Smart Services

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What is smart service?

- The most advanced level of data-based digital service

- Smart service is created from the collection and analysis of data obtained from billions of products equipped sensors/technical objects connected to the Internet

- For example…
  - Smart house
  - Smart agriculture
  - Smart grid (energy)
  - Smart infrastructure maintenance
  - Autonomous driving

  etc.

Digital disruption and digital transformation

[Digital disruption]

- The digital environment surrounding the people's lives and business has changed dramatically:
  - ✓ popularization of smartphones
  - ✓ progress of cloud technology
  - ✓ arrival of the IoT era where all things are connected to the Internet
- Venture companies that develop business using new technologies such as AI, big data, and block chains, will revolutionize the existing market and business structure

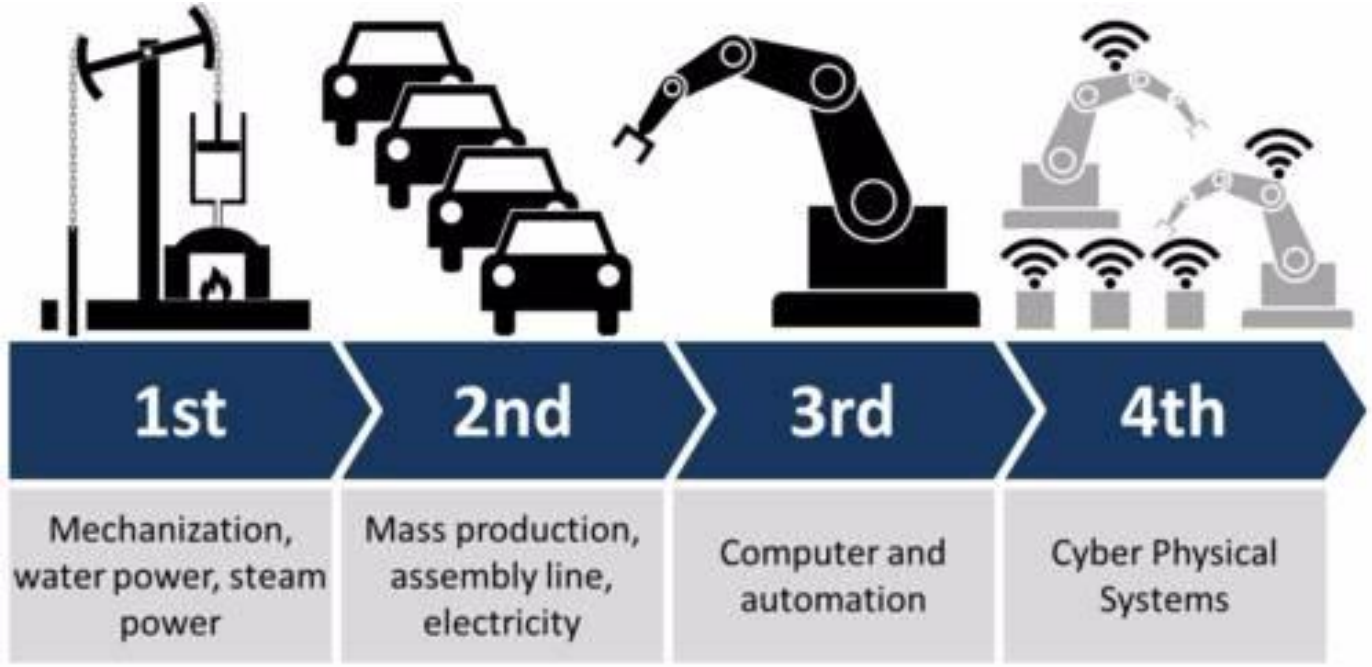
[Digital transformation]

In response to digital disruption, digital transformation is expanding

- ✓ service improvement
- ✓ productivity improvement based on digital premise
- ✓ organization reform

4th industrial revolution

The 4th industrial revolution causes digital disruption with new technologies such as robotics, AI, nanotechnology, quantum computing, biotechnology, IoT, 5G, autonomous driving, etc. in a number of fields



