Society 5.0
Since its Inception to Today

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Background

- Historical framework
  - Science and Technology Basic Law (1995)

  ➡ Science and Technology Basic Plan (5 year-planning, since 1996)
- Changing policy environment
  - Mainstreaming of innovation

- From Council for S&T Policy to Council for STI
- Growth Strategy & STI Strategy hand in hand!

Time of accelerated changes!

- **2015**
  - Preparing the 5th Science & Technology Basic Plan (2016-2020)
    - Business as usual?
    - Our hypothesis: **Time of accelerated changes**

  ➡ Enhancing **preparedness** for the **unforeseeable future**

  ➡ Identifying our **core values**!

Society 5.0

- 2016
  - Unexpected becoming reality (including geo-politics) ➡ Uncertainty ↑
    - Hype in Artificial Intelligence (AI)
    - UN Sustainable Development Goals (SDGs) ➡ Shared values
- 2017
  - Uncertainty surrounding security issues

The 5th Science & Technology Basic Plan

1. Introduction: changing context and our goal
2. Preparing the next: Future industry and society
   - **Society 5.0**
3. Addressing socio-economic & global challenges
4. Investing in “fundamentals”: People and Excellence
5. Better functioning STI systems
6. STI and society
   - Everybody on board, including “citizen”
7. Leading effective STI Policy implementation

http://www8.cao.go.jp/cstp/english/basic/5thbasicplan.pdf

"Society" at the heart

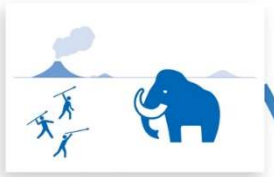
- From "Technology-driven"
  to "**Human-centered**"
- Society backed by Science, Technology and Innovation (**STI**)
  - Including AI, Big data, IoT, Robotics,…
- Values of **Openness**, **Sustainability**, & **Inclusiveness**
- **Everybody** on board
  - In the context of aging society!

Ultimate goal:
- **Achieving economic growth & well-being**
- **Addressing societal challenges**
- **Contributing to the global prosperity**

Why “5.0”?

Hunting & gathering society
In symbiosis with Nature

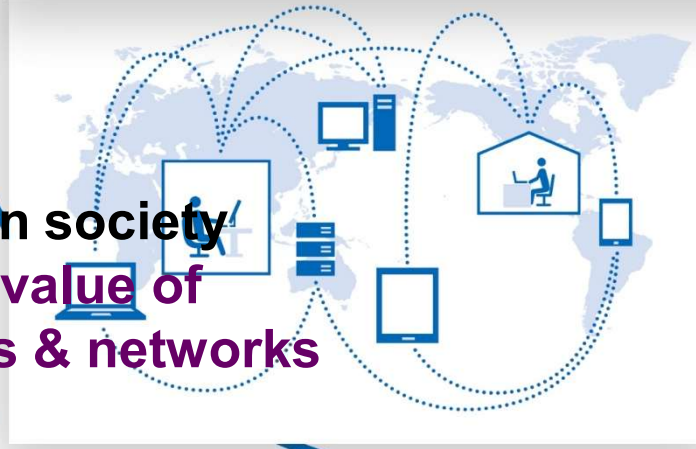
1.0



2.0

Agrarian society
Beginning of human organization

Industrial society 3.0
Mastering of power & Mass production



Information society
Increased value of intangibles & networks

4.0

What’s next?

