oneM2M Industry Day, Kanazawa

Ministry of Internal Affairs and Communications
Hokuriku Bureau of Telecommunications

Expectations We Have on the Activities of oneM2M

Industrial Promotion and Regional Revitalization Using IoT

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Topic

1. **The Significance and the Future Outlook of ICT**
2. **Toward IoT Age**
3. **The Japanese government promote IoT utilization**
4. **IoT introduction example in Hokuriku area**
5. **Expectation for the Activities of oneM2M**

The Significance and the Future Outlook of ICT

ICT that Helps Resolve all the Issues

Examples of the Issues to solve in Japanese Rural Areas

``Surveys covering municipalities``,MIC

Industries

With regard to agriculture, fishery, civil engineering, construction industry, etc., the providers including successors are decreasing. It is necessary to improve productivity by omitting work and reducing burden.

Employment

Due to the population decline and outflow, consumption demand in the region decreases and the economy shrinks. Employment opportunities decrease.

Community

On account of the population decline , the vitality of the region declines so maintenance of the natural environment, local culture and so on is needed.

Mobility

Owing to the aging ,population drain to urban areas, spread of private cars ,and so on, there are people with limited access to shopping facilities because suburban shops and public transportation systems decrease. It also affects commuting and access to hospitals.

Medical treatment, Nursing, and Welfare

ICT can help with the uneven distribution of doctors in rural areas.

Disaster Prevention

The increase of unmanaged forest results the heavier damage caused by flood.

Dovernment (Sightseeing)

In order to increase residential and nonresident populations through the appeal of local attractiveness and improvement of regional brand power, it is essential to secure their own financial revenues municipalities.

Examples of the Issues to solve in Japan

○Natural Calamities (Earthquakes, Tsunamis, Typhoons, Floods, Thunder etc.) ○Labor Shortages ○Productivity Decline ○Demand Deficiency ○Escalation of Medical Costs ○Increase in Care Burden ○Employment of Persons with Disabilities, Participation in Society ○Declining Birthrates/ Aging Population ○Regional Economic Slumps ○Population Concentration in Tokyo・・・

Examples of the Issues to solve in the world

17 SDGs (Sustainable Development Goals) (UN)

○No Poverty ○Zero Hunger ○Good Health and Well-Being ○Quality Education ○Gender Equality ○Clean Water and Sanitation ○Affordable and Clean Energy ○Decent Work and Economic Growth ○Industry, Innovation and Infrastructure ○Reduced Inequalities ○Sustainable Cities and Communities ○Responsible Production and Consumption ○Climate Action ○Life Below Water Life On Land ○Peace, Justice and Strong Institutions ○Partnerships for the Goals

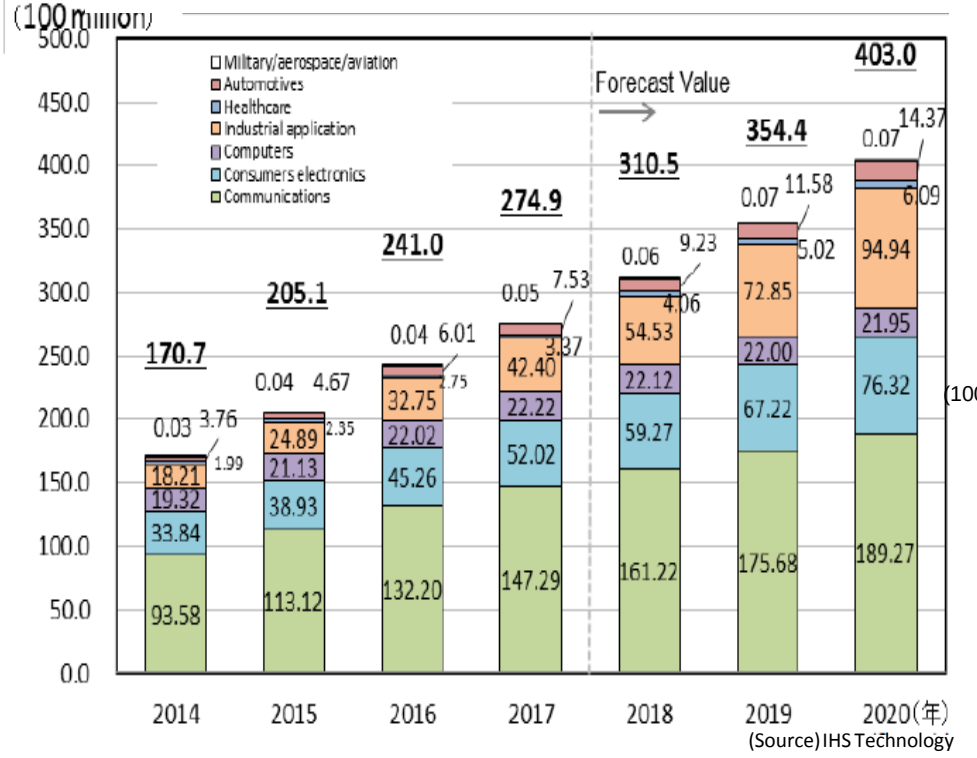
Have the Potential to Solve These Issues Using ICT

