

ICT R&D policy for IoT/BD/AI Era

October 6, 2016

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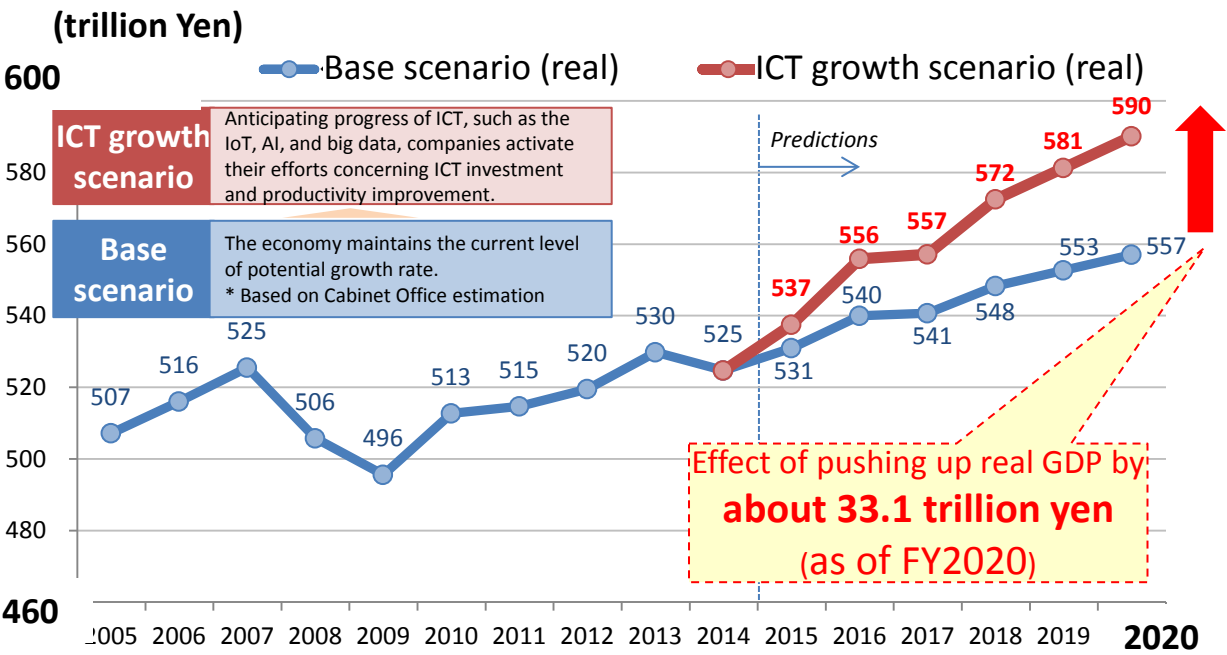
Ministry of Internal Affairs and Communications(MIC), Japan

- 1. ICT Expectation for Society and Economy**
- 2. R&D policies for innovation and new value**
- 3. EU-Japan coordinated calls for strategic ICT R&D projects**

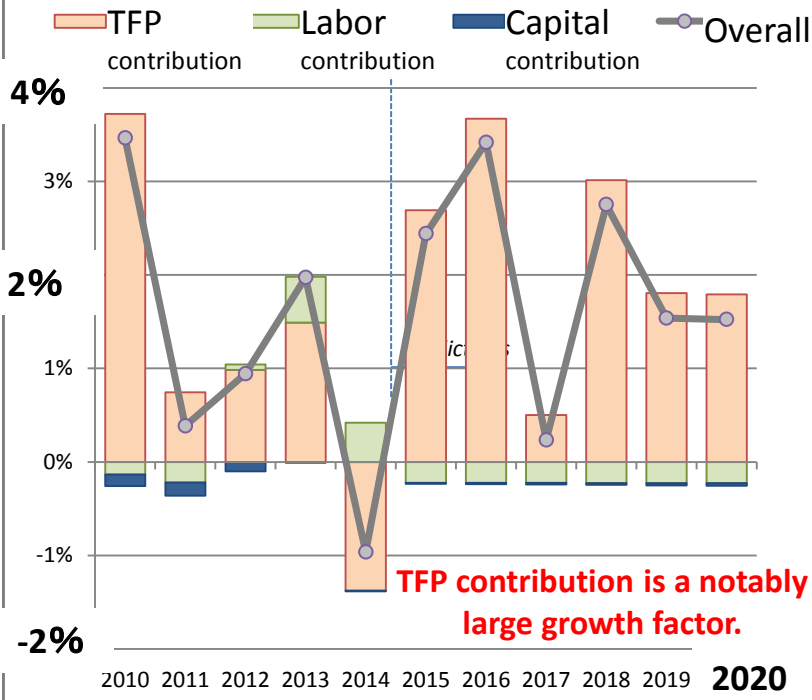
ICT Contribution to Economic Growth: Quantitative and Comprehensive Verification

