

一部抜粋

# NTT EAST

## Regional and Industrial Revitalization Initiatives

2024 / 06 / 05

NTT EAST

Norikazu Watanabe

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- II. NTT East Group's self-owned wireless lineup**
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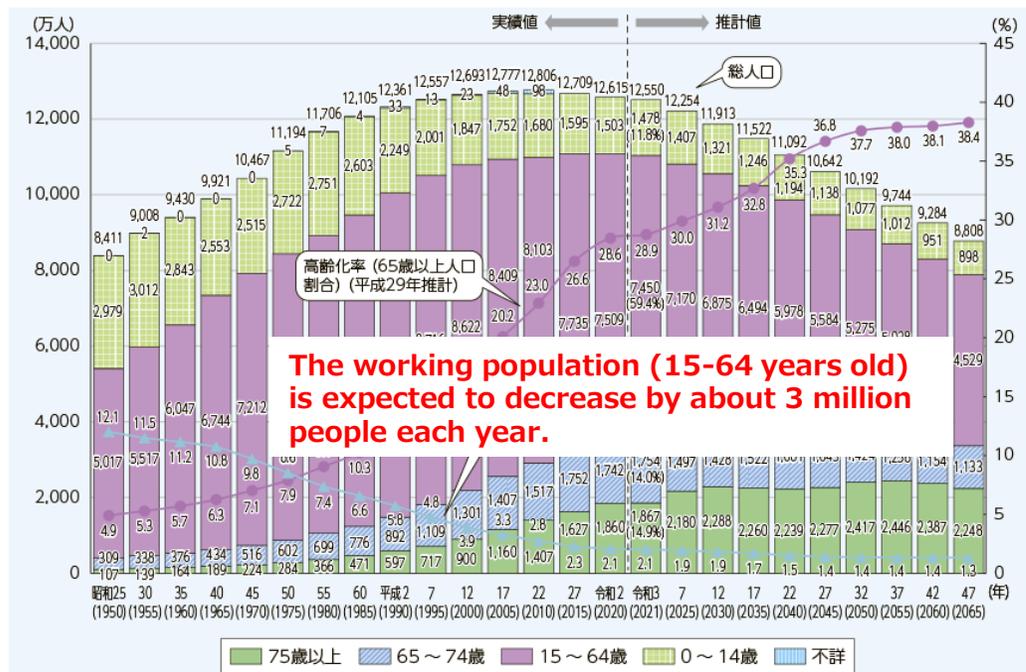
# I . The World Aimed for by NTT East Group

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## NOW

- Decrease in working population (including the future※)
- Difficulty in going to work due to COVID-19

### ※Aging trends and future prospects



Source: Cabinet Office (2022) 「令和4年版高齢社会白書」

## FUTURE

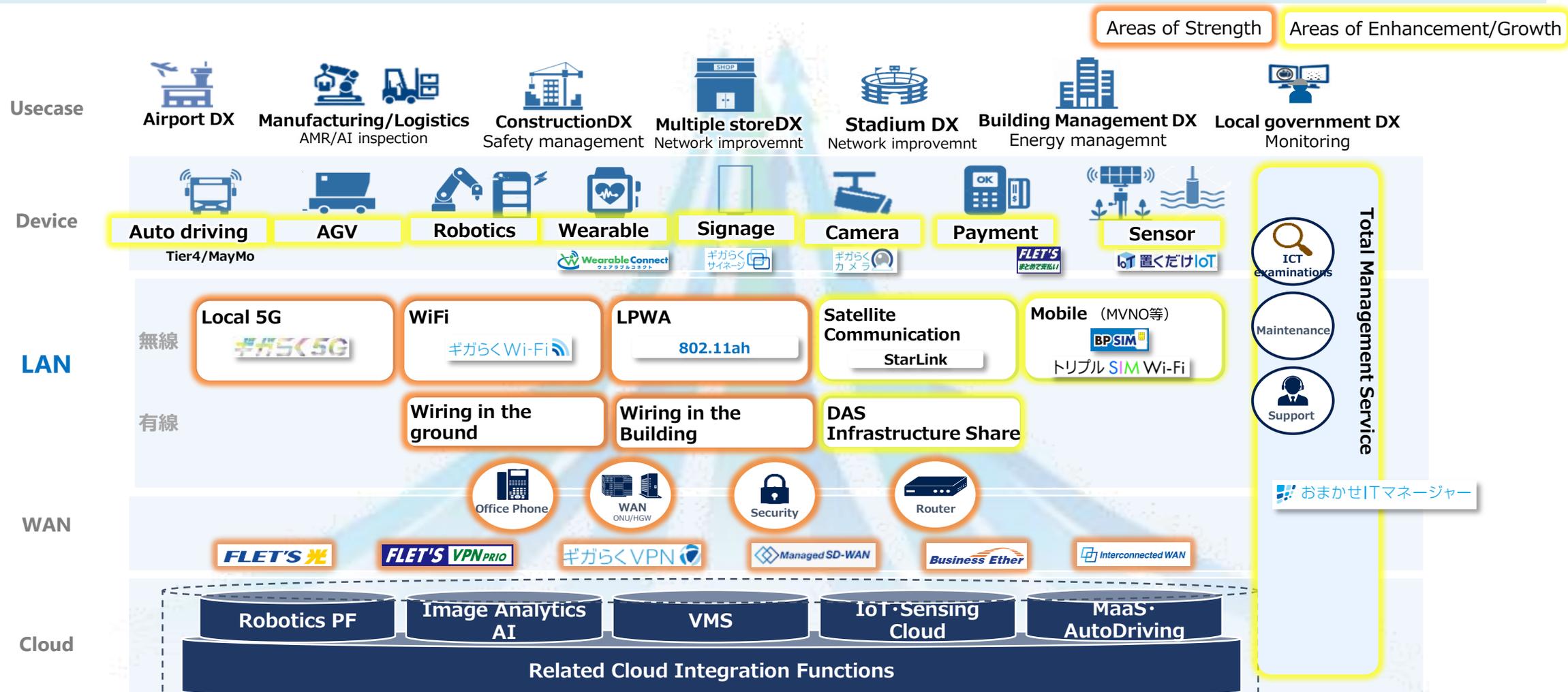
- Promoting automation by utilizing the characteristics of IoT and AI
  - ✓ Expand business scale without increasing manpower
  - ✓ Business can be maintained even if human resources cannot be secured