Toward IoT Age ①

Thanks to the evolution of technology, **we are easily able to introduce IoT,** because **data collection, transmission, storage, analysis and utilization** can be achieved **at a low cost and with ease.**

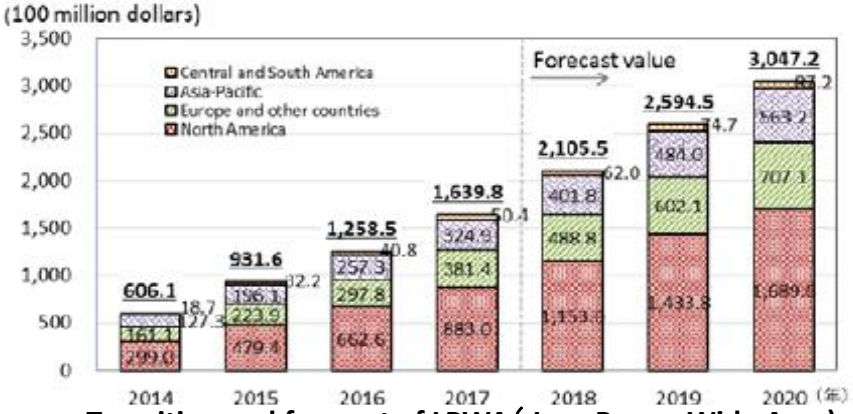
- **The number of IoT devices in 2020** is expected to be about **1.5 times** more than that of 2017.
- **The market size of cloud services, which support AI･IoT services,** is predicted to reach about **1.9 times** that of 2017 by 2020.
- It is expected that **LPWA**（Low Power Wide Area: Radio technology applicable for low speed, long distance, low cost) **module market in 2020** will reach about **4.3 times** more than that of 2017.

Transition and forecast of the number of IoT devices in the world

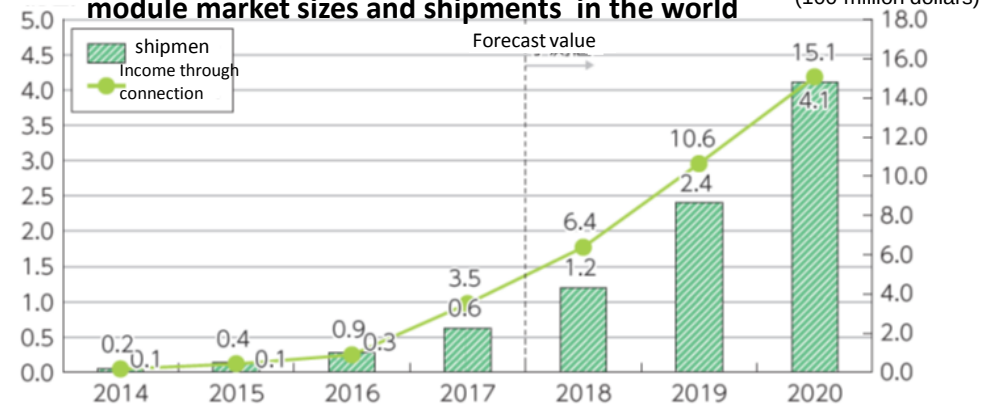


(Source) IHS Technology

Transition and forecast of cloud service market sizes in the world



Transition and forecast of LPWA（Low Power Wide Area) module market sizes and shipments in the world



(Source) IHS Technology

Toward IoT Age ②

- **Large-volumes of information** including images and the animation will be exchanged a lot.
- **Various devices will be connected**, and the amount of information becomes huge.
- Like tele-medicine, it is necessary to operate devices smoothly **without time lag through the network.**

5G(fifth-generation mobile communications system) is the ICT infrastructure of IoT age.

super-low delay

High-speed and high capacity mobile radio communication technology route

2G 3G 4G

simultaneous connection with multiple terminals

5 G

"super-high-speed"

5G will provide broadband service that is 100 times faster than the current mobile communication system.

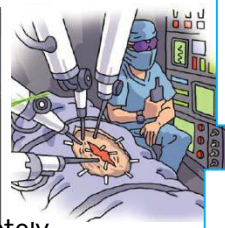
⇒Two-hour films will be downloaded in three seconds.

Have a powerful impact on society

"super-low delay"

Users will operate and control robots of remote location in real time without minding time lag.

