

Ministry of Internal Affairs and Communications, Govn't of Japan (the former First Secretary, Embassy of Japan in Thailand)

Outlines





4th Industrial Revolution





Source: Wikipedia (Christoph Roser at AllAboutLean.com)

Depopulation in Japan



Source: OECD Historical Population Data and Projections (1950-2050)

Aging in Asian Countries



Source: US World Population Prospects 2017

"Society 5.0" & SDGs



Outlines

1. Backgrounds

2. Initiatives

3. Policy Efforts

Private-Sector Initiative





Political-Sector Initiative



Government-Sector Initiative





Source: MIC White Paper 2017 Information and Communications in Japan

Outlines



1. Backgrounds 2. Initiatives **3. Policy Efforts**

IoT Comprehensive Strategy: Framework





"Project for IoT Services Creation"





1

Smart Fishery Model Project

Higashimatsushima Organization for Progress and Economy, Education, Energy







2) Characters and Skills to be Developed



I Characters to Develop:

Individuals who can **utilize software resources** to design, construct, and **operate** ICT service infrastructure

I Skills to Develop:

- Both networking and computing skills
- Skills to utilize software resources

such as virtualization or an external cloud

II Features of Curriculums

To develop human resources to systematically master infrastructure construction, and resiliently operate them Advanced IT Architect Human Resource Development Council

Established on 26 July, 2017

Chairman: Dr. Jun Murai, Dean, Graduate School of Media and Governance, Professor, Faculty of Environment and Information Studies, Keio University

2 HRD for Wireless IoT User Companies







Key Points for Wireless IoT users



	Item	Main Contents
1	Basic concept of IoT	 Basic knowledge of IoT Value creation by connecting a variety of people, things, and events
2	Business strategy based on IoT	 Development of IoT utilization business strategy Formulation of Business Continuity Plan/Management
3	Measures to utilize IoT data	 Data usage, Data analysis Coordination of interested parties related to data utilization E.g., Act on the Protection of Personal Information
4	IoT System construction, operation, and maintenance	 Configuration of IoT systems Design of IoT systems (design that does not cause interference and understanding of radio utilization environment) Operation and maintenance of IoT systems, IoT security
5	Standardization trends	 Understanding of technologies based on international standards
6	Legal rules	 System operation in accordance with laws, including the Radio Law





*Under the initiative of NICT, those challenges were identified through experiments in factories.

Needs

- Efficient work / secure work place
- Flexibly rearrange production line for multi-product/low-volume manufacturing
- Failure detection / manage manufacturing machines



Multi-product/low-volume manufacturing

Challenges

- Limited radio frequency resources and communication congestion from hundreds of IoT devices
- Dynamic change of electro-magnetic environment
- Radio noise out of manufacturing machines, WiFi-AP etc.



Various heterogeneous wireless systems (WiFi, Bluetooth, etc.), Radio Noise, etc.

Frequency conflict with WiFi-AP

Radio frequency and communication congestion



Wireless IoT Factory

International Cooperation

- Between Governments (Hannover Declaration)
- Between Reserch Institutes (DFKI, NICT)
- International Symposium, Workshop, Seminar

International Standardization

- Standardization of wireless communication technologies
- Development of wireless communication technologies in narrow space
- Verification environment for practical use
- Data utilizing data

- International Alliance
- Cooperation among companies, academia, governments
- Interoperability

Promotion

Visualization of radio waves
Improvement of literacy related radio waves etc.

Human Resource



Regional IoT Implementation





Smart City by Data Utilization





Reference Models of Smart City



Sapporo City, Hokkaido

by Sapporo Electronics and Industries Cultivation Foundation

- Building a platform and establishing a local council for the fields of tourism, transportation (countermeasures against snow), health, and others.
- Tourism: Developing services to conduct marketing analysis & information dissemination by utilizing purchase information and traffic information from private businesses in addition to information on the flow of people from Wi-Fi systems and beacons.



Study toward AI Network Society



Progress of AI's R&D and utilization

Evolution of AI networking

Expectation for huge benefits + Concerns about risks.
 Need to address social, economic, ethical & legal issues.

Services using AI systems will be provided beyond national borders via networks.

Important to internationally share: guidelines (as non-regulatory, non-binding soft law) and best practices

"Conference toward AI Network Society" established in the Institute for Information and Communications Policy (IICP), MIC in 2016

Chair: Dr. Osamu SUDOH (Professor, the University of Tokyo)
 Vice-chair: Dr. Hitoshi MITOMO (Professor, Waseda University)

- Advisory expert group by multi-stakeholders from industry, academia, private sectors with observers from gov't agencies, national research institutes etc.
- Developed "Draft AI R&D Guidelines for International Discussions" (see <u>http://www.soumu.go.jp/main_content/000507517.pdf</u>)



AI R&D Principles in the Draft AI R&D GUIDELINES



Principle of:	Developers should:
1. Collaboration	Pay attention to the interconnectivity and interoperability of AI systems.
2. Transparency	Pay attention to the verifiability of inputs/outputs of AI systems and explainablity of their judgments.
3. Controllability	Pay attention to the controllability of AI systems.
4. Safety	Take it into consideration that AI systems will not harm the life, body or property of users or third parties through actuators or other devices.
5. Security	Pay attention to the security of AI systems.
6. Privacy	Take it into consideration that AI systems will not infringe the privacy of users or third parties.
7. Ethics	Respect human dignity and individual autonomy in R&D of AI systems.
8. User assistance	Take it into consideration that AI systems will support users and make it possible to give them opportunities for choice in appropriate manners.
9. Accountability	Make efforts to fulfill their accountability to stakeholders including users of AI systems.

Summary



1.

In the 4th Industrial Revolution, Thailand and Japan have challenged the same issue, or depopulation and aging in both national and regional levels.

2.

To solve the problem, it is necessary to promote data utilization by 5G, IoT and AI with industry-academiagovernment collaboration for Data-Driven Society.

3.

Thailand and Japan is mutually complementary. Hope deepening the international cooperation on 5G strengthen our win-win relationship for new areas such as IoT and AI.

NONGEN SI Thanks for your attention



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