### 【Ex:Automation of conveyor belt sushi】

Leading conveyor belt sushi companies are early adopters of on-site automation



- DX solutions : Wireless technology , AI , IoT , Robotics will enliven Japan and the region
- Developing concrete the greatest challenge “Labor shortage and manpower shortage”



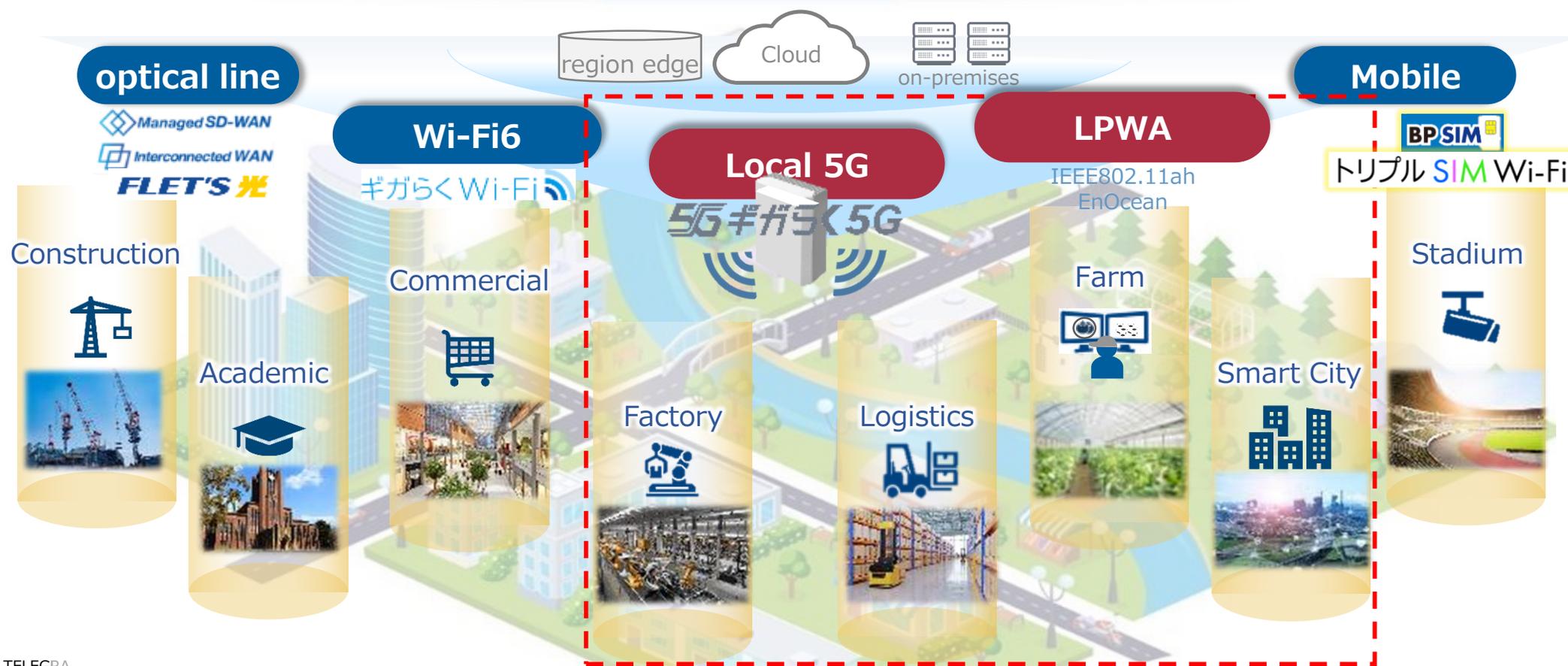
## II. NTT East Group's self-owned wireless lineup

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## Contributing to industrial DX and solving regional issues

through **local 5G and other multi-access private networks** providing optimal network solutions that combine wired and wireless.