Robots controlled remotely



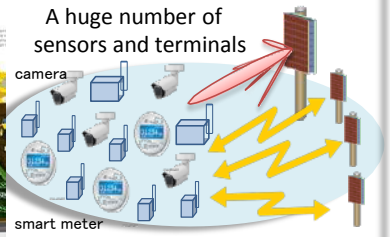
The medical specialist in Tokyo orders the doctor in the copter, he operates remotely .

Emergency surgery in the helicopter.

⇒5G will achieve accurate operation of robots etc.in real time.

" Simultaneous Connection with Multiple Terminals "

Various devices including smartphones and personal computers will be connected to network.



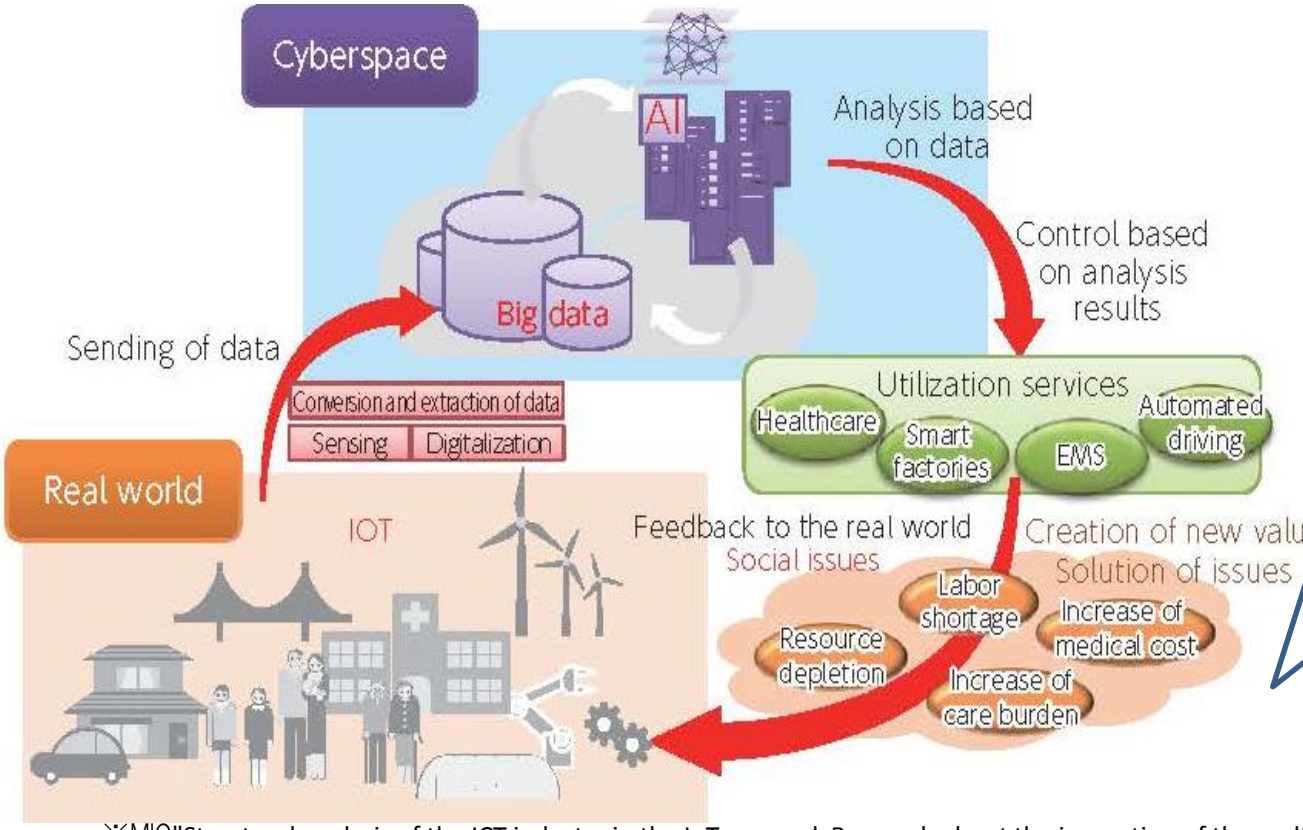
⇒Approximately 100 terminals and sensors in the rooms of house will connect with a net.

(In terms of current technology, several smartphones and personal computers can connect with it.)