- Progress in ICT investment in the IoT, big data, AI, etc. is expected to accelerate Japan's economic growth and **have an effect of pushing up real GDP by about 33.1 trillion yen (255 billion EURO) as of FY2020.**
- By growth factor, contribution by the total factor productivity (TFP)* is large. ICT is expected to have an effect of further increasing the TFP contribution.

Impact of ICT growth on real GDP



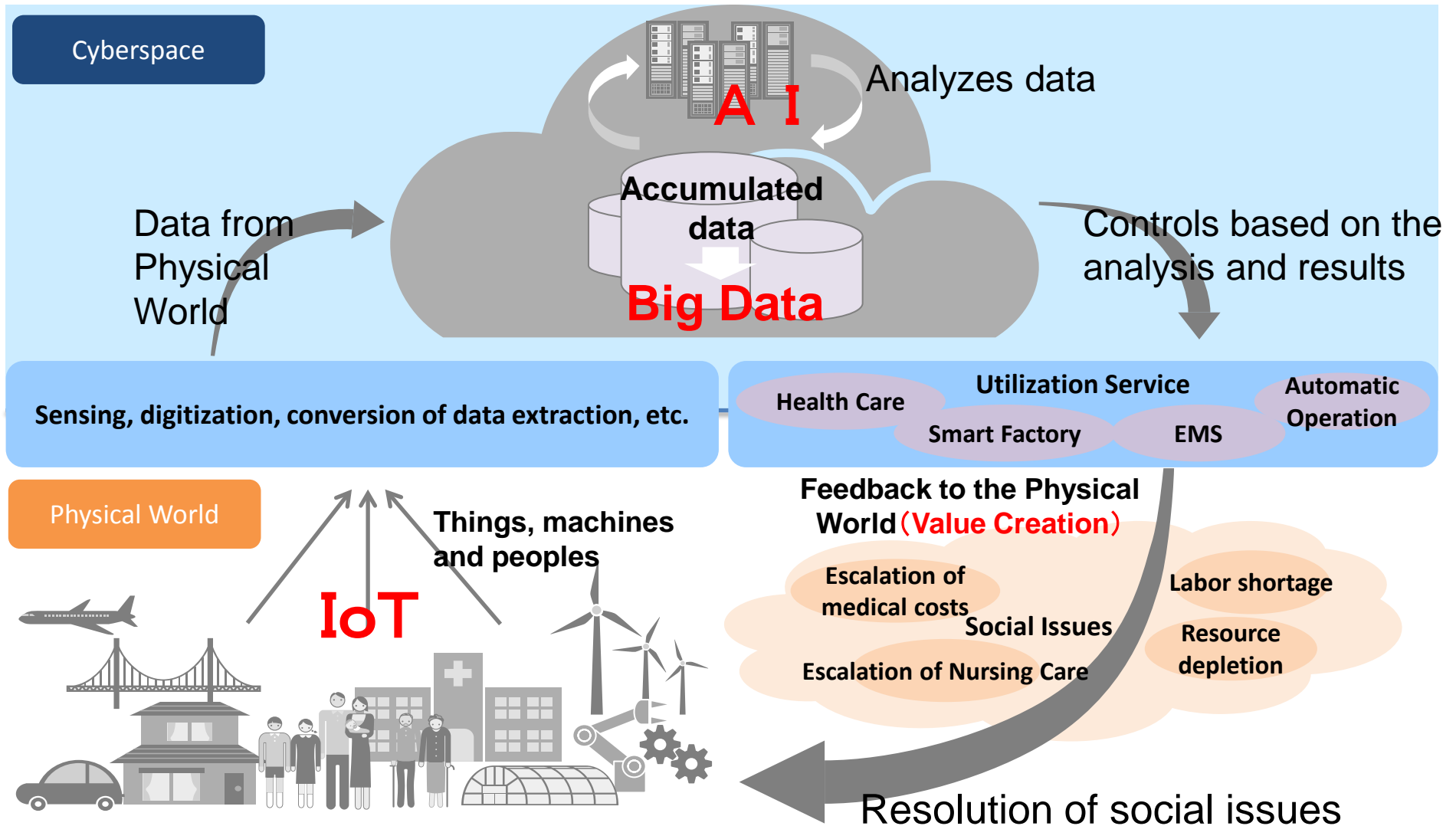
Breakdown of growth factors (ICT growth scenario)