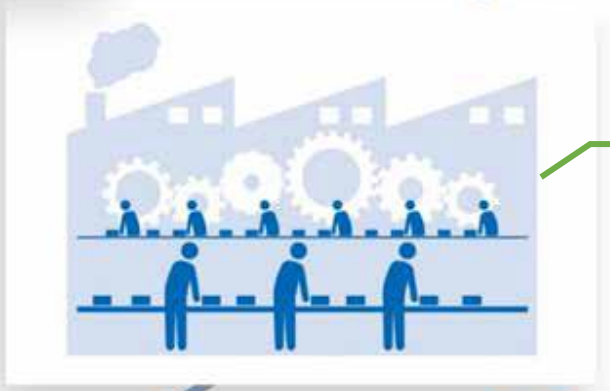
Society 5.0

“Society 5.0”
Super Smart Society

Society 1.0
Hunting & gathering

Society 2.0
Agricultural

Society 3.0
Industrial



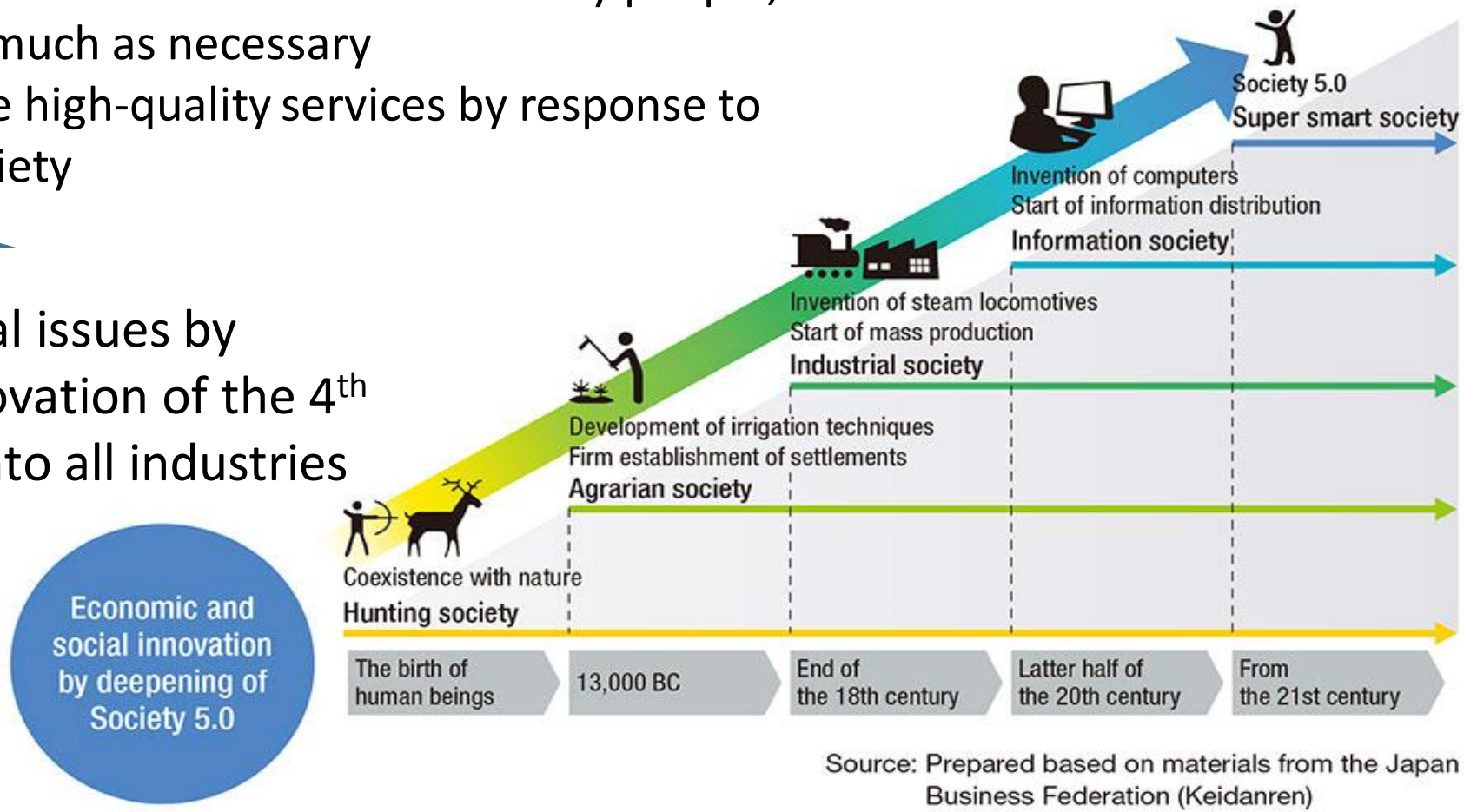
Society 4.0
Information

Realize Society 5.0 by 4th industrial revolution

Society 5.0 is aiming for a prosperous human-centered society:

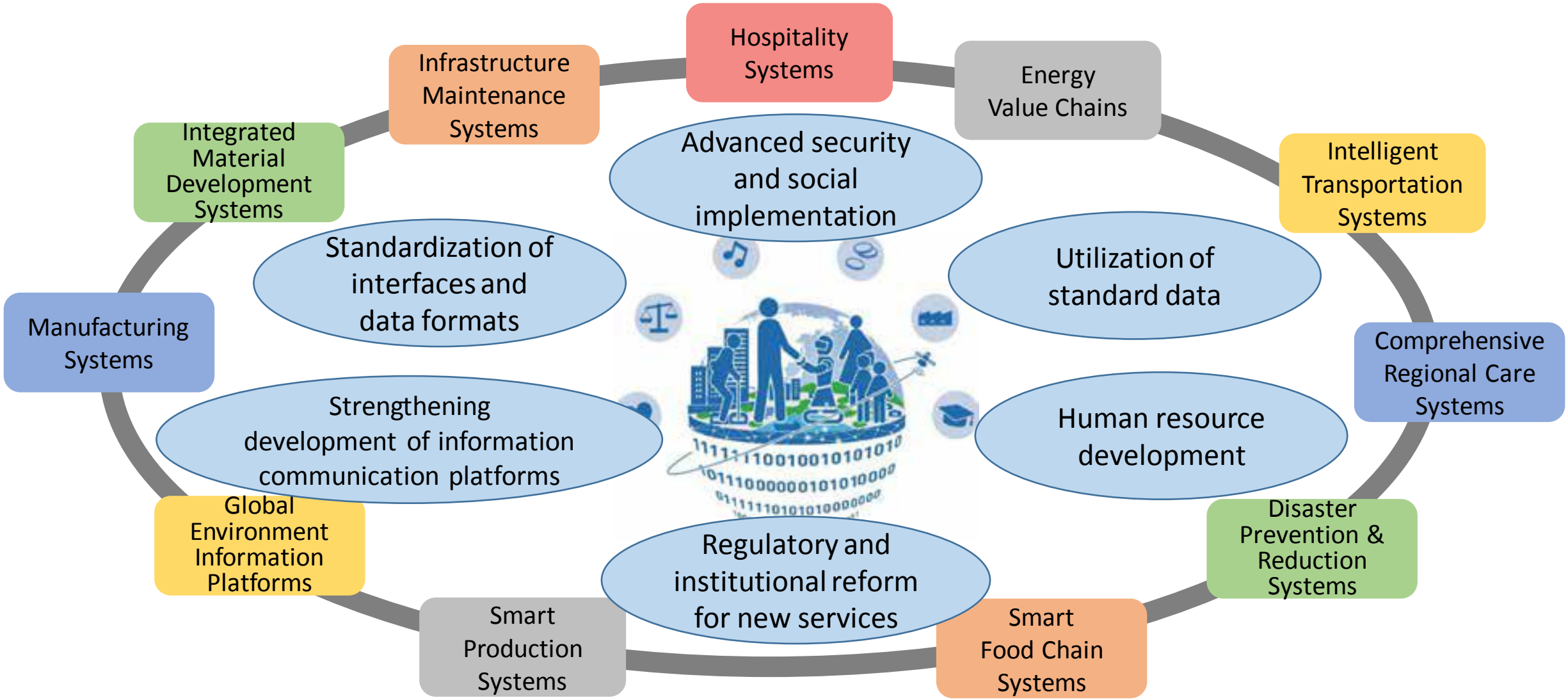
- ✓ Provide necessary items and services to necessary people, when necessary, as much as necessary
- ✓ Everyone can receive high-quality services by response to various needs of society