Toward IoT Age ③

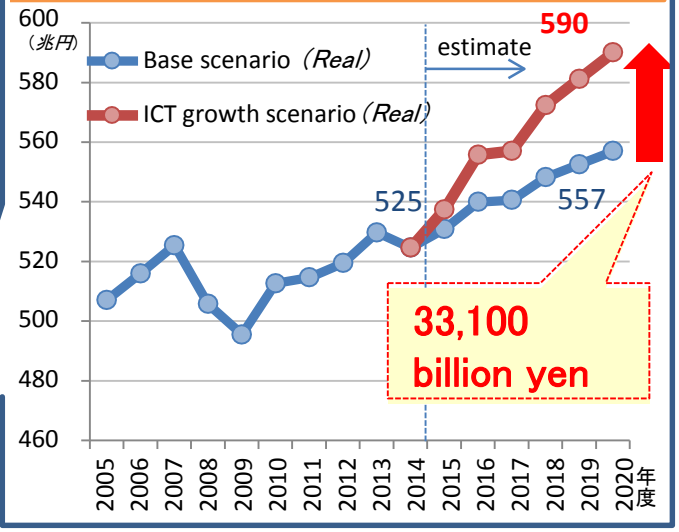
Existing ICT	A computer and Internet communalized the **information of " human "**, and they promoted efficiency of social economy.
IoT Age	**IoT, Big Data, AI** analyzes various **data of "something"**, and **they create new value.**

An era when new value is created by "IoT"



Impact to real GDP

If **ICT investment of IoT, Big data, the AI** progresses, **An upthrust effect of real GDP** approximately 33,100 billion yen is anticipated as of 2020.



※MIC"Structural analysis of the ICT industry in the IoT era and Research about the inspection of the multifaceted contribution to economic growth by the ICT"(2016)

The Japanese government promote IoT utilization ①

Promoting IoT, Bigdata, AI utilization on the whole government

Government strategy

Growth strategy　Growth Strategy 2018(June 15,2018）

・The Japanese government decided to **conduct research and development, on common platform technologies, such as technologies to quickly and efficiently connect massive numbers of IoT devices and technologies to consolidate IoT devices and services with different wireless standards and to connect and accommodate them to networks efficiently and securely**. **MIC perform suggestion for international standardization by March, 2019.**

・The Japanese government expands support about the private international standardization activities and rule formation and push forward in the examination of Government CSO (Chief Standardization Officer) .

Public and private sectors cooperate and examine the way of the international standardization to send "Society 5.0" to the global community as an initiative from Japan.

ITstrategy　Declaration to be the World's Most Advanced IT Nation: Basic Plan for the Advancement of Public and Private Sector Data Utilization (June 15,2018）

・It is effective to fully utilize various data in cross-fields in order to solve a wide range of problems which local governments have such as population decline, the maintenance of infrastructure and administrative services, and improve the attractiveness of the cities and productivities. The Japanese **government promotes setting up the model of advanced city where data is fully utilized and encourages local governments and private sectors to actively corporate with the other parties.**

Regional Revitalization　Basic policy for Overcoming Populatiton Decline and Vitalizing Local Economy in Japan 2018(June 15,2018)

・For the purpose of rousing investments in the central city of a district,　The Japanese government **implement the technique of Society5.0, such as AI, IoT to strongly push forward the world's most advanced city reproduction. Acceleration of Regional Revitalization, Activation of the local economy, Cancellation of the Tokyo overconcentration.**

※”Society5.0”…The society which balances the solution to social problem with economic development follow Hunting society（Society1.0）、Agrarian society（Society2.0）、Industrial society（Society3.0）、Information society（Society4.0）[from Cabinet Office HP]

The Japanese government promoting IoT utilization ②

～ Local IoT implementation promotion ～

●The era of full-scale practical use such as IoT, big data, the AI.
"The area IoT implementation promotion taskforce" which the Minister of Internal Affairs and Communications presided over was started in September, 2016 to spread results such as the experiences in Japan.

Local problem

Population decline, Aging
- ✓ Total population ：162,000 people decrease in one year
- ✓The rate of aging：２７．３％
  Birth rate: １．４４ (2016)

Acceleration of the Tokyo overconcentration
- ✓ Transference excess of approximately 120, 000 people In the metropolitan area (2016)

Regional economic slump
- ✓ Though the employment and income were improved, the local economy is still sluggish.

