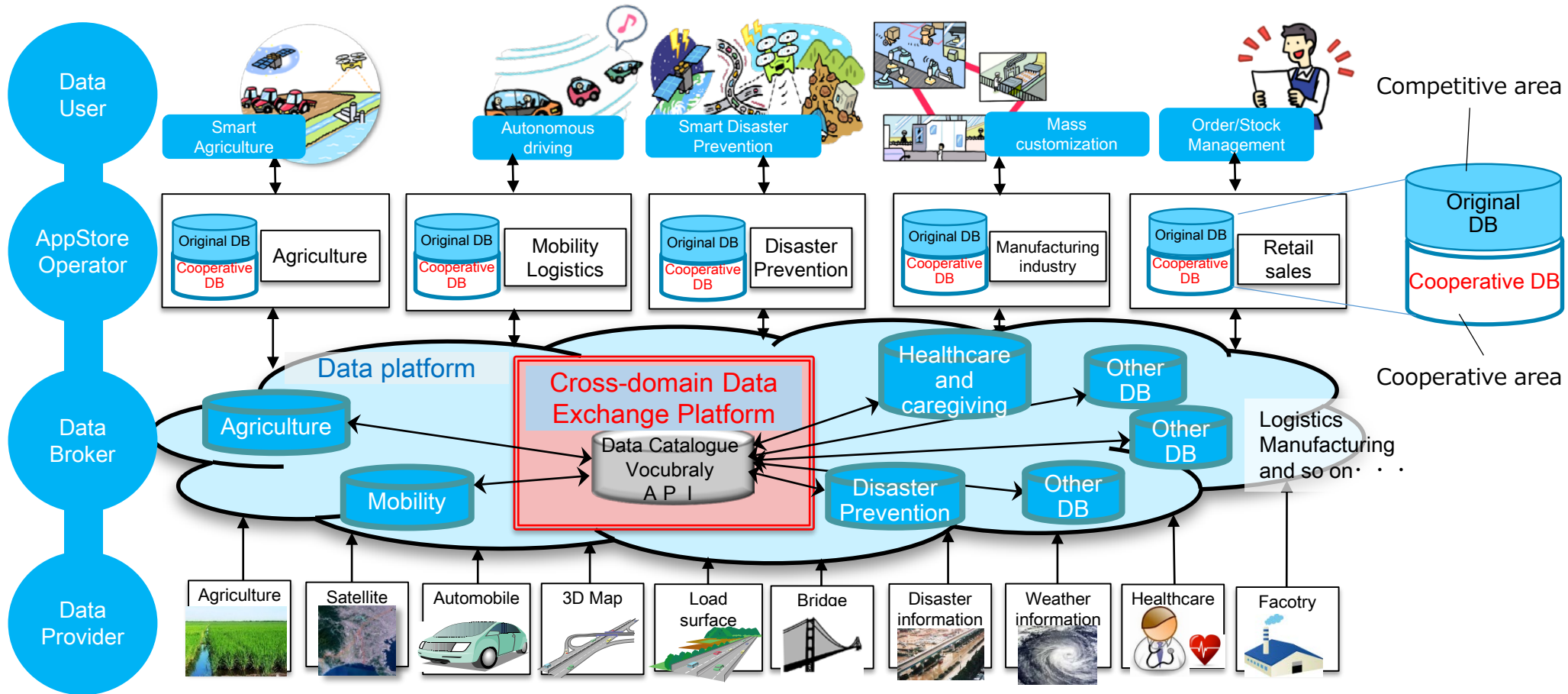


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Cross-Domain Data Exchange Platform

Building cross-domain data exchange platform in 3 years, make it fully operational in 5 years
(Analysis by AI made possible at time of full operation)