5.0

Lessons from the History

1. Hunting and gathering society
   - In symbiosis with Nature

➡ **Sustainability**

2. Agrarian society
   - Very beginnings of human organization

➡ **Inclusiveness**

3. Industrial society
   - Mastering of power and mass production

➡ **Efficiency**

4. Information (or digital) society
   - Increased value of intangibles and networks

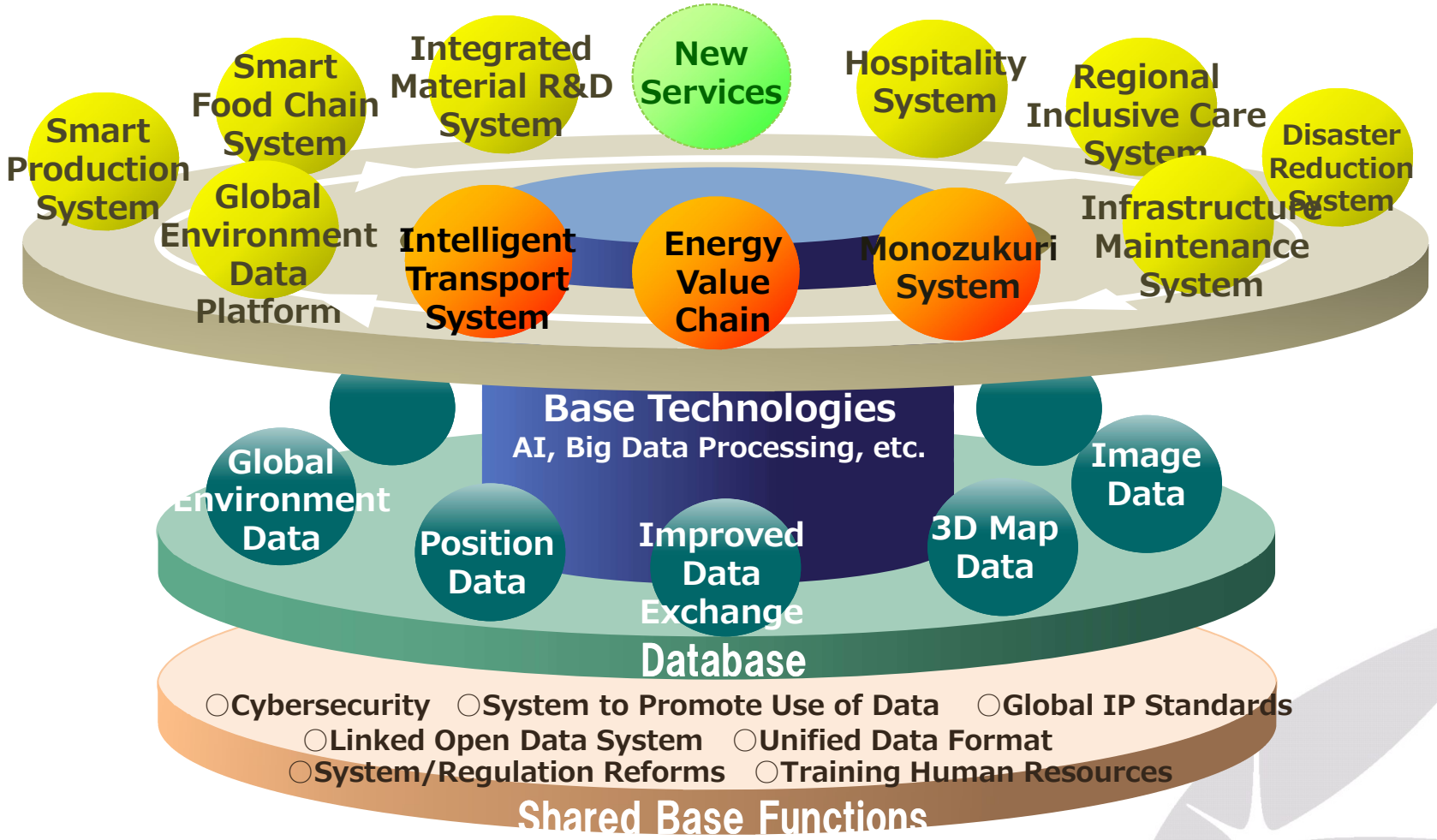
➡ **Openness**

5. **Society 5.0**
   - As a **living concept** ➡ To be **nurtured**!

In Other Words・・・

- A society where the necessary goods and services are provided to the people who need them at the right time and in the right amounts, regardless of age, gender, location, language or other limitations, for a fulfilling and comfortable lifestyle where everyone can receive high-quality service
  - Coexistence of people and robots/AI
  - Made-to-order services
  - Elimination of service inequality
  - Increased opportunities for game changers

Exploratory fields



Mobility

Planning a route is troublesome. I want to avoid traffic jam.

I am concerned about the weather. Safety first.

Want to go to somewhere fun. Want to eat yummy food.

Sensor Info.