The possibility that local IoT brings

Technical progress



IｏＴ／Sensor

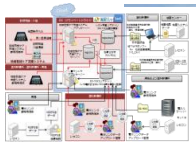

Cloud


Big data


ＡＩ

Create successful models


<Education>
programming


<Medical>
ＥＨＲ


<Agriculture, forestry, and fishery>
IT fishery


< Way of working >
Telework

Problem of the regional implementation
- ✓ There are few areas that have already pushed forward in action.
- ✓ The problems are as follows. "Limitation of the budget" "showing of the use image" "Shortage of human resources"

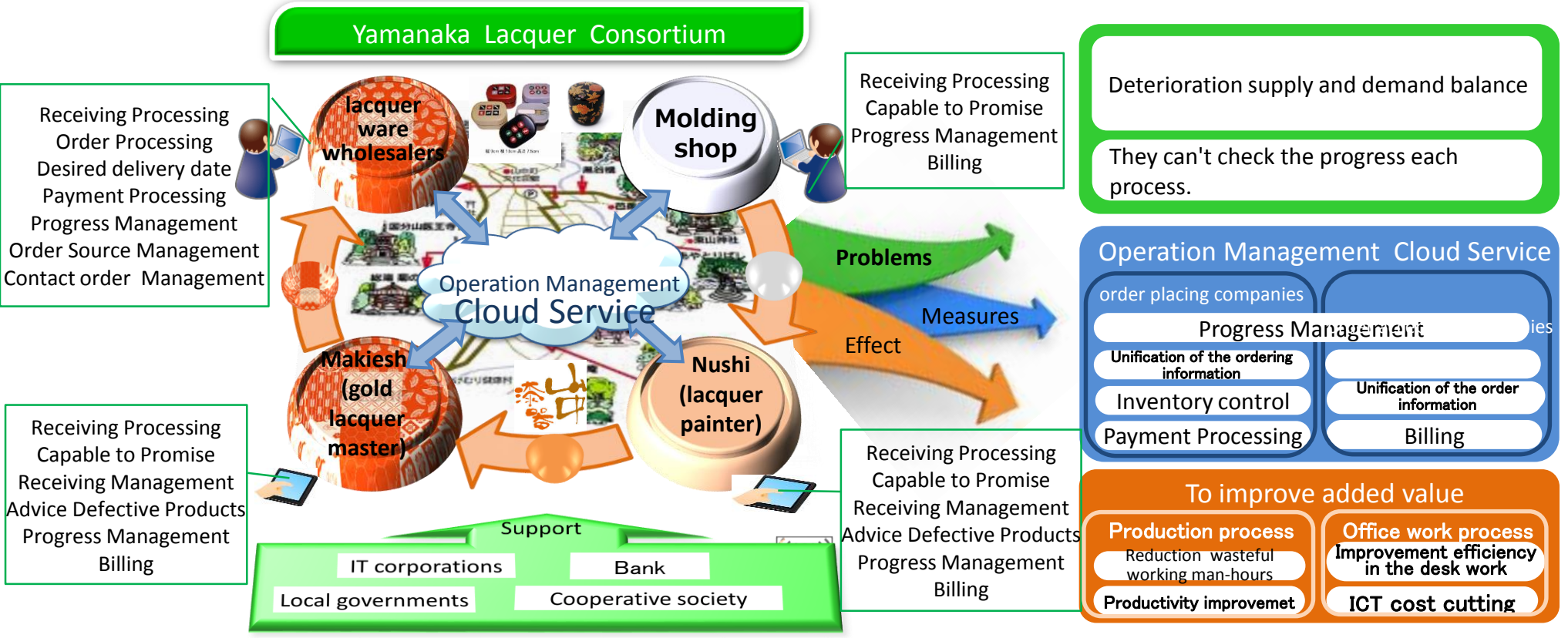
● **MIC made "the local IoT implementation promotion road map" which led to revitalization of regional economy and local problem solution.** (December, 2016) evision (May,2017)

● Primary recommendations, including the establishment of a comprehensive promotion system . (December, 2016) , Second proposal, including the implementation of the regional IoT implementation Comprehensive Support (May,2017)

IoT introduction example in Hokuriku area ①

Yamanaka lacquerware productivity improvement project using cloud service

Proposer	Yamanaka Lacquer Consortium
Area	A region that produces Yamanaka Lacquer ware Kaga city, Ishikawa prefecture
Summary	There is a problem in A region that produces Yamanaka Lacquer ware. It is an aging of craftsmen, a lack of successors and an old Business practice. **The Operation Management Cloud Service improves productivity of the lacquerware.**



IoT introduction example in Hokuriku area ②

Business to deploy the IoT technical guidance model uses "Master craftsmanship"

Proposer	Kahoku City, Ishikawa New Agriculture Total Support Organization, Ishikawa Agriculture and Forestry Research Center NTT DOCOMO, INC. , Keyware Solutions Inc., Keio University
Field of application	Agriculture, forestry, and fisheries industries
Area	Kahoku City, Ishikawa
Summary	➢ A delivery basis of premium grapes " Ruby Roman " from Ishikawa is strict. The technical succession does not advance. There are many producers with commodification rate less than 50%. ➢ A development type of a model developed in Hamamatsu city, Shizuoka. **【Evolution①】Advancement of the learning support system and Education to a scholar of new agriculture person.** **【Creation①】Proof of the remote instruction that utilized a high-resolution image and Optimization of the harvest time decision** **【Creation②】Big data collection in the farm and Automation of "craftsmanship "**

Problems

Low commodification rate

There are many producers with commodification rate 48%.