* Total Factor Productivity (TFP): Factors other than production factors (labor, capital) that contribute to increasing added value. Specifically, it includes technology progress, improvement of workers' skills, and improvement in business management efficiency or organizational management efficiency.

Note: The fluctuation in 2017 takes into account the influence of the consumption tax hike.

■ Importance of new ICT role including IoT is expected to grow through improvement of company's efficiency and new services.



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- We will share our vision of the future, which is characterized by the sophisticated integration of cyberspace with physical space (“the real world”) and work to enhance it, while further pursuing a series of measures aimed at its realization, under the concept of “Society 5.0”.*
- It is necessary to aim at “systemization” of services and businesses, system advancement, and coordination between multiple systems. Therefore, we will promote the measures needed to develop a common platform for this goal (called “Society 5.0 Service Platform”), through collaboration between industry, academia, and government and the relevant government ministries.

Tentative translation

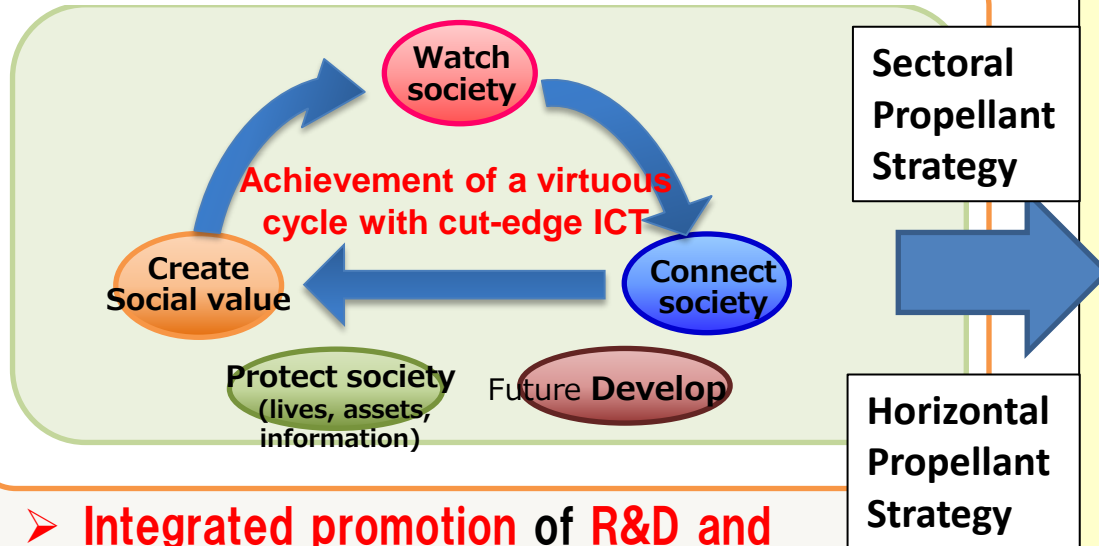


- technologies needed for the service platform
 - ⇒ cybersecurity, IoT system development, “big data” analysis, AI, and devices etc.
- technologies that represent core strengths for new value creation
 - ⇒ robots, sensors, biotechnology, materials and nanotechnology, and photonic/quantum technology etc.