Resolving various social issues by implementing the innovation of the 4th industrial revolution into all industries



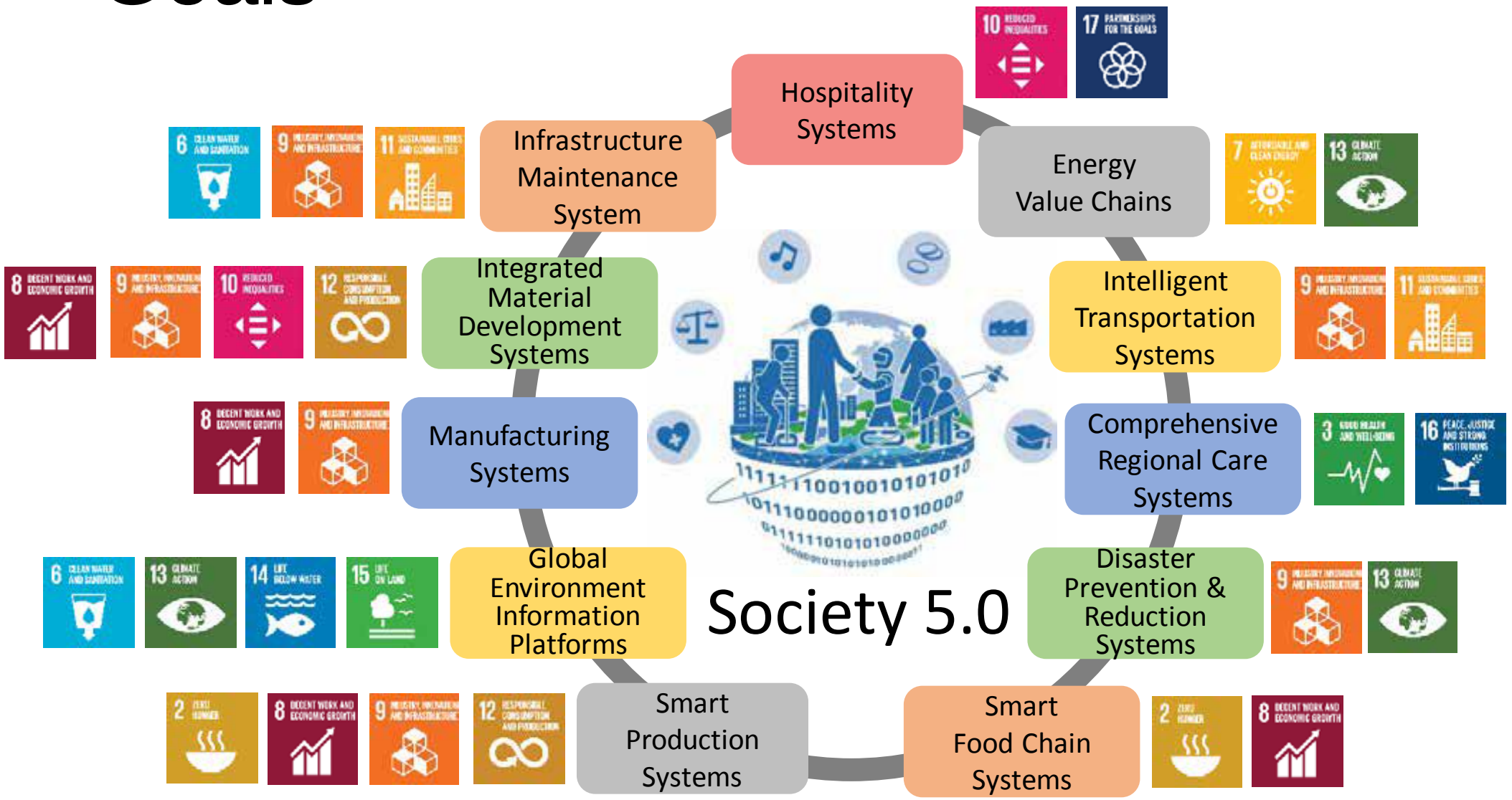
Source: Prepared based on materials from the Japan Business Federation (Keidanren)

Super Smart Society Service Platform of Society 5.0



Sustainable Development Goals (SDGs)