**Combine the optimal NW according to the application**



# 『Giga-Raku 5 G』 : Service overview

Service area  
**Nationwide**



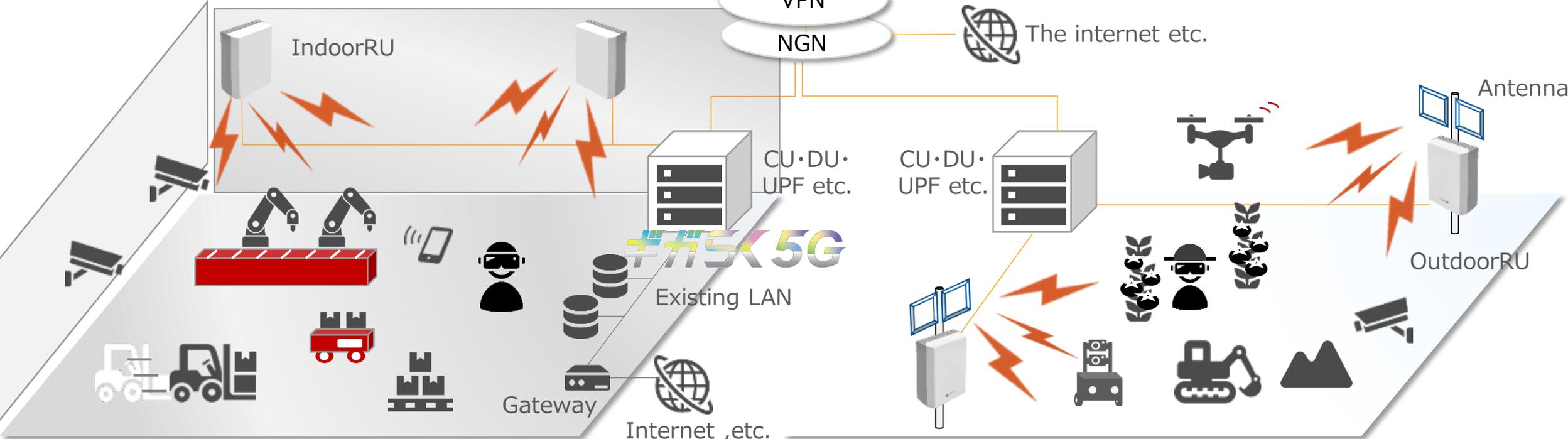
**Indoor**

**Outdoor**

NTT Data center  
**5G Core**



VPN  
NGN



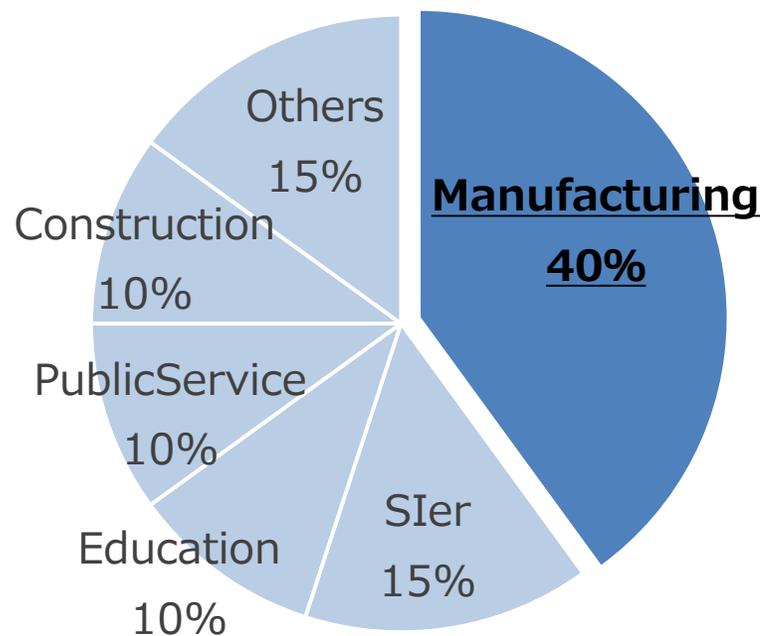
**Provide Full-scale 5G SA functions as one-stop solution.**



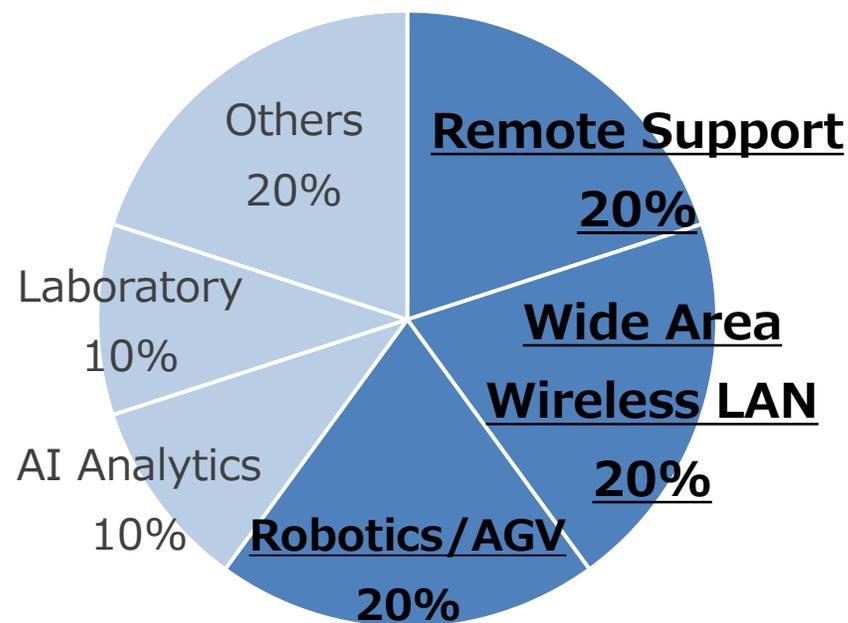
# Overview of Local 5G Case

- Approximately 40% of customers are from the manufacturing industry
- Local 5G applications include : “Remote Support” “Wide Area Wireless LAN” “Robotics/AGV”
- Market survey shows NTT East leading in Local 5G builds share with 25%.

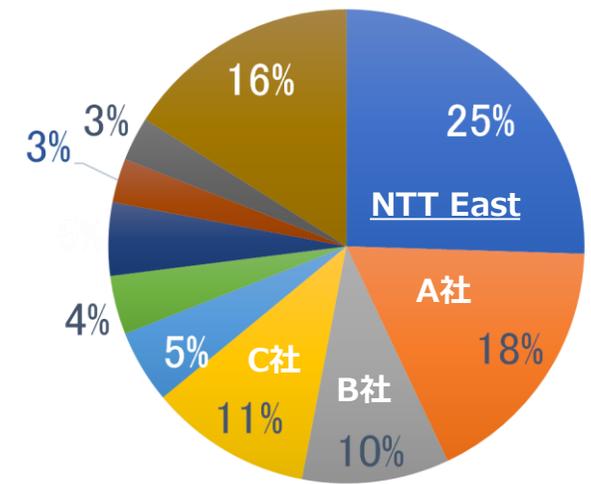
(Industry)