Secure IoT System and Trustworthy Chain Ecosystem

A. Creation & Confirmation of Trustworthiness

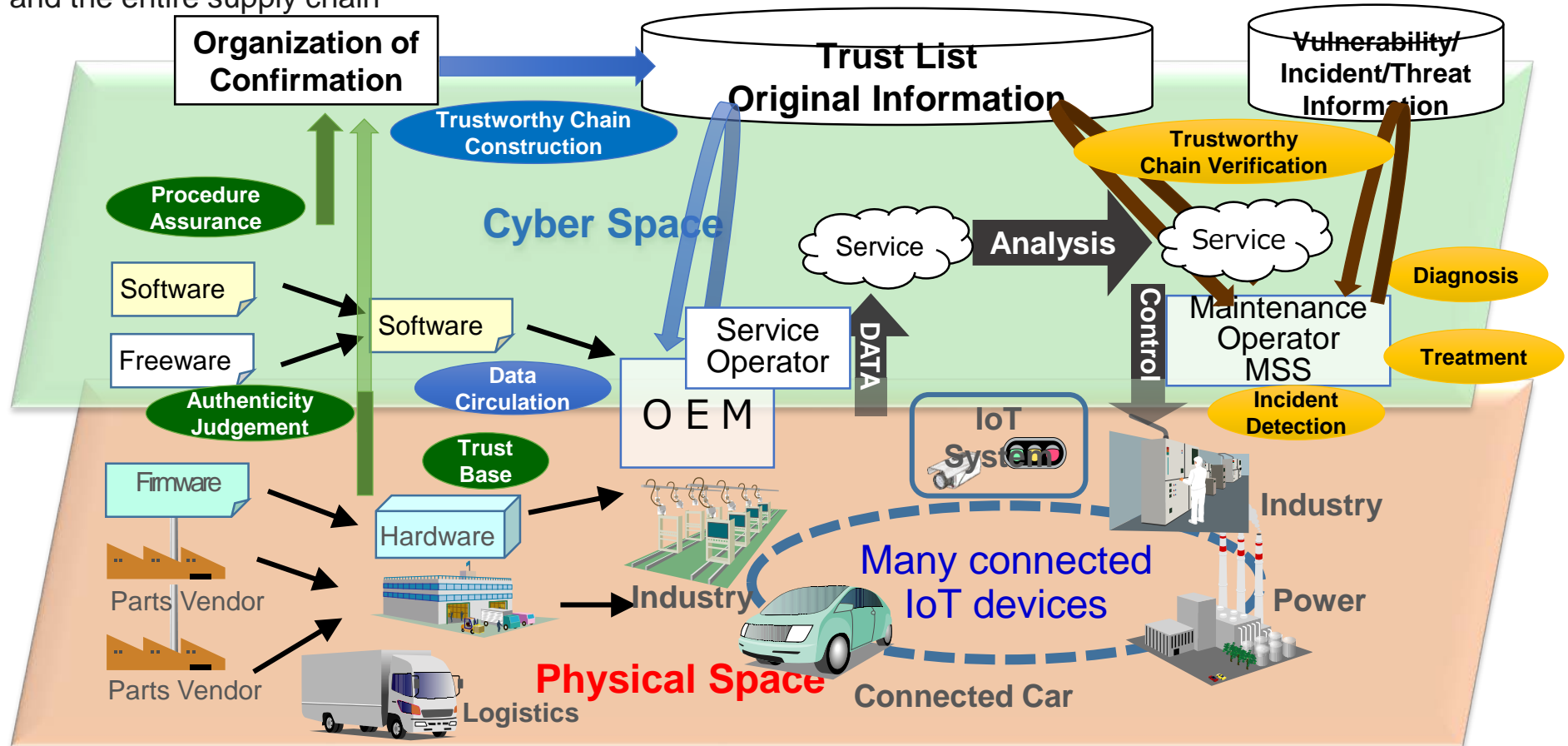
Technology that creates and confirms “trustworthiness” necessary to ensure security of various IoT systems/ services and the entire supply chain

B. Construction & Distribution of Trustworthy Chain

Technology that constructs “trustworthy chain” and securely circulates necessary information


C. Verification & Maintenance of Trustworthy Chain

Technology that verifies and maintains that the trustworthy chain is operated safely



AI strategy package (tentative)

1st meeting of AI strategy expert meeting for strength and promotion of the innovation strategy (September 5, 2018)
The meeting/team/taskforce are discussing the followings.