Big Data

Personal History

Data Base

AI

Artificial Intelligence

Analyze

Weather

Trans-portation

Hotels

Restaurants

output

Sightseeing area

Transportation

Hotel

Restaurant

GHG reduction

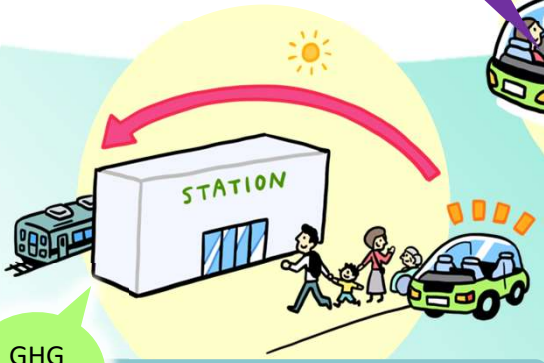
Reduction of congestion & accidents

Comfortable travel with autonomous driving

Burden reduction

Assisted mobility

Self-driving wheel-chairs support movement of elderly citizens



GHG reduction

Smooth transfer

Combination of car sharing services, public transportation, etc.

Optimal plan

regional promotion

Sightseeing routes matching personal preferences

Cross-Ministerial Strategic Innovation Promotion Program

Automated Driving System

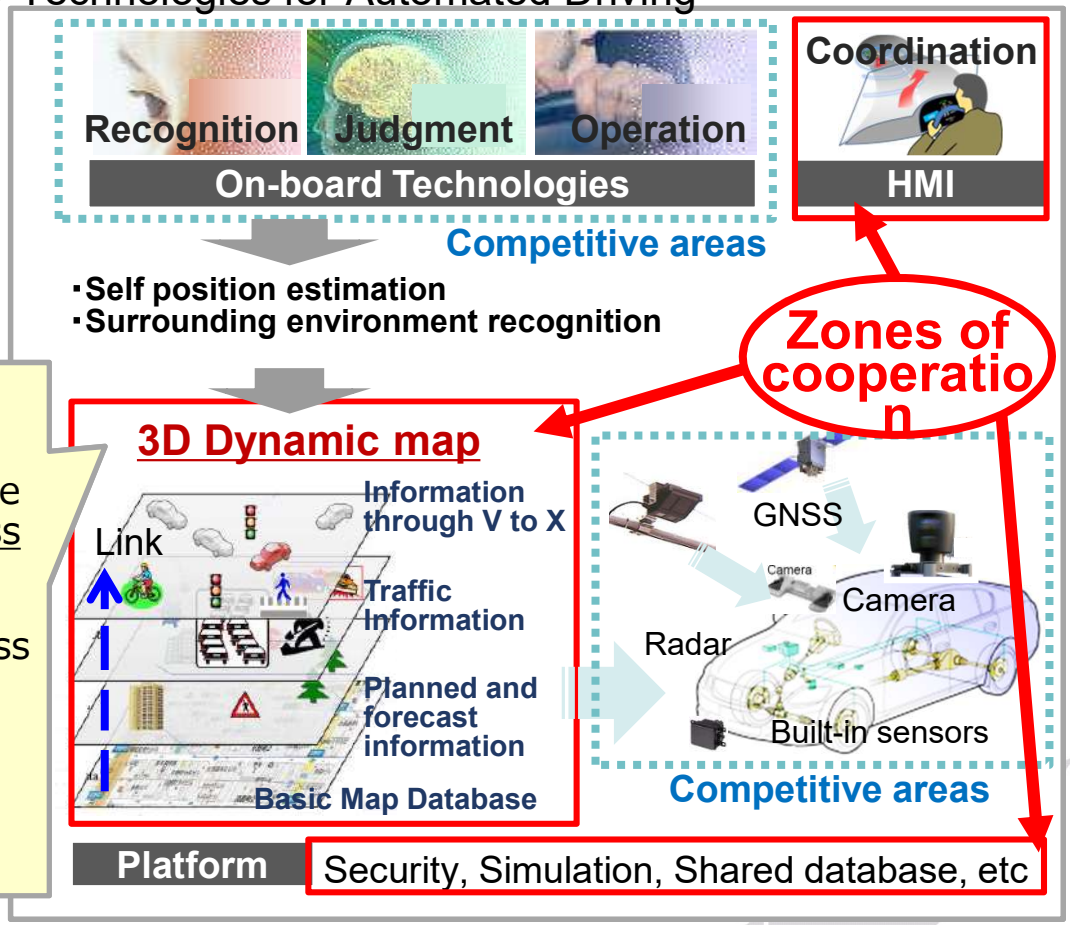
Program Director:
Seigo Kuzumaki

Executive General Manager,
Advanced R&D and Engineering
Toyota Motor Corporation

Dynamic Map Planning Co., Ltd.