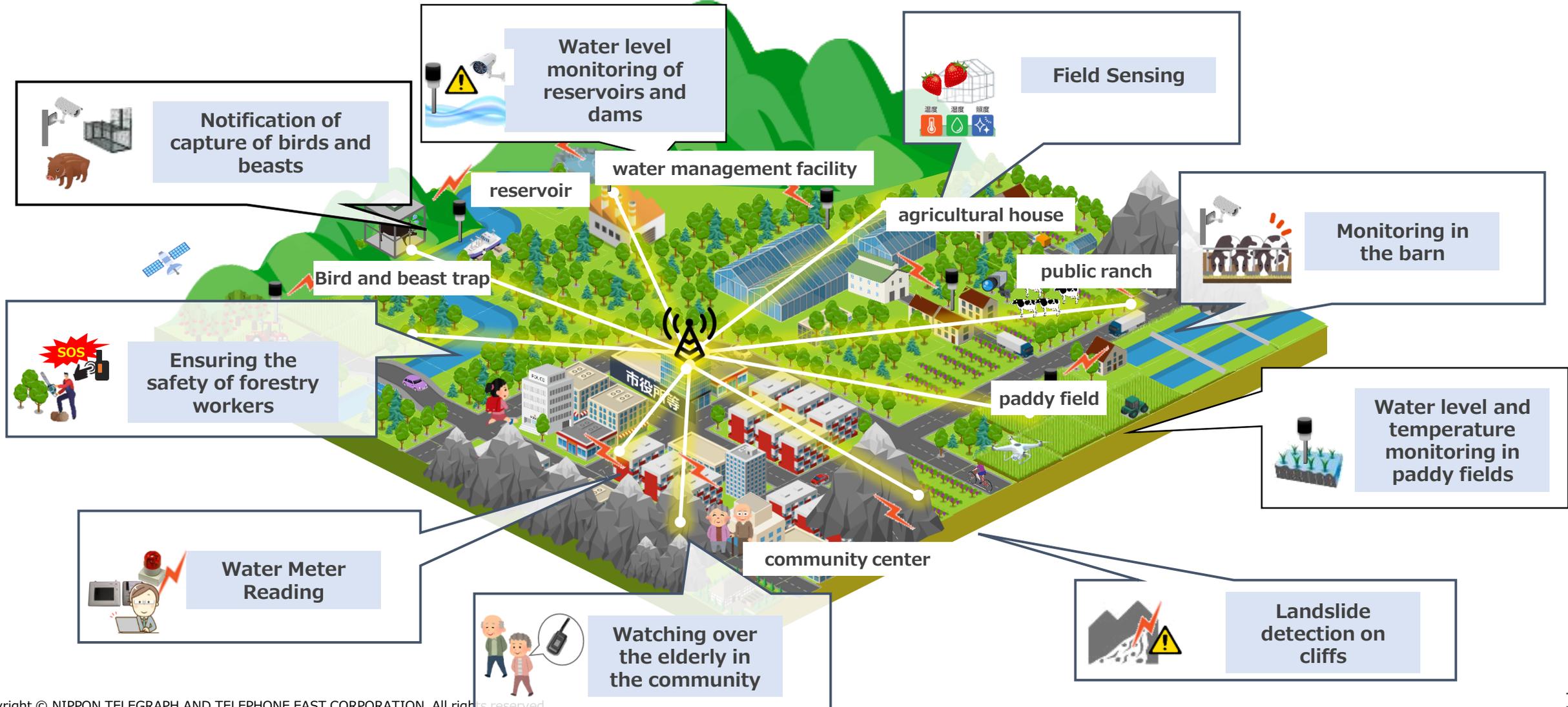
(Usecase)



(Vendor Market Share)



■ We work in local governments and build our own wireless networks to meet the needs and issues of the region.



# Ⅲ. Self-owned wireless + DX solution Case Study

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# Wide Area Wireless LAN

## ~Plant , Port~

- Customers with large sites, such as plants and ports, are experiencing weak or inadequate signal coverage.
- Providing wide-area coverage, high-speed, large-capacity, stable communications, and a basic communications environment (e.g., tablet use) by utilizing high-power, licensed local 5G.

## Solution Summary

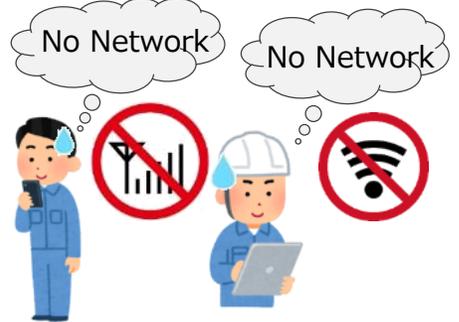
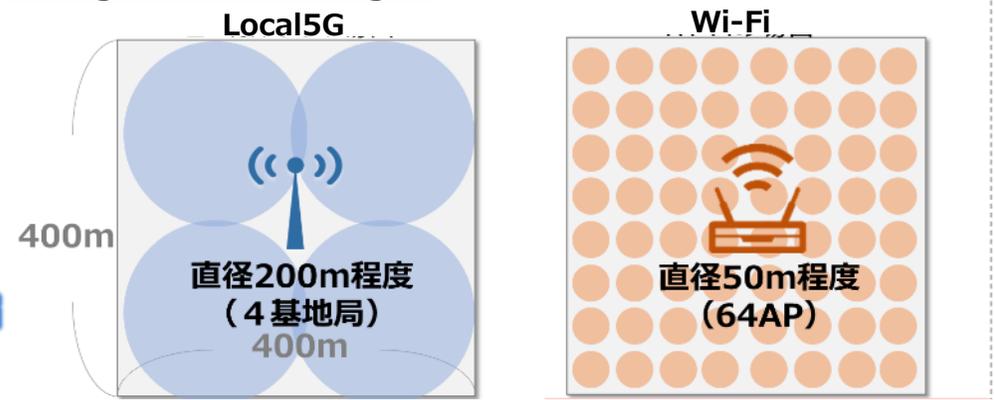


Providing a basic communication environment for customers with large sites



Higher power local 5G has an advantage in covering a large site

<Image of Area coverage>



### Local 5G strength

- High power ⇒ Wide area coverage
- Self-owned ⇒ Installed at any location
- License system ⇒ Stable Communication
- 5G ⇒ Large capacity , Low delay

Small and lightweight dongles make Local 5G connectivity for tablets and laptops more practical



Image of connection with tablet and notebook PC

- Build a local 5G at Yumeshima Container Terminal in the Port of Osaka, the site of the 2025 Osaka-Kansai World Expo.
- Providing radio coverage of the entire container terminal area with 13 Local 5G antennas

<Panoramic view of Yumeshima>



<Image of antenna installation>



<Container Terminal Administration Building and Gate>



Rooftop : 20 m



50m×30m

# Manufacturing , Logistics

■ High-speed (400 Mbps or more) uplink communication enables advanced remote assist and remote monitoring.

