

*Furukawa **G** Plan 2020*  
*Group **G**lobal **G**rowth*

Progress of  
Mid-term Management Plan

President  
**Keiichi Kobayashi**

May 28, 2019

FURUKAWA ELECTRIC CO., LTD.

## Forward-Looking Statements

Projections of future sales and earnings in these materials are “forward-looking statements.”

Management offers these projections in good faith and on the basis of information presently available.

Information in these statements reflects assumptions about such variables as economic trends and currency exchange rates.

Forward-looking statements incorporate known and unknown risks as well as other uncertainties that include, but are not limited to, the following items.

- Economic trends in the U.S., Europe, Japan and elsewhere in Asia, particularly with regard to consumer spending and corporate expenditures.
- Changes in exchange rates of the U.S. dollar, euro, and Asian currencies.
- Furukawa Electric Group’s ability to respond to rapid advances in technology.
- Changes in assumptions involving financial and managerial matters and the operating environment.
- Current and future trade restrictions and related matters in foreign countries.
- Changes in the market value of securities held by the Furukawa Electric Group.

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**FURUKAWA ELECTRIC CO., LTD.**

## **1. Initiatives through the 2020 Mid-term Management Plan milestone year (FY2018)**

**Strengthen and transform the businesses directed towards increasing profitability**

## **2. Future initiatives**

- (1) 2020 Mid-term Management Plan – Quantitative management targets**
- (2) Establishment of the Transformation Div.**
- (3) Growth scenarios for the main businesses  
Communications Solutions, Energy Infrastructure, Copper & High Performance Material Products**
- (4) Growth investments**
- (5) Measures to strengthen the main businesses  
Automotive Products, Functional Products**
- (6) Initiatives to strengthen ESG**

## **3. Group Vision 2030 – Towards accelerating the creation of new businesses**

# Actual results in the 2020 Mid-term Management Plan milestone year (FY2018)

**In FY2018, although advanced investments increased and the communications business slowed, the results were above the milestone targets set in the Mid-term Management Plan**

	FY2016 Result	FY2017 Result	FY2018 Result	FY2018 milestone Set as of May 2016
<b>Operating income</b>	JPY 38.6 billion	JPY 44.8 billion	<b>JPY 40.8 billion</b>	At least JPY 35.0 billion
<b>Net income</b>	JPY 17.6 billion	JPY 28.5 billion	<b>JPY 29.1 billion</b>	—
<b>NET D/E Ratio</b>	0.99	0.88	<b>0.81</b>	—
<b>Equity capital ratio</b>	27.6%	29.0%	<b>30.3%</b>	—
<b>R O E</b>	9.3%	12.9%	<b>12.0%</b>	—
<b>Return on operating assets</b>	12.1%	13.1%	<b>11.2%</b>	—