1st Interim Report(2015.7)

- 5-year priority R & D of field and task government and NICT should study from FY2016

Promotion of cut-edge ICT-sation society

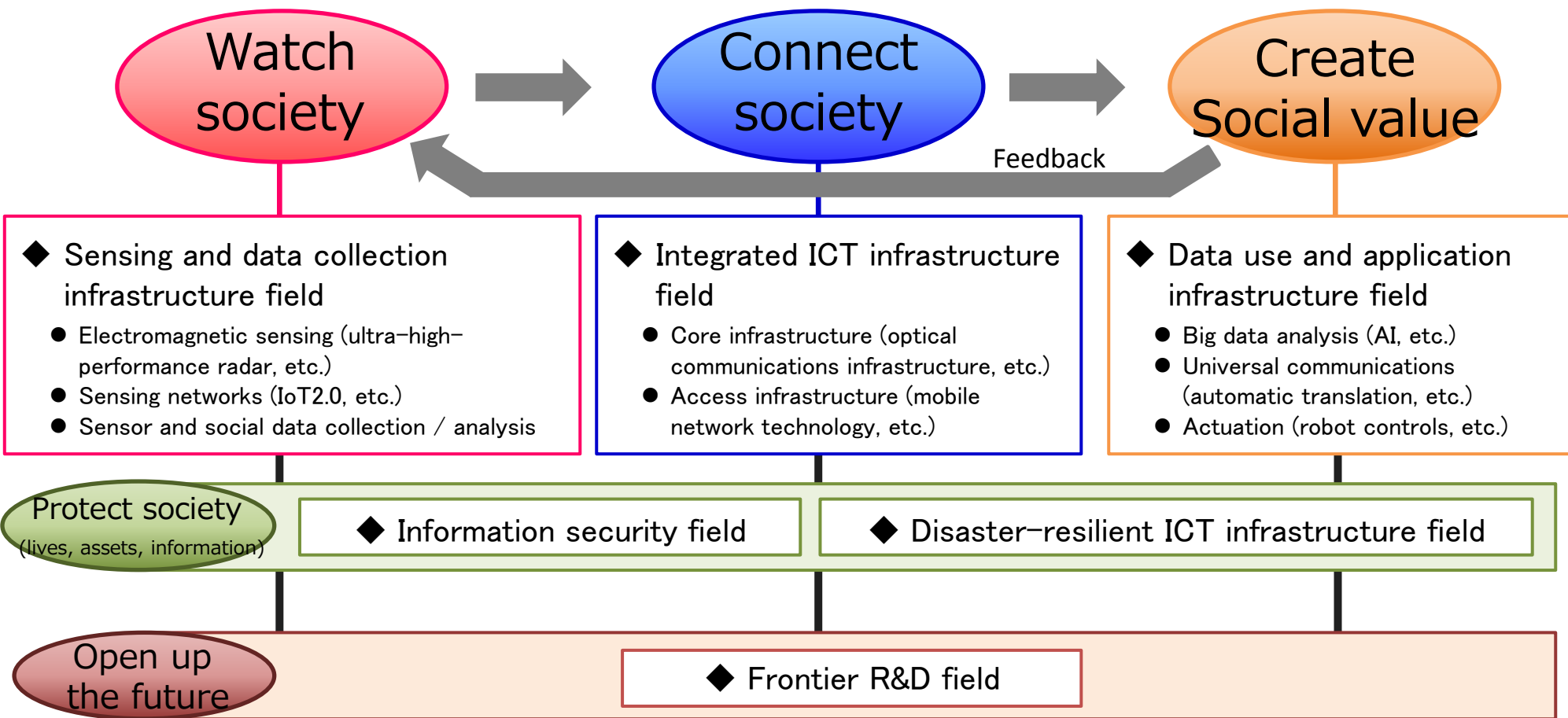


- Integrated promotion of R&D and demonstration (Technical and Social)
- Establishment of IoT propellant body by industry-academia-government collaboration