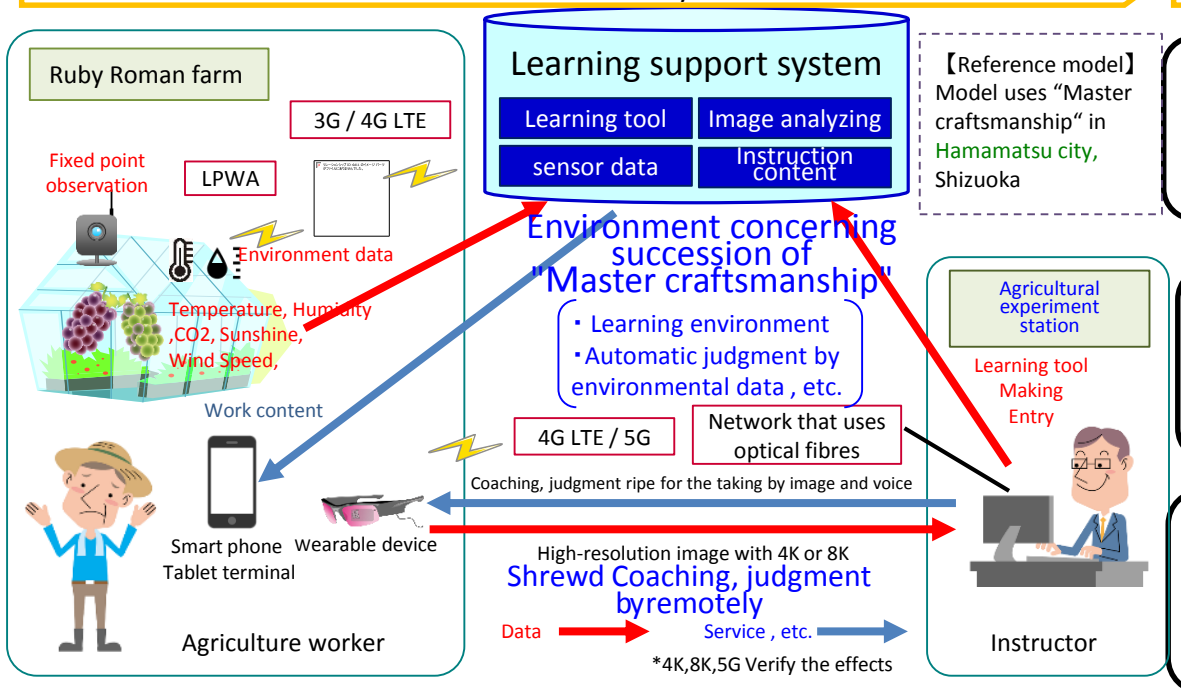
Cultivation skills to explicit knowledge

Most of the cultivation skills of " Ruby Roman " are not made to become explicit knowledge.

Increase in technical guidance

By the decrease of the member of technical guidance and large farm, the instruction by the farm reached the limit.

IoT services that contribute to the resolution of Problems in the community



KPI

Improvement of commodification rate

We aim at 10% of up at a commodification rate by 5 years later.

Cultivation skills to explicit knowledge

An improvement in cultivation skills to explicit knowledge

Increase in technical guidance

Increase in the number of technical guidance

IoT introduction example in Hokuriku area ③

Sharing Toyama Manufacturing IoT Platform

Proposer	Toyama Prefectural University, Toyama Prefecture, INTEC Inc., KDDI CORPORATION, Toyama IoT Acceleration Consortium Tpyama Prefectural Machinaery Electronic IndustriesAssociatio , Toyama Aluminum Industrial Association, TEXTILE and FASHION TOYAMA ASSOCIATION, Toyama Prefectural Plastic Industries Association
Field of pplication	Sharing economy, Local business
Area	Toyama Prefecture
Summary	➢ **Though the need of the introduction of the IoT system is high in SMEs, The introduction of IoT to the company does not advance for an expense being high.** ➢ **The businesses make a system which uses a simple system jointly by "Sharing Toyama Manufacturing IoT Platform". It promotes the introduction of the IoT system in SMEs.**

Problems

The introduction cost of the IoT system

A simple system in accord with the needs of SMEs is not offered.