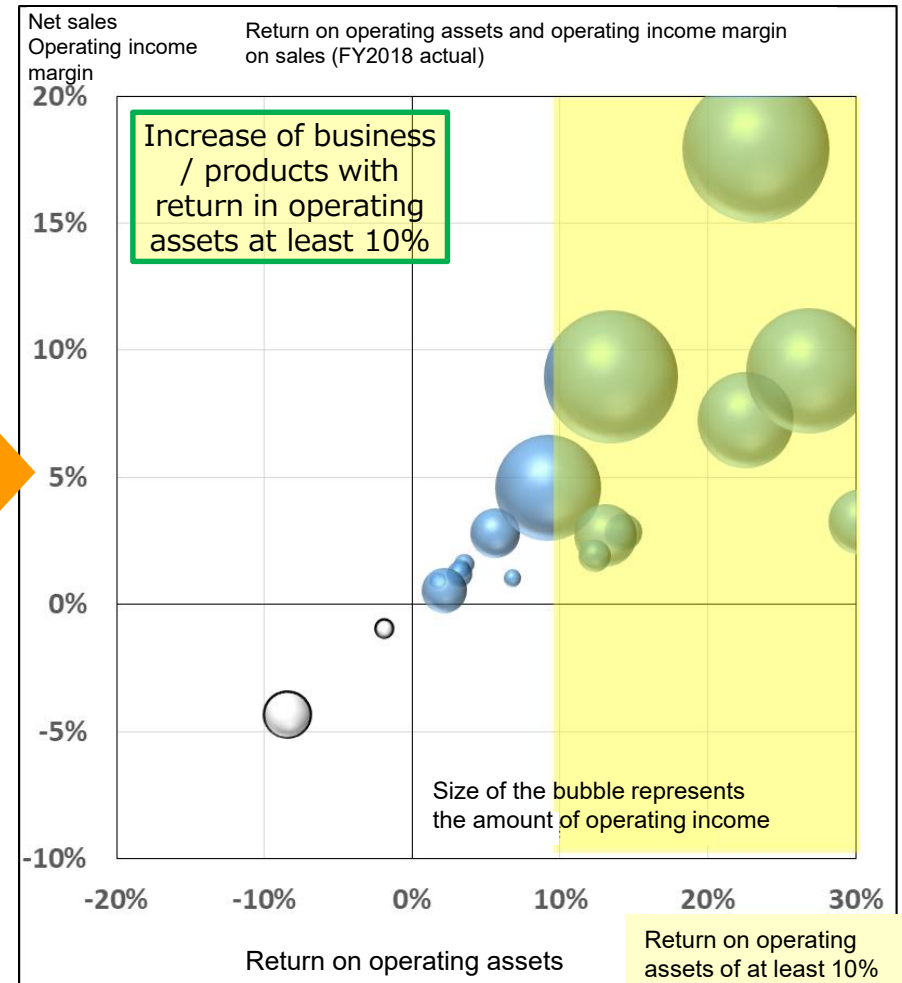
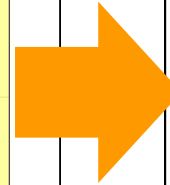
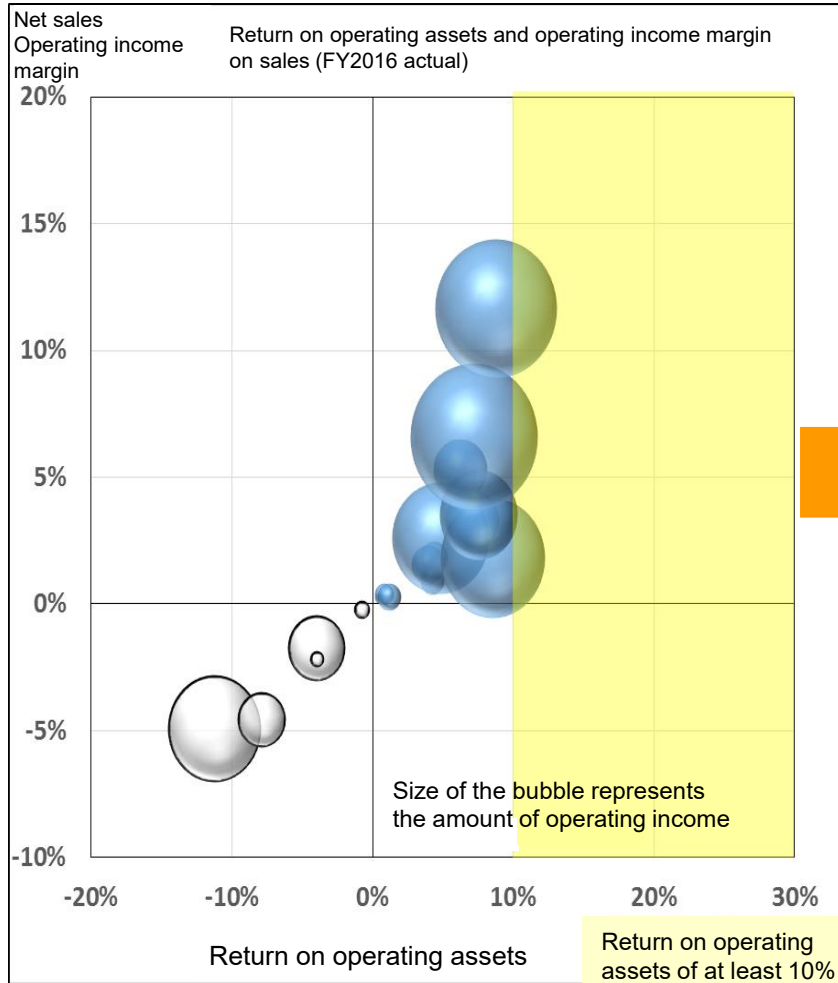
## 1. Initiatives through the 2020 Mid-term Management Plan milestone year (FY2018)

**Strengthen and transform the businesses  
directed towards increasing profitability**

# Strengthen and transform the businesses①

## Reform the low-margin businesses and products

In FY2016, return on operating assets was introduced as a KPI. Steady progress has been made in improving the low-margin businesses and products



Return on operating assets : Operating Income / Operating Assets (Inventories + Tangible and Intangible Fixed Assets)

# Strengthen and transform the businesses ②

## Revise the business portfolio

Directed at effectively utilizing the management resources of the group companies, currently revising the business portfolio, including the partnerships with other companies

Response to the low-margin / non-core businesses

Create new businesses

<Complete>

- Downsize / withdraw from phosphor bronze strips
- Withdraw from the refrigerant pipe business (Okamura Metals)
- Sell the shares of FCM

<Plan to complete within the current fiscal year>

Figures in ( ) indicate net sales

- Project A (About JPY 30 billion)
- Project B (About JPY 20 billion)
- Project C (About JPY 40 billion)

<Complete>

- Commercialize the fiber laser business
- Launch the reinforced plastics business (Cooperative venture with Tetra Pak and Veolia)