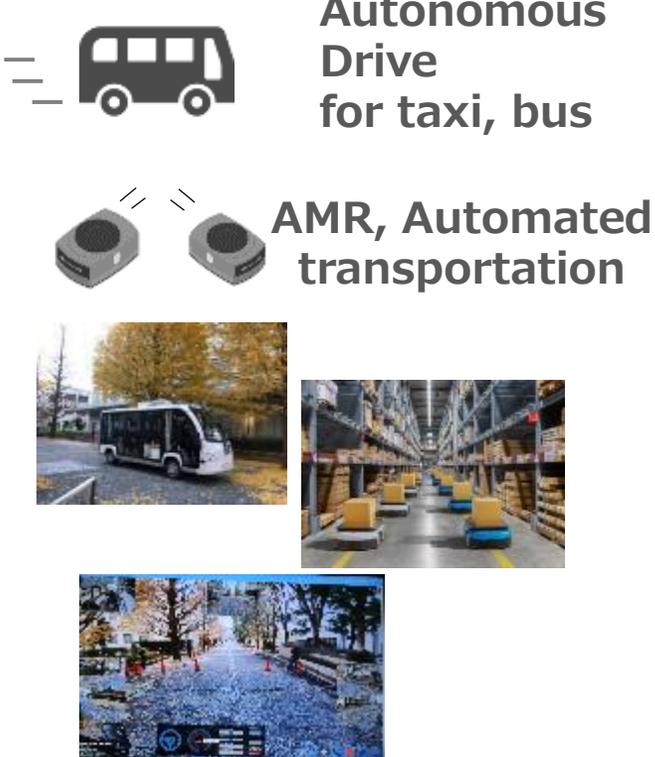
## Wide area wireless LAN



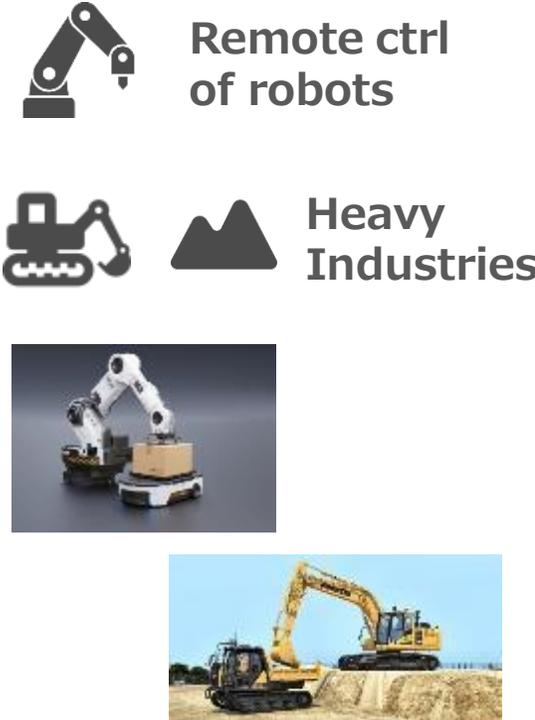
## Remote Monitoring for expert support



## Autonomous Robots with remote monitoring

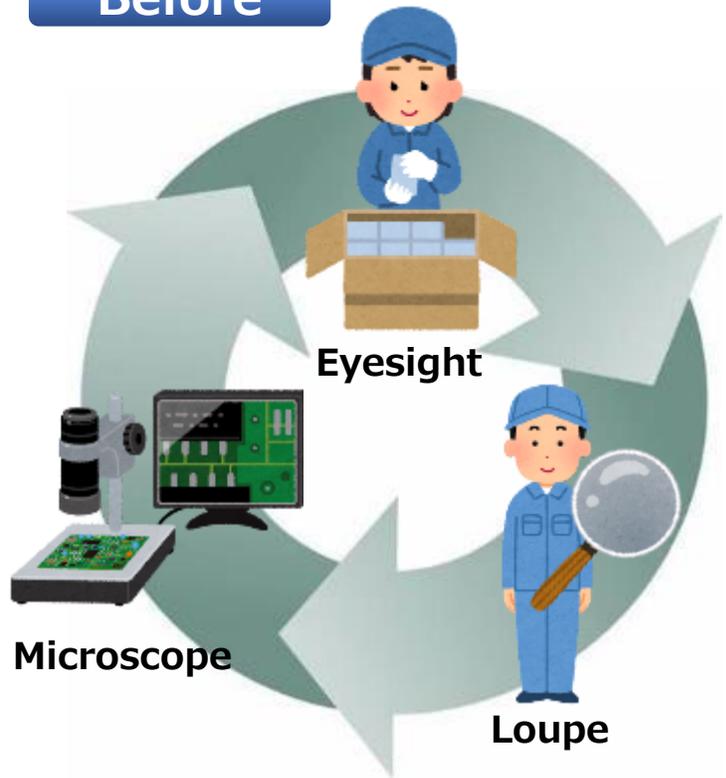


## Remote Control for robot



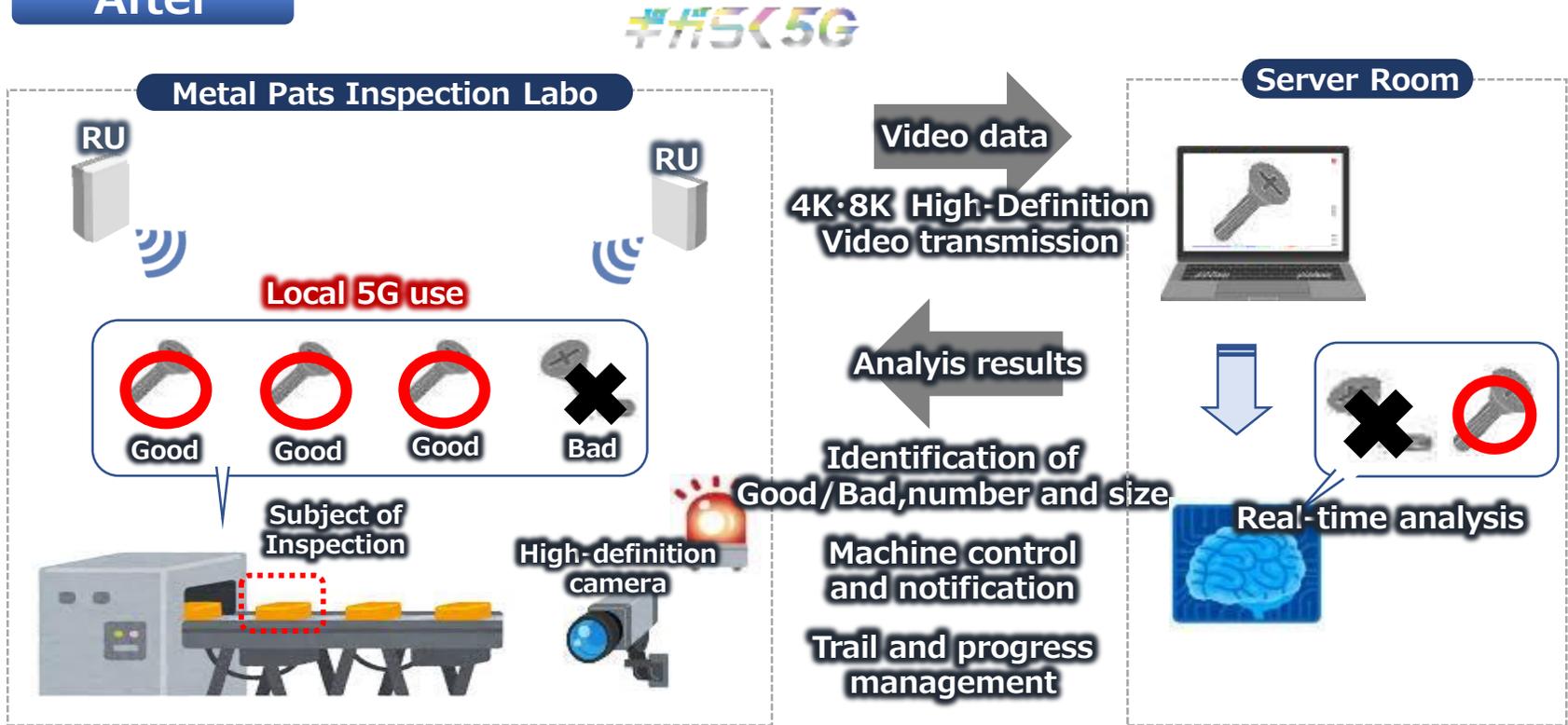
## Shortened inspection time and improved inspection accuracy with automatic inspection using a high-definition camera and AI analysis