2nd Interim Report(2016.7)

- R&D Strategy for Smart/enhanced IoT Acceleration
- R&D Strategy for Next Generation AI Acceleration
- Human Resource Strategy for IoT/BD/AI Era
- ICT Standardization Strategy for IoT/BD/AI Era

Aiming the generation of new values and the reformation of public systems that will be the result of realizing an advanced future society by a social ICT revolution (cut-edge ICT-sation society)



※ Established a world-leading test bed corresponding to the new IoT era, integrally promote the demonstration and advanced R & D by opening the research institutes and users such as the latest R & D achievements as a test bed.

IoT Acceleration Consortium

- The IoT Acceleration Consortium is a private-led IoT body since October 2015 to promote IoT/BD/AI.
- Giving recommendations for the development and utilization of technologies along with the solution of policy issues.

General Assembly
■ Chair
■ Vice Chair

Steering committee

Chair

Jun Murai, Dean and Professor of the Faculty of Environment and Information Studies

Vice Chairs

Hiroo Unoura, President and Chief Executive Officer, Nippon Telegraph and Telephone Corporation
Hiroaki Nakanishi, Hitachi, Ltd., Chairman & CEO Hiroaki Nakanishi

Steering Committee members (Chairman + 14 persons)

Chair: Jun Murai

**Technology development WG
(Smart IoT Acceleration Forum)**

- R&D and field test
- Standardization
- Technology related issues

**Advanced Model Business
Promotion WG
(IoT Propulsion Lab)**

- Business models
- Regulatory reforms
- Industry related issues

IoT security WG

IoT Network / device security
guideline

**Data distribution
promotion WG**

Topics around data flow
(ie personal data)