<Under consideration>

- Project a (Concluded non-disclosure agreements with Company X and Company Y)
- Project b (Considering a cooperative venture with Company Z)

## Initiatives directed at creating new businesses

**With the objective of accelerating the development of new products and creation of new businesses, actively promote initiatives for open innovation**

- August 2016 : Established the open laboratory FunLab® inside the Yokohama Works  
※Total cumulative visitors surpassed 1,000 people in September 2018
- September 2017: Established the Advanced Prototyping Center (joint organization of the R&D Division and Sales Division)
- February 2018 : Started the social cooperation program with The University of Tokyo
- May 2018 : Started the cooperative activity with the accelerator Creww Inc. directed at strengthening the partnerships with venture companies
- August 2018 : Established the SVIL\* research center in the Silicon Valley in the US

○June 2019 (planned): Open the new FunLab®

\* SVIL: Silicon Valley Innovation Laboratories



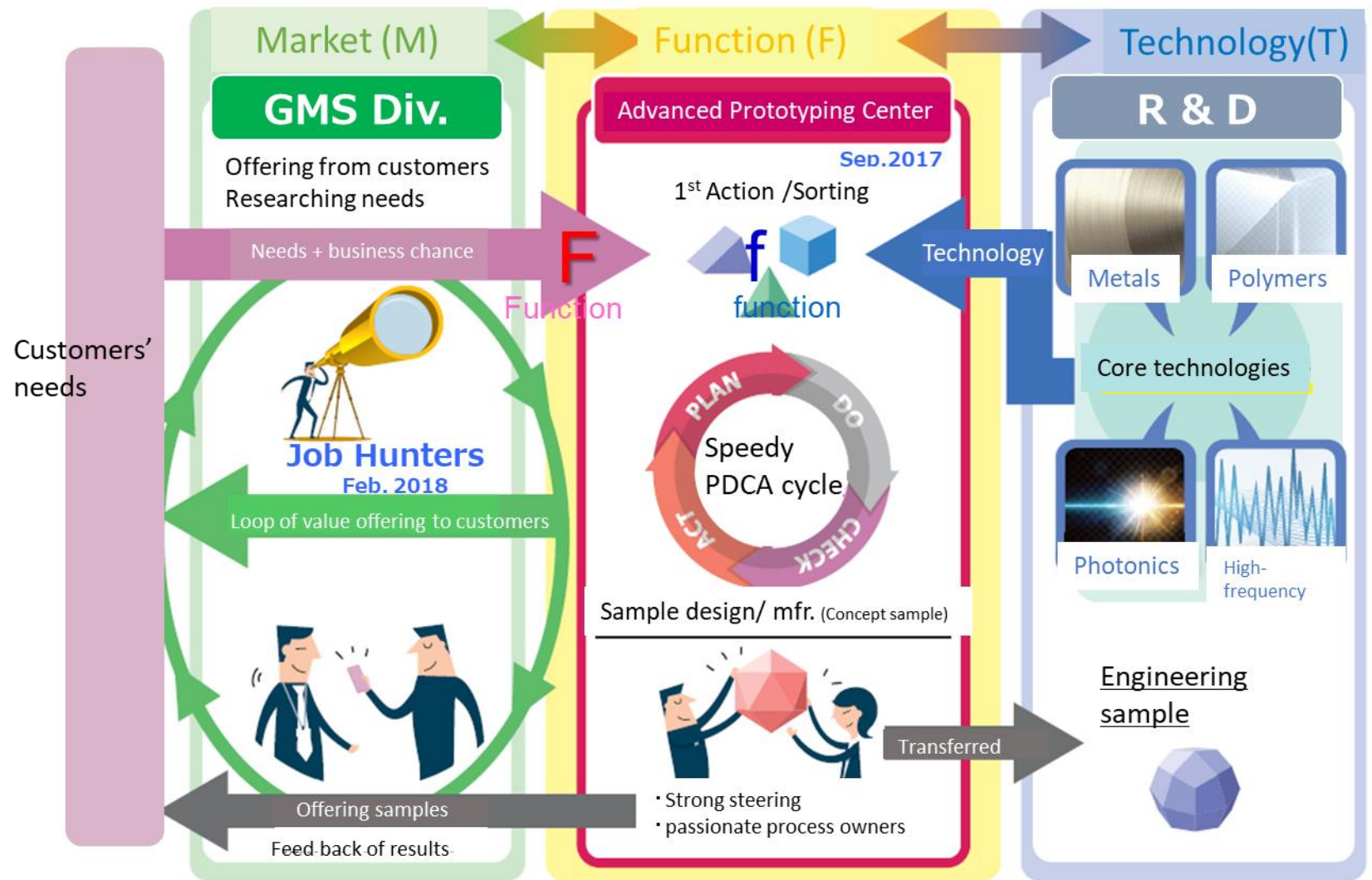
SVIL research center (US)



New open laboratory FunLab®