### Before



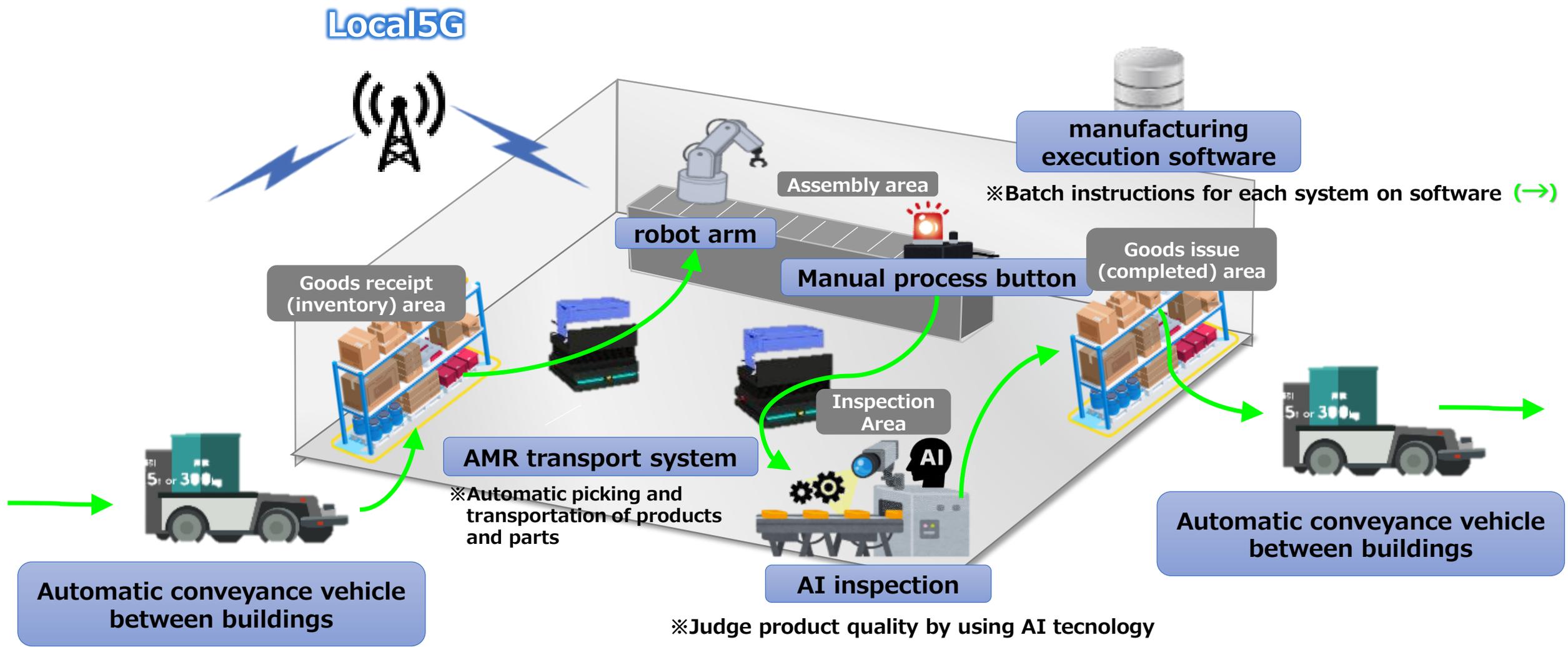
- × 2~3 person operation
- × Huge inspection time
- × Uneven decision accuracy

### After



- ◎ Improved operational efficiency and reduced operating costs through automation
- ◎ Uniformity and accuracy improvement of inspection quality

## Wireless technology enables flexible process changes



- Build up Local 5G Smart Factory & Logistics at NTTeCity-Labo (Chofu, Tokyo 2024/1~)
- Exhibition and verification environment with a series of manufacturing processes realized in a local 5G environment. → **Incubate use cases and technology validation**

## Exterior View



## Interior View



## Installed equipment

● Automatic conveyance vehicle



(eve autonomy)

● Autonomous Mobile Robot (AMR)



(Industry Alpha)

● Appearance inspection



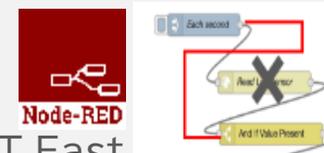
(Brains Technology, Inc.)

● Manual process button



(Industry Alpha)

● Process Management



(Design: NTT East  
Equipment: FA System & Technology Corporation)

● Nutrunner (Manual Assembly)



(Atlas Copco)

# Municipality

- To address issues such as illegal dumping, crop theft, and wildlife damage in fields, we utilize real-time video.
- By utilizing 11ah, we achieve video transmission over a wide area. Addressing multiple issues through video utilization.