Society 5.0 x Sustainable Development Goals



Examples

Smart service utilizing Wi-Fi (Barcelona)

Smart lighting

- Measure traffic volume with sensor, adjust street light to appropriate brightness
- Saving cost of electricity

Smart parking

- Provide parking space information from power-saving sensor
- Increase in parking lot revenue, alleviation of congestion
- Increase in tourism revenue by longer tourist's staying time

Smart waste management

- Manage garbage condition of waste collecting box with sensor
- Cost reduction of waste collection

Smart bus stop

- Provide Wi-Fi spot
- Deliver of information (bus operation, administration, etc.)
- Advertising

Internet access

- Free Wi-Fi spot for tourists and citizens
- Coexistence with communications carrier's service

Analysis of location information / environment sensor

- Environmental sensor (noise, air pollution)
- Monitoring suspicious individuals by IP cameras
- Analyzing flow of passers based on location information and utilizing for marketing

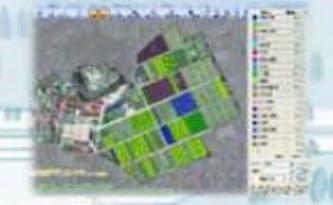
Created value (ca. 30 bio. USD) by providing smart service based on Wi-Fi as a common infrastructure

Smart Agriculture

1. Labor saving & large scale production

Break down the limits of work capacity by night/multiple/autonomous running of agricultural machinery by GPS system

2. Maximize crop capacity



Realize high yield & quality with maximized crop potential by cultivation based on sensing technology and utilizing past data

Smart Agriculture

3. Release from hard/dangerous work

- Saving labor by assist suit to relieve heavy work such as harvest loading
- Automation weeding robot