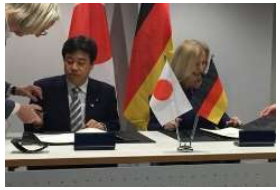
- ○Jointly established by 15 companies in June 2016, planning for technology and business schemes of **Dynamic maps**
- ○Shifting the planning company to a business entity "Dynamic Map **Platform** Co., Ltd" in June 2017 (announced 13, June)
- ○Promote strategic international standardization of Dynamic Map

▼Technologies for Automated Driving



■Japanese-German Cooperation on R&D of Automated Driving

Joint Declaration signed by both Ministers(12th of Jan. 2017)



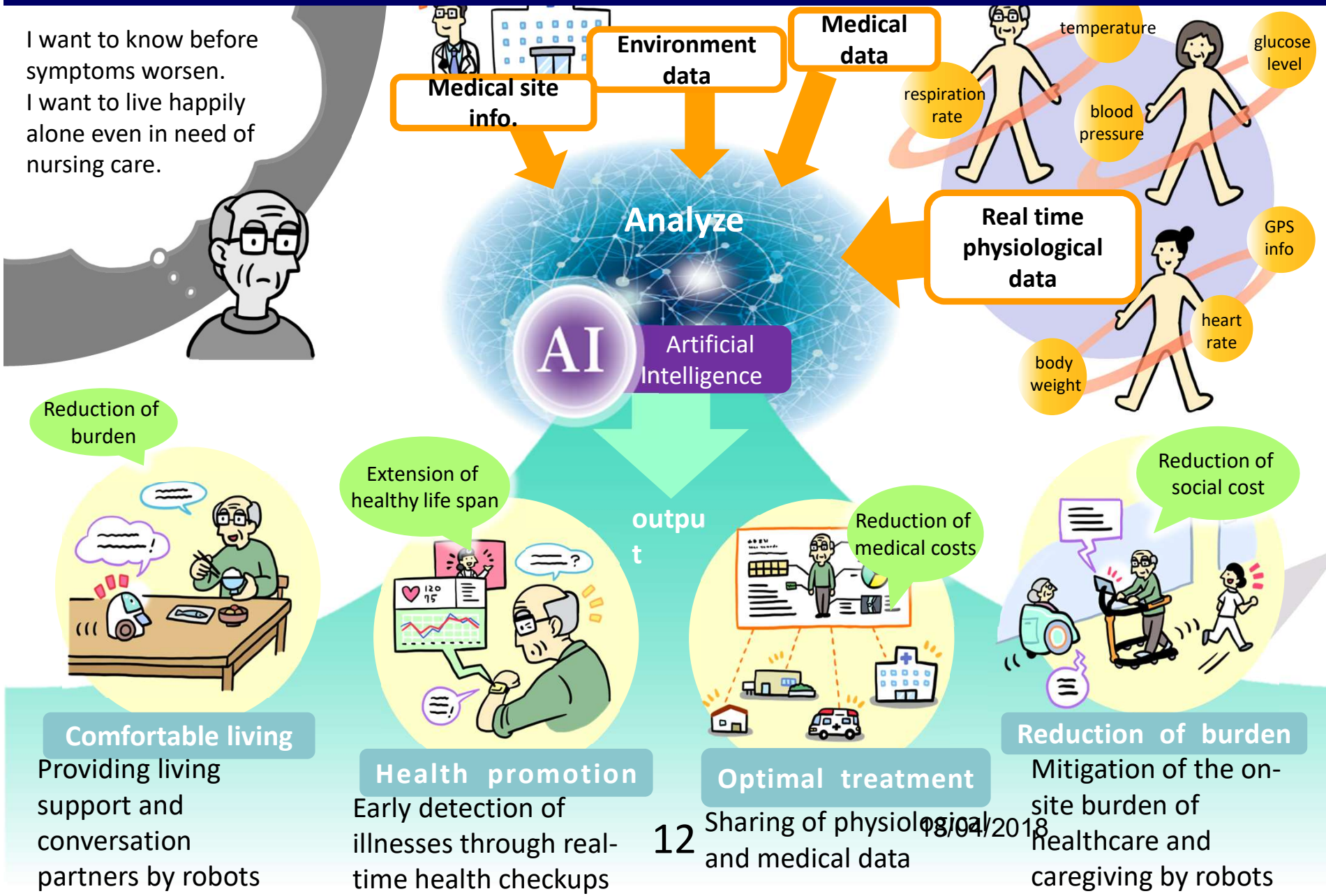
■Field Operation Test (FOT)

①Large-scale FOT starting in around Sep. 2017.
②Automated Driving Bus FOT in Okinawa from Mar. 2017.