Cooper
ation

Cooper
ation

MIC, METI and others

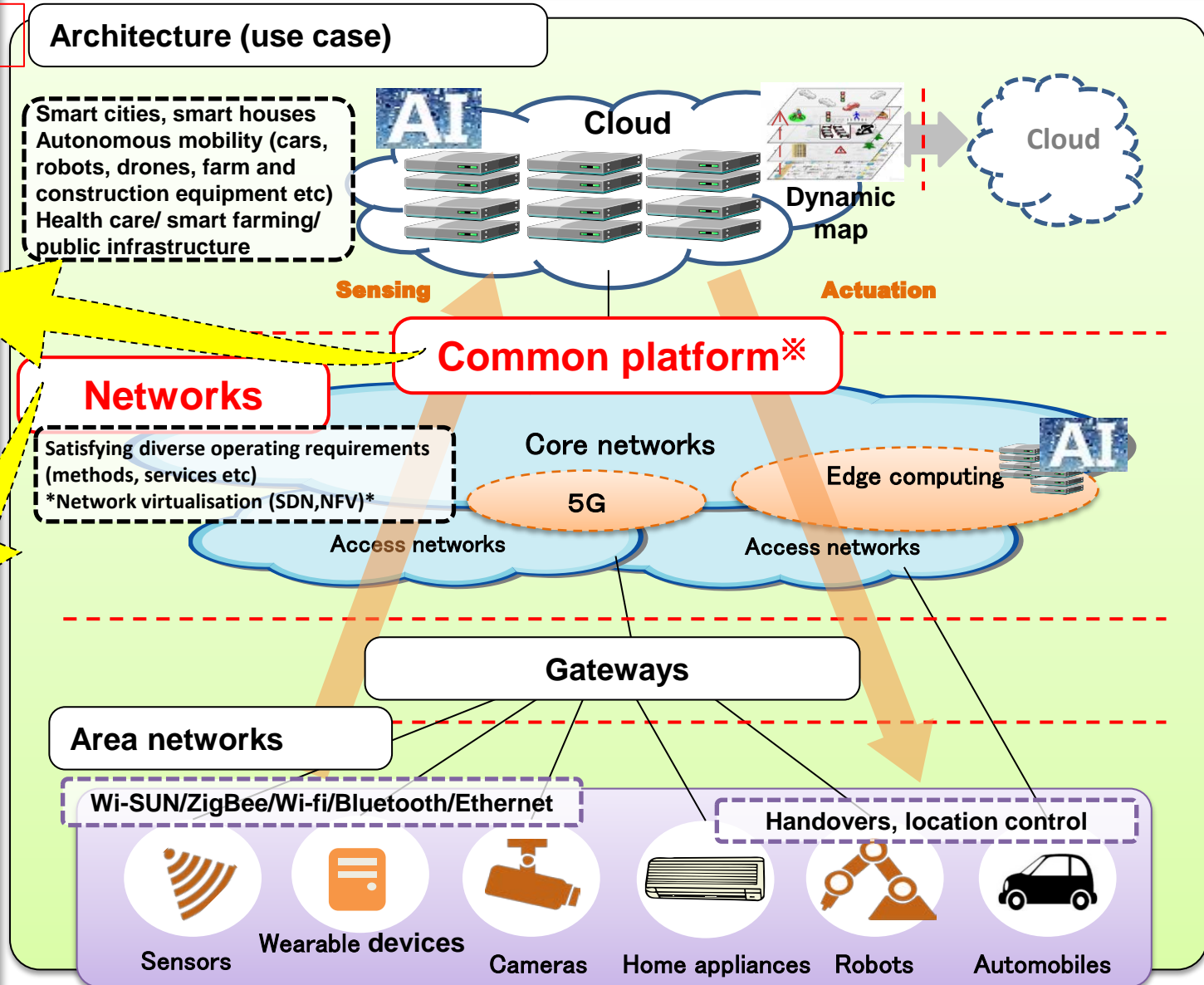
The Development of Advanced IoT Common Platform (2nd Interim report)

Developing common platform

- ① **no relying on specific services**, collecting and using data, device management;
- ② **maintaining interconnectivity** between different vendors;
- ③ allocating resources and ensuring the reliability of connections to match the importance of the service.

Developing networks

- * **very low delay** (approx. 1 millisecond)
- * **very large number of simultaneous connections** (1 million devices per sq. km)
- * **very high speed** (10GB/second)
- Automated driving (100km/h, 128 devices per square km)
- * **next-gen AI** (AI enhanced by neuroscience)
- * Selection and adoption of the above functions by use case



※ * The standards agencies of Japan, the US, the EU, China, South Korea and India have collaborated to set up a new international standardization body (oneM2M) and will promote the standardization of common platform that are compatible with applications across diverse areas of IoT.

SDOs and IoT promotion groups

Applications



ITU-T SG20

IoT/SC&C AdHoc (TTC)

Infrastructure



ISO/IEC
JTC1/WG10

Special Working Group on Internet of Things
(SWG on IoT) (IPSJ)



ITU-T FG IMT-2020
(SG13)
ITU-R SG5 WP5D

AdHoc Group
for FG IMT-2020 (TTC)

The Fifth Generation Mobile
Communications Promotion Forum
(ARIB/TTC)

3GPP2 Working Group
(TTC)

oneM2M Joint meetings (TTC/ARIB) Cross sectoral

Health Care

Industry

Industry

Smart Home

Mobile

Internet

Mobile

Telecom technology

Dejours

Forum / Consortium

Corresponding Japanese Organizations

4.5.1 Promotion of International Joint Research

Promoting international research corporation organically linking with internal expansion of research results and researchers' international exchange.

In Southeast Asia, in particular, NICT established a virtual research cooperation organization based on research cooperation cultivated with South East Asia, where research organizations and universities in the region participate, to demonstrate a leadership in the research cooperation in the region.