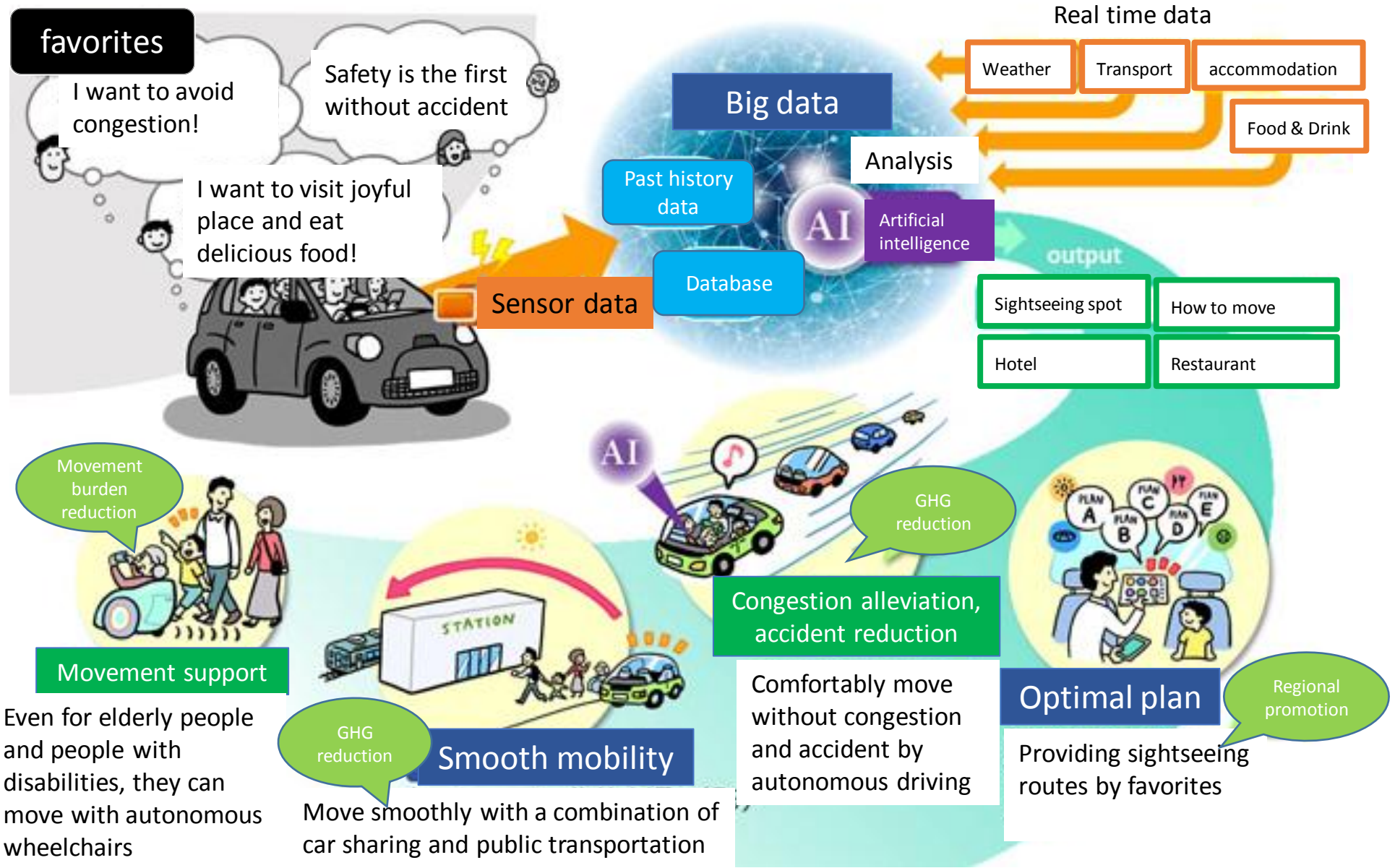
4. Easy for everyone to do

Challenging agriculture even young people with little knowledge by converting know-how into data