### Problem

Prevention of Illegal Dumping



Prevention of theft of agricultural products



Prevention of Damage to Wildlife



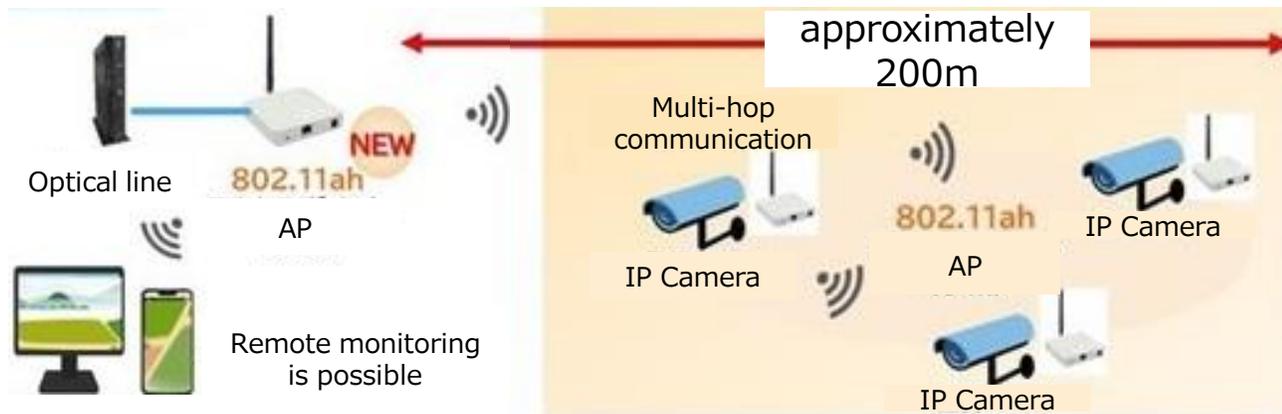
### Effect

Remote Situational Awareness and Information Accumulation



Using cameras to solve various problems

[ Demonstration image ]





## Advancing demonstrations utilizing 11ah for various applications in collaboration with local partners.

Project	Field	Needs	Points for selecting 11ah
<b>Farm Field monitoring</b>	Farm Field	<ul style="list-style-type: none"> <li>Countermeasures against crop theft</li> <li>Monitoring of illegal dumping</li> </ul>	<ul style="list-style-type: none"> <li>Real-time video</li> </ul>
<b>Fishery Monitoring</b>	Lake	<ul style="list-style-type: none"> <li>Deterrence against illegal Fishing</li> <li>Efficiency of water temperature surveys</li> </ul>	<ul style="list-style-type: none"> <li>Real-time video</li> <li>Sensing</li> </ul>
<b>Factory Facility Monitoring</b>	Large-scale factories	<ul style="list-style-type: none"> <li>Efficiency of data acquisition through retrofits to existing equipment</li> </ul>	<ul style="list-style-type: none"> <li>Utilization of high-quality still images</li> <li>Sensing</li> </ul>
<b>Environmental Monitoring</b>	Golf courses	<ul style="list-style-type: none"> <li>Remote monitoring of environmental turf conditions</li> <li>Confirmation of course progress</li> </ul>	<ul style="list-style-type: none"> <li>Utilization of high-quality still images</li> <li>Real-time video</li> </ul>
<b>Water Level Monitoring</b>	Urban areas	<ul style="list-style-type: none"> <li>Reduction of patrol operations in flood-prone waterways near urban areas</li> </ul>	<ul style="list-style-type: none"> <li>Utilization of high-quality still images</li> </ul>
<b>Communication means for Forestry Workers</b>	Mountainous areas	<ul style="list-style-type: none"> <li>Communication in areas with poor mobile reception</li> </ul>	<ul style="list-style-type: none"> <li>Wide-ranging use</li> <li>Utilization of IP devices</li> </ul>

LPWA

- Started proposing a single network with wider coverage than Wi-Fi based on 802.11ah.
- We are making proposals to local governments to reduce costs by creating a single network that can cover multiple uses (multi-use).

The following can be achieved with one network

- Communication speed that is sufficient to use the camera.
- Wider coverage area than Wi-Fi
- For implementation at a reasonable cost



**Ensuring the safety of forestry workers**

Sending SOS and understanding location information by attaching a terminal  
⇒ **Preventing industrial accidents for forestry workers**

**Watching over children and the elderly**

Location information confirmation, life sensing  
⇒ **Improving the quality of monitoring**

**Water meter reading**

Water leak detection and flow monitoring using remote automatic meter reading  
⇒ **Improving meter reading efficiency and saving labor**

Multi-Use

# Utilizing "IEEE802.11ah" Use Cases for Condominium Management and Developers

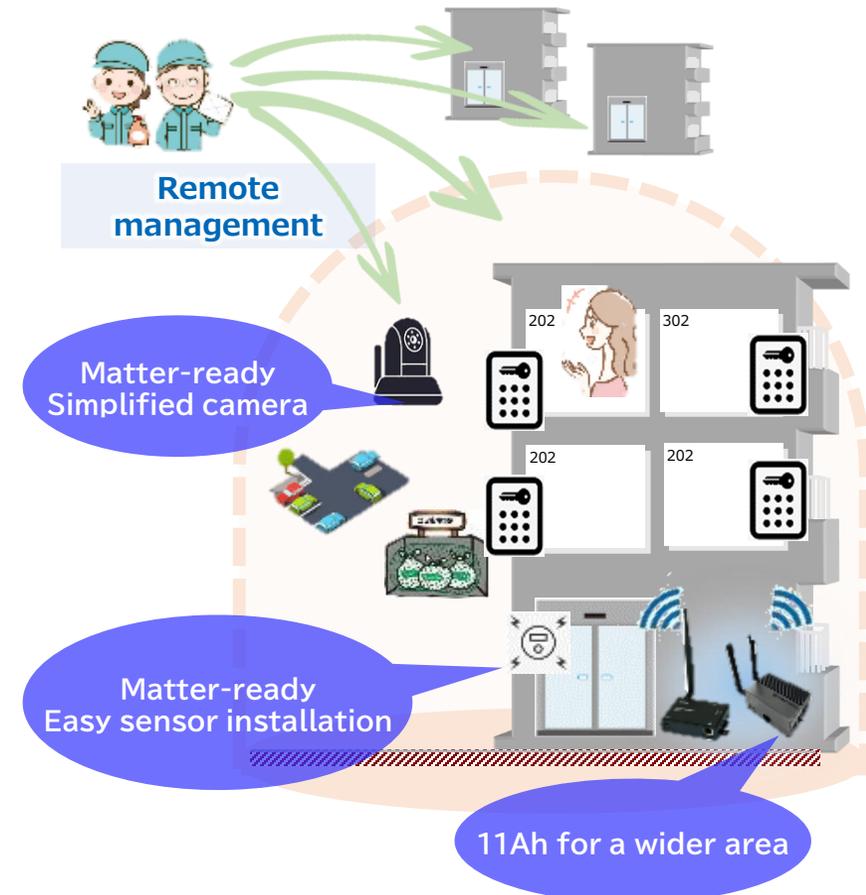
- Conventional Wi-Fi (2.4 GHz band) is difficult to cover the entire house and outdoors.
- Since the 11ah uses the 920 MHz band, it flies widely, and has excellent wraparound characteristics, so it is possible to communicate without walls and obstacles.
- Achieving smarter condominium management operations, including around buildings