Furthermore, **MIC and NICT in pursuit of making Japan a global research and development base will promote joint research with organizations and researchers with global research and development capabilities in Europe and the United States.**

(Extracted from 1st Interim Report(2015.7.28))

“Smart IoT promotion strategy” Ⅲ(3)③ ii) Promotion of International R&D collaboration

Regarding the IoT-related technologies in Japan aimed for global expansions, “Joint Declaration on a Strategic Cooperation on the Future Generation of Communication Networks (5G)” is declared between Japan and EU to promote R&D collaboration projects.

However, **further enhancements of international joint R&D is required** considering the high competition over international standardization predicted in the close future.

【Specific Promotion Plan】

⇒ **Reinforcement on international joint R&D projects** cooperating and communicating closely with “Smart IoT Acceleration Forum,” **in order to share information on various international IoT-leading organizations and their trial projects, and promote international cooperation regarding standardization.**

(Extracted from 2nd Interim Report(2016.7.7))

iii. Fostering innovation

f) Facilitating R&D and adoption of emerging technologies

27. We recognize the importance of facilitating emerging technologies in achieving a digitally connected world. **We reaffirm our commitment to encouraging ICT R&D relating to emerging technologies such as the Internet of Things, big data analytics, 5G mobile telecommunications, Artificial Intelligence (AI), and robotics.** We plan to ensure that our policy frameworks take into account the broader societal and economic implications of such technologies as they are developed while remaining technology neutral.

v. Strengthening Comprehensive International Cooperation and Collaboration

31. **In order to effectively implement the aforementioned actions, we resolve to enhance international cooperation and collaboration among all stakeholders.** We plan to encourage other countries and regions to undertake efforts to support the digitally connected world and promote an environment that encourages innovation.

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Exchange of ICT research through the holding of a symposium since 2008



2008
1st EU-Japan Symposium
Jun. 8 - 10, 2008 @ Brussels



2009
2nd Japan-EU Symposium
Oct. 13 -14, 2009 @ Tokyo



2010
3rd EU-Japan Symposium
Oct. 20-21 and 2010 @ Tampele



2011
18th EU-JP ICT Policy Dialogue
Jun. 17, 2011 @ Brussels



2012
The ministerial dialogues
May. 3, 2012 @ Brussels



2012
19th JP-EU ICT Policy Dialogue
Nov. 14, 2012 @ Tokyo



2013
20th EU-JP ICT Policy Dialogue
Dec. 4, 2013 @ Brussels



2015
21st EU-JP ICT Policy Dialogue
Mar. 24, 2015 @ Tokyo

*NICT:
National Research and
Development Corporation
National Institute of Information and
Communications Technology

First projects of the EU-Japan coordinated call

The following projects were launched between the EC (FP7) , MIC and NICT.

- ⇒ Coordinated call in October 2012, 6 projects launched in 2013 and **completed in 2016**
- ⇒ **For next stage(deployment of outcome, enhanced R&D and deepening collaboration etc.)**



Optical Communications



Wireless Communications



Cybersecurity



Internet of Things



Federated testbeds

FELIX

Green & content centric networks



The following projects were launched between the EC (Horizon 2020), MIC and NICT
⇒ Coordinated call in January 2014, 4 projects **launched in October 2014**



Optical Communications

SAFARI

Big Data

iKaas



Federated testbeds

FESTIVAL

Photonic Infrastructure

RAPID 5G
A Europe-Japan Cooperation

The following projects were launched between the EC (Horizon 2020), MIC and NICT
⇒ Coordinated call in October 2015, 5 projects **launched in July 2016**



5G(Network)

5G! PAGODA

5G(RAT)

MiEdge



Big data / Cloud / IoT

BIGCLOUT

CPaaS.io

Experimental Testbeds

ICN2020

Further Cooperation

(For current stage)

- **Reviewing ongoing projects for constructive feedback**

(For next stage)

- **Launching discussions on cooperation areas toward 4th Call, starting in 2018**
- **Exploring possibility of other measures to foster R&D cooperation and strengthen various collaboration between the EU and Japan**

Thank you for your attention!