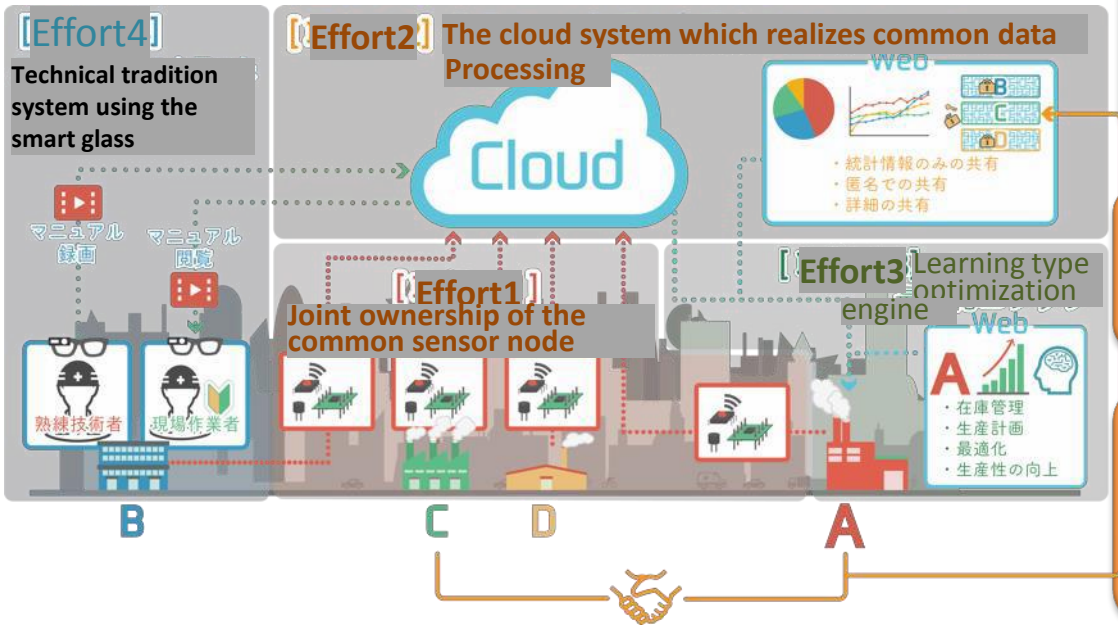
Information cooperation between companies

When each company introduces IoT system individually, between companies of data can't cooperate.

Improvement of the productivity of SMEs

Because the introduction of the IoT system doesn't increase, the productivity improvement of SMEs isn't realized.

IoT services that contribute to the resolution of Problems in the community



KPI

The introduction cost of the IoT system

IoT system introduction company makes annual burden cost 0.1% of sales.
Or they hold down annual burden cost to less than 20% of whole IT investment

Information cooperation between companies

Example of the cooperation between companies : In 20 proof companies more than eight cases

Improvement of the productivity of SMEs

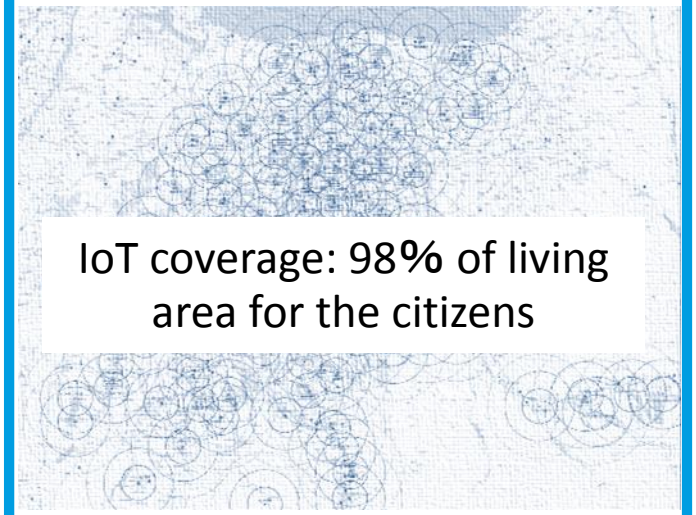
・30% reduction of working hours or the number of people
・2.0% of growth rates of the amount of added value in 2016

IoT introduction example in Hokuriku area ④

Toyama City Smart City infrastructure development project

Business associations	Toyama City
Area	The entire area of the city of Toyama
Summary	**Creating more efficient and safer city by utilizing ICT**

The Compact City



LPWA + Cloud Platform

2018 Project	Smart City Platform construction Industry/academia/government cooperation	The IoT use with the administrative infrastructure
	【Pilot Program 】 Support Program for security of children	Promotion of the platform Promotion of the cooperation projects
After 2018 Project		

■ **Platform construction**
- LPWA network＋IoT Platform
- IoT promotion taskforce

■ **Industry/academia/government** cooperation
- Establishment of a meeting
- Promotion of the city's smart city policy

■ **Support Program for security of children**
- Cooperation with the common lifeline platform
- Cooperation with the opening data site

■ **The IoT use with the administrative** infrastructure
- Snowmelt, accumulated snow
- Smart meter, Water level sensing
- Traffic information, etc.