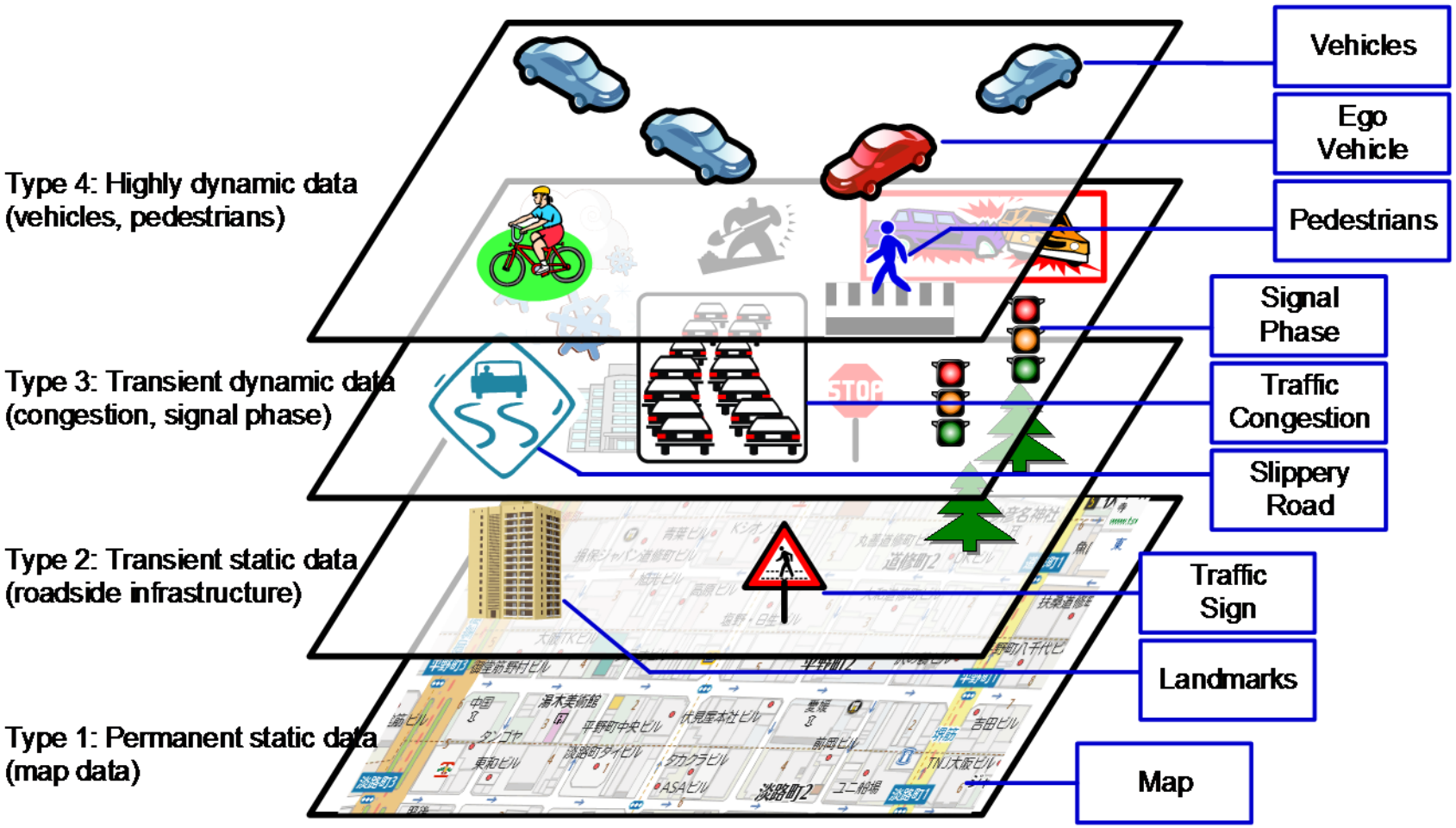
5. Provide safety and reliability

Delivering safety and reliability by direct information on production to consumers through cloud system