<p>Education Re-Design Enhancement of human resource development for the AI era</p>	<ul style="list-style-type: none"> ➤ Special treatment of advanced IT professionals, career path representation by industries ➤ Establishment of system for certifying the university graduates ➤ Establishment of double-major system for AI x specialized field ➤ Mathematics / data science compulsory education for all university students within 3 years ➤ revision of college entrance examinations ➤ Enhancement of connections between high school education and university education to utilize the world's top math level of students up to the age of 15 ➤ Eliminate separation of science and technology in high school, and enhancement of science teaching staff 	<p>Output</p>  <p>Input</p>
<p>R&D World's best research environment</p>	<ul style="list-style-type: none"> ➤ Development of a research environment that attracts human resources from all over the world (Grand challenge like "moon shot") 	
<p>Social change Response to</p> <ul style="list-style-type: none"> - Declining birthrate and aging population - Labor shortage - Increasing of social security cost - Gap between urban and rural - Strengthening industrial competitiveness etc. 	<ul style="list-style-type: none"> ➤ Building cross-domain data exchange platform <ul style="list-style-type: none"> • Agriculture : Expert know-how data, production/distribution/purchasing data base • Health/Medical/Elderly care : Data infrastructure of integrated health/medical/elderly care data at the individual level • Resilience/logistics : Consecutive data infrastructure of design/procurement/maintenance/ disassembly, data infrastructure of intelligent truck/harbor/shipping • Finance : Creation of new services (settlement infrastructure etc) based on data utilization environment ➤ Establishment of AI engineering ➤ Establishment of a funding system to support start-up based on innovative ideas of young people, with a high degree of freedom and safety net 	
<p>ELSI Solving ethical, legal and social problems</p>	<ul style="list-style-type: none"> ➤ Ensuring of security, personal information protection, formulation of human-centered principles for utilization of AI ➤ Information dissemination to international societies, e.g., G7, G20, OECD, UNESCO, etc. (Contribute to SDGs) 	

Overview of Social Principles of Human-centric AI (tentative)

Principles	Description
Human-Centric	➤ AI substitutes for human labor, expands human ability and creativity, and can be upgraded by learning from humans, etc.
Education and Literacy	➤ In order to ensure that everyone understands and uses AI correctly, society should provide all necessary educational opportunities equally, etc.
Privacy	➤ The personal information of the data should not be distributed or used in a manner that the person does not desire, etc.
Security	➤ Malicious cyber attacks should not impair the safety and security of society by halting the operation of important infrastructure and systems, or by leaking personal and industrial information, etc.
Fair competition	➤ Unfair competitions should not be carried out utilizing the dominant position in possession of data, etc.
Fairness, Accountability, and Transparency	➤ Fairness, transparency, and accountability for the AI reasoning process are ensured as much as possible so that AI inferences do not unfairly discriminate or treat people unfairly
Innovation	➤ An environment should be established in which data in all fields can be mutually used across national borders on the premise of ensuring privacy and security.

CSTI's 'STI for SDGs Initiatives'

Council for Science, Technology
and Innovation (CSTI)

Society 5.0
ソサイエティ

- To balance economic advancement with the resolution of social problems
- To bring about a 'human-centered society' where anyone can enjoy a high quality of life

Highly
compatible

SUSTAINABLE
DEVELOPMENT GOALS

- To end poverty, protect the planet, fight diseases, and ensure prosperity for all, with 'No one will be Left behind'

Integrated Innovation Strategy 2018 (adopted in June 2018)

Chapter 5: Promotion of STI for SDGs

1. Formulation of national 'STI for SDGs Roadmap'
2. Investigation on the profitable 'STI for SDGs Platform'