■ **Promotion of the platform**
- The councils of Industry/academia/government cooperation
- Cooperation with the common lifeline platform

■ **Promotion of the cooperation projects**
- Support Program for security of children
- Workshop with citizens

oneM2M

Only unique international standard organization

for **IoT platform,**

which **seamlessly "connects".**

Features of the Standards

- ○ Global and open standards
- ○ Service functions which can be commonly used
- ○ Binding to existing protocols
- ○ Guarantee of interoperability
- ○ Cooperation of different applications
- ○ The Inter-work with other IoT technologies

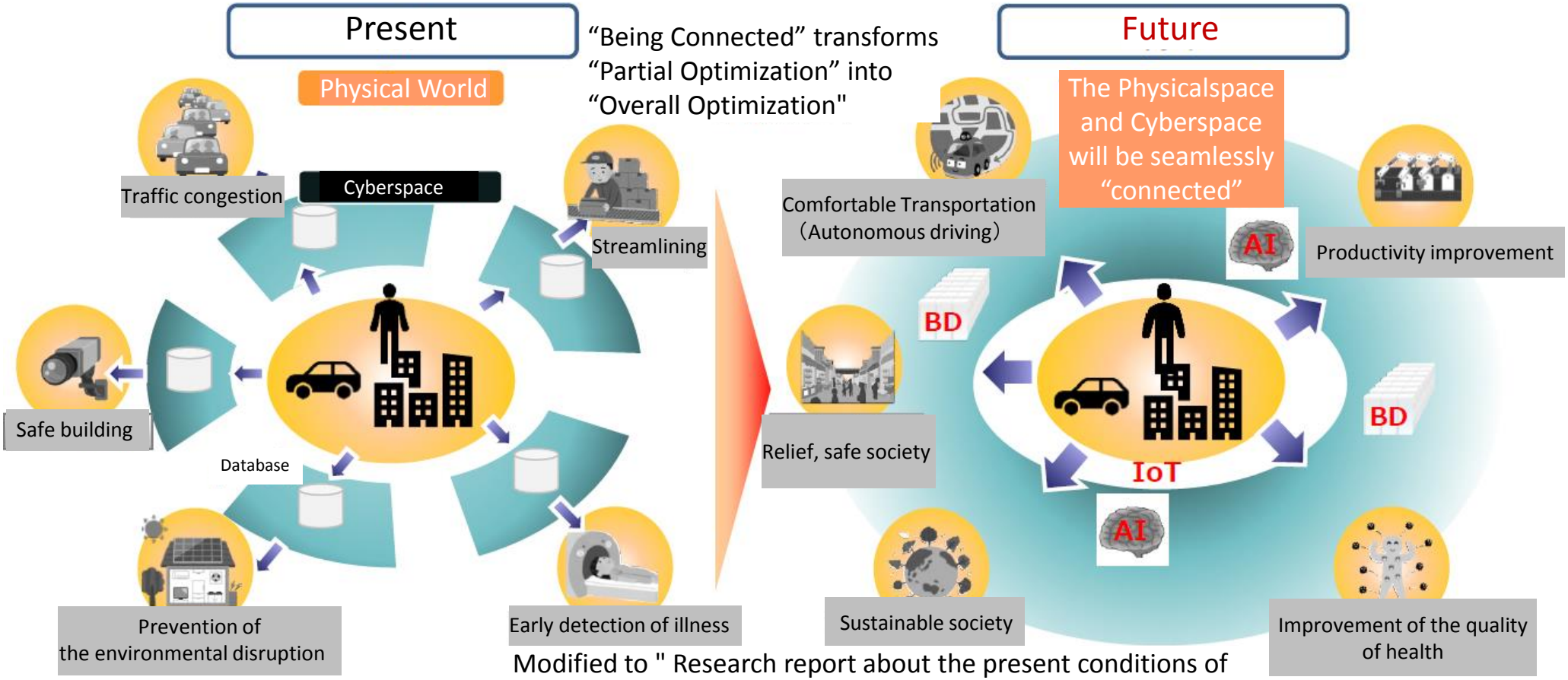
:

oneM2M-Enabling World

“Seamlessly-connected things/systems solve problems“

Independent devices, networks, systems, and platforms, are not connected.

Across any industries and societies worldwide, devices, networks, systems, and platforms, will be seamlessly connected.



Modified to " Research report about the present conditions of the ICT of our country” (InfoCom Research, Inc.)

oneM2M, IoT standard activity,
is highly expected to contribute to
connecting Societies and
solving problems
across the world

Thank you for your time and attention.

Ministry of Internal Affairs
and Communications