Smart Transport and autonomous driving



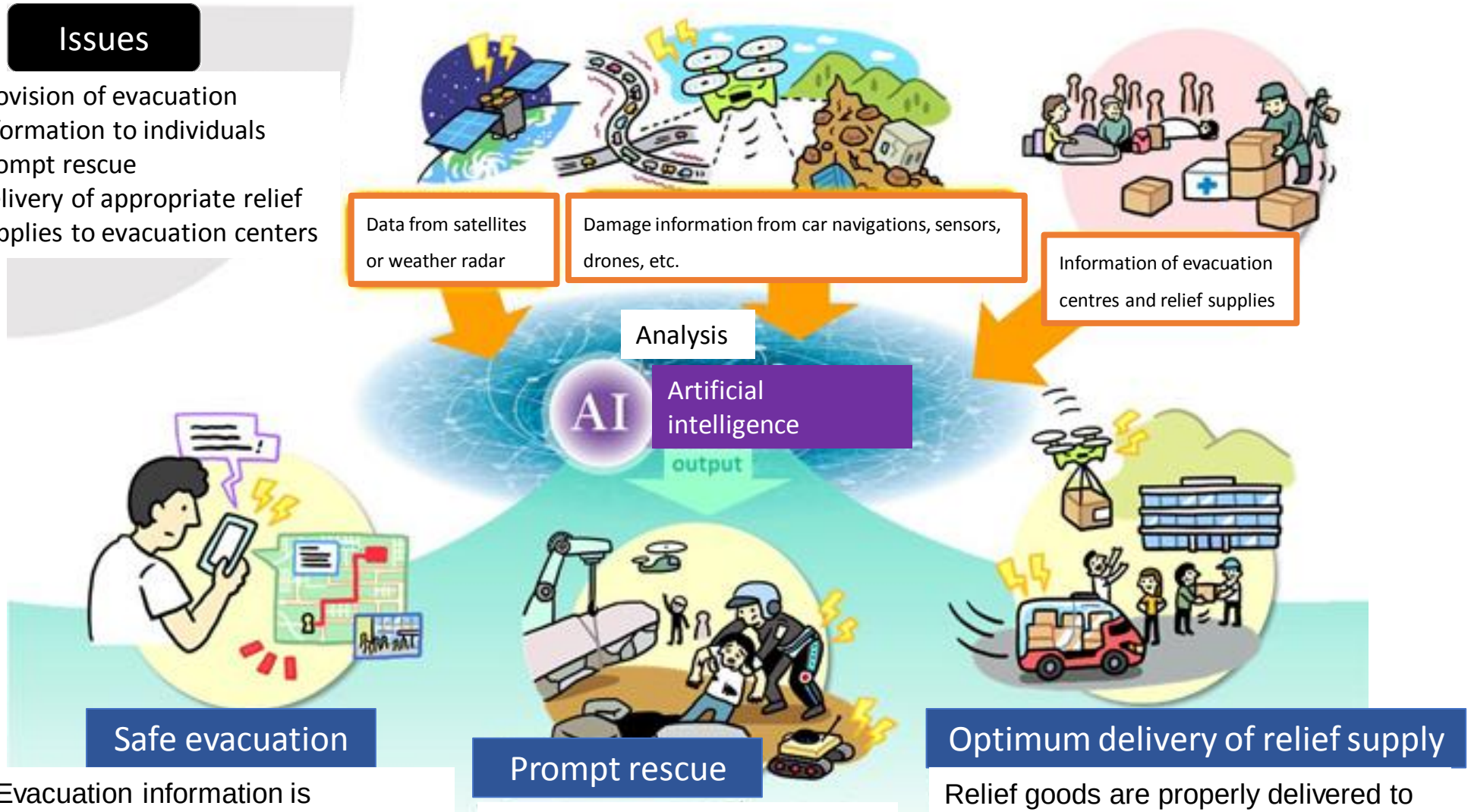
Autonomous driving and dynamic map



Disaster prevention and response

Issues

- Provision of evacuation information to individuals
- Prompt rescue
- Delivery of appropriate relief supplies to evacuation centers



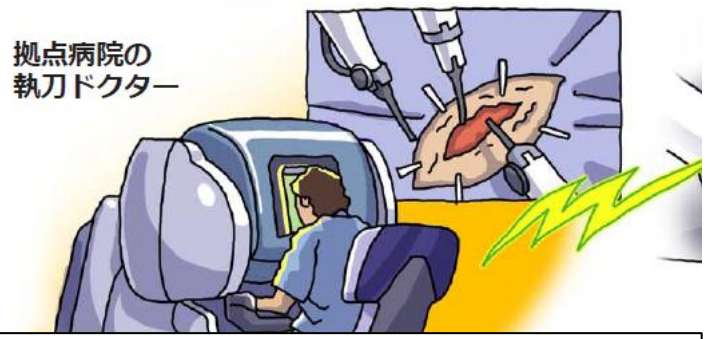
Evacuation information is presented to smartphones and evacuated safely to evacuation centres

Rescue quickly with assist suit and rescue robot

Relief goods are properly delivered to evacuation centres by drone or autonomous delivery vehicles

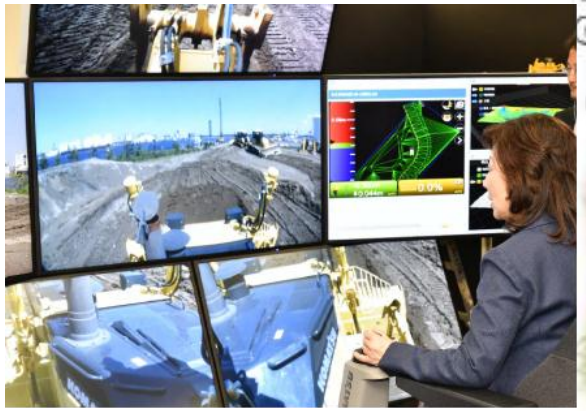
New advanced technology

[example of future image]



Remote operation of medical machine with high-speed / low latency communication

Elimination of medical inequality:
remote diagnosis by high-definition diagnostic image



Elimination of labor shortage:
Construction machinery by remote control

Safe, reliable and speedy disaster restoration:
remote working with a humanoid robot

Future prospect of technology

2020

Robots' participation in society (2022?–)

- Shopping agent robot

Fusion of human body and computer (2022–2027?)

- Contact lens type display
- Nano medical robot moving in blood vessels

Eliminate linguistic barrier (2025?)

- Talk with pet animals with device

2030

Human and machine coexist and cooperate (2030s–2040s)

- Flying taxi
- Clothes with analyzing physical condition

AI substitute for human beings (2025–)

- 49% jobs of Japan substitute by robot & AI
- AI can propose mediation plan

2040

Advance into space (2050?)

- Lift to the space

2050

Singularity (2045?)

- Intellectual labor substitute for human beings by AI

(Arranged by MIC based on the research report of National Institute of Science and Technology policy (March 2010) and article of the Nikkei (on 1 Nov. 2017)

Design of optimal ICT platform

It is important to design the optimal ICT platform on the assumption of the contents and type of data to be used and the use case so that residents can enjoy a safe, secure and convenient service.