## IEEE802.11ah ( 920MHz band )

< feature >  
It is power-saving and can go around to the back when there is a wall or obstacle.



Extended communication distance to 1 km





We will introduce the expectations for private wireless, which has entered a new era, and **the new wireless technology devices** that form it, such as IEEE802.11ah and Wi-Fi6E, as well as **exhibit use cases** that combine these wireless systems.

The facility is now open to the public as a facility where you can think of new ways to promote business DX and utilize IoT implementation.

**As NTT e-city Labo, we accept inspections from local governments, companies, and organizations.**

## Actual machine exhibition

## Use case exhibition



Agriculture, forestry and fisheries, livestock fields



Smart factory/smart home



【location】 **NTT East Central Training Center** (NTT e-city Labo) (1-44 Irumamachi, Chofu, Tokyo)

[https://business.ntt-east.co.jp/content/regional\\_revitalization/labo/](https://business.ntt-east.co.jp/content/regional_revitalization/labo/)

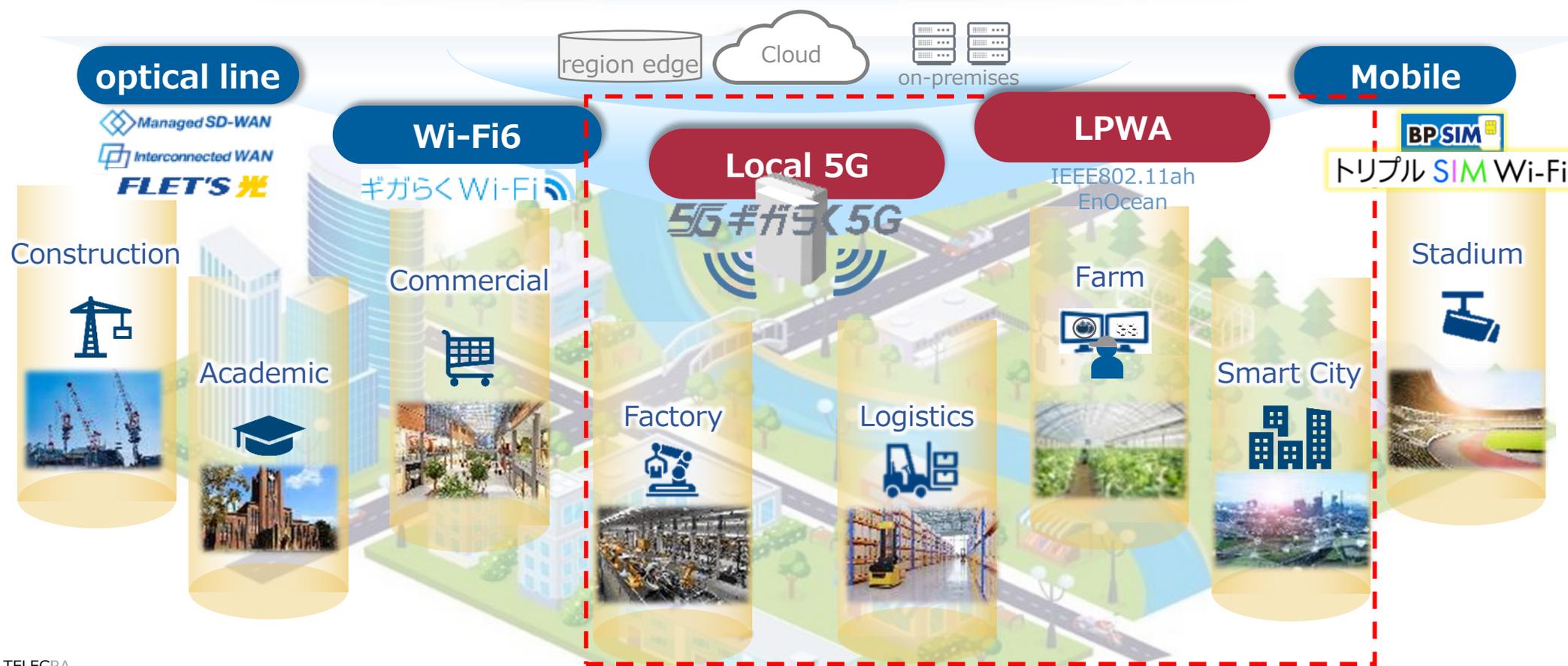
# IV. Summary

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## Contributing to industrial DX and solving regional issues

through **local 5G and other multi-access private networks** providing optimal network solutions that combine wired and wireless.

**Combine the optimal NW according to the application**





2 years since established  
**12,499 Visitors**  
**278 local governments**  
 (65 Chiefs)  
**720 Private Companies**  
 Others 314

## NTT e-City LaboConcept

Reality	Sympathy	Co-Creation
Experience the real thing with all five senses	Showcasing live images of themselves sweating it out	Link communities and regions, and communities and companies

地域の価値創造企業へ

**SOCIAL  
INNOVATION  
パートナー**

NTT東日本グループ