■Realize ART＊ at the Tokyo2020 Games

＊ART: Advanced Rapid Transit

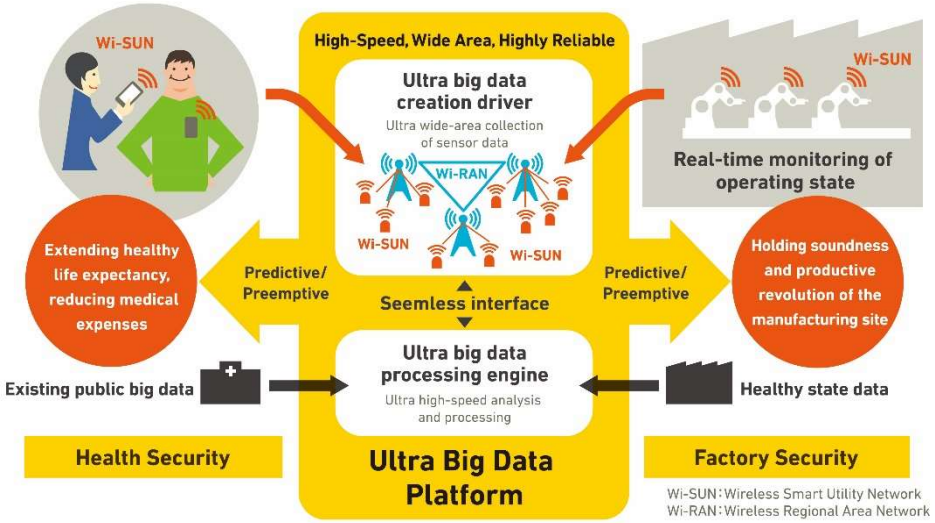
Healthcare & Caregiving



Impulsing PAradigm Change through disruptive Technologies Program (ImPACT)

Ultra Big Data Platform for Reducing Social Risks

Program Manager
Hiroshi Harada



Innovative Cybernic System for a ZERO Intensive Nursing-care Society

Program Manager
Yoshiyuki Sankai

Disaster prevention

- Provision of evacuation information
- Rescue of victims
- Delivery of Supplies

Data from satellite, and weather radar

Damage information from structural sensors, and automobiles

Evacuation and supplies information

Analyze

AI Artificial Intelligence

Safe evacuation

Provide every person with shelter and relief information via individual smartphones

Prompt rescue

Rescue from disaster-affected buildings with assist suits and rescue robots.

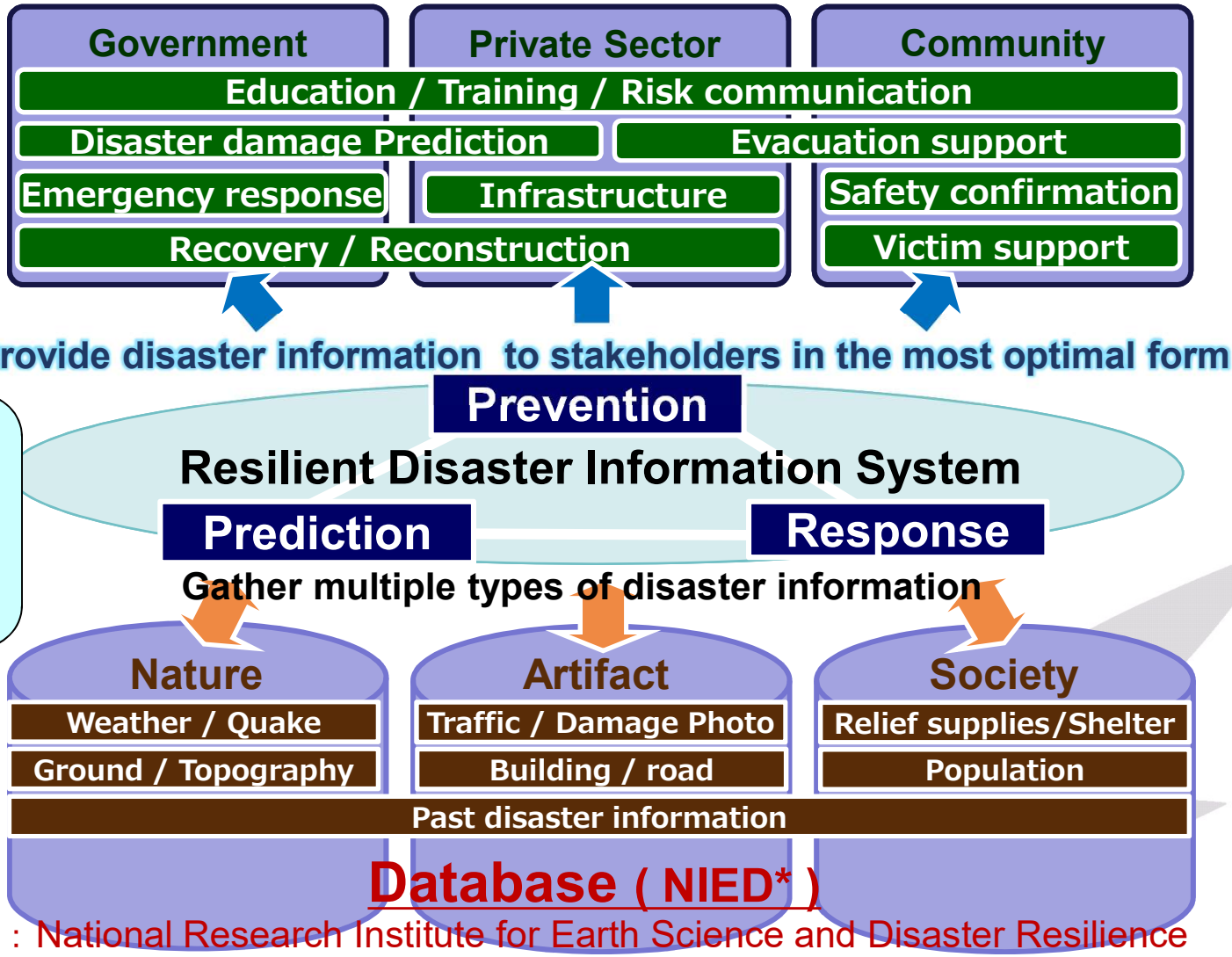
Optimal Delivery

Deliver supplies to evacuation centers with drone or automatic delivery car

Cross-Ministerial Strategic Innovation Promotion Program

Program Director:
Muneo Hori
Professor
Earthquake Research Institute, University of Tokyo

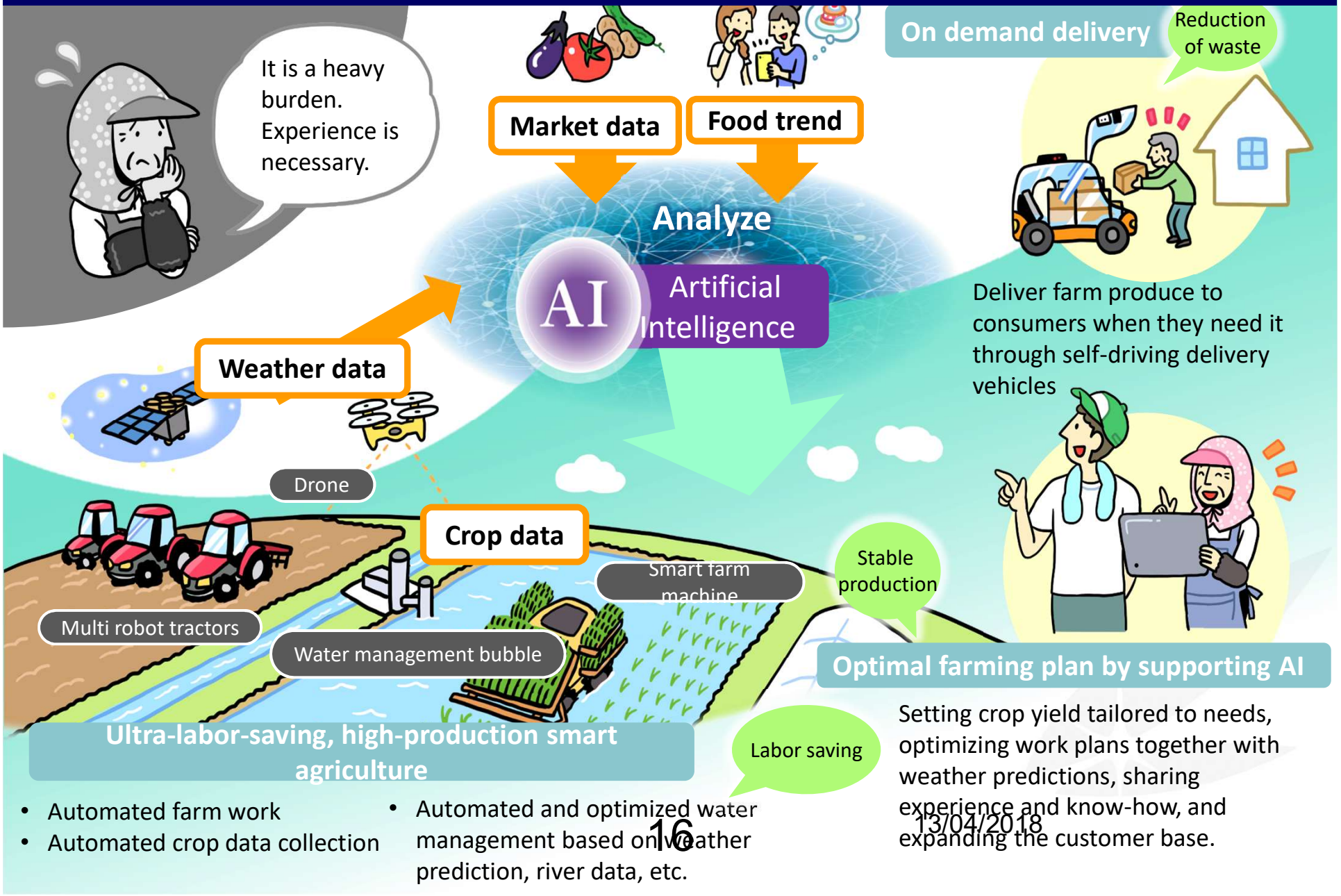
Build real time Resilient Disaster Information for earthquakes, tsunami, heavy rains, tornadoes, volcanic eruptions, and other natural disasters.



Enhancement of Societal Resiliency against Natural Disasters

* NIED : National Research Institute for Earth Science and Disaster Resilience

Agriculture



R&D on Artificial Intelligence Technology

- Leading ministries
  - MEXT (S&T) ➡ Riken (FY2016: USD 65 millions) http://www.riken.jp/en/research/labs/aip/
  - METI (Economy) ➡ AIST (FY2016: USD 163 millions) http://www.airc.aist.go.jp/en/index.html
  - MIC (Communication) ➡ NICT (FY2016: USD 22 millions) https://cinet.jp/english/
- Coordinated by the AI Technology Strategy Council (2016-)
  - "User ministries" such as the Ministry of Infrastructure, the Ministry of Agriculture, and the Ministry of Health participating to the Council
  - AI Technology Strategy (March 2017)

http://www.nedo.go.jp/content/100865202.pdf

And socially responsible STI

- STI and **Society**
  - Co-creation of STI
    - Dialogue and collaboration
    - Empowering stakeholders
    - Science advise for policy making
    - Ethical, Legal and Social Implications (ELSI)
  - Research integrity
- Putting into practice
  - Bioethics Committee ➡ **Interim Report on Genome Editing** (April 2016)
  - Advisory Board on Artificial Intelligence and Human Society ➡ **Report on Artificial Intelligence and Human Society** (March 2017)

http://www8.cao.go.jp/cstp/tyousakai/ai/summary/aisociety_en.pdf

Reactions and Actions!

- Reactions and reactions!
  - Competing against or enveloping “Industry 4.0”?
    - Empathy around “Society 5.0”
  - Too utopic!
    - Positive thinking is so needed today!
  - Too vague!
    - Space for anyone to propose his/her own version
- Actions
  - Keidanren (Japan Business Federation) ➡ “Action plan to realize Society 5.0” (Feb. 2017)
  - Space for “Game changer”?
- Nurturing “Society 5.0”
  - Co-evolution of society and technology!
  - Need for a shared narrative!

Generating debate & gathering ideas!

And…

Your version of “Society 5.0”?

Your ideas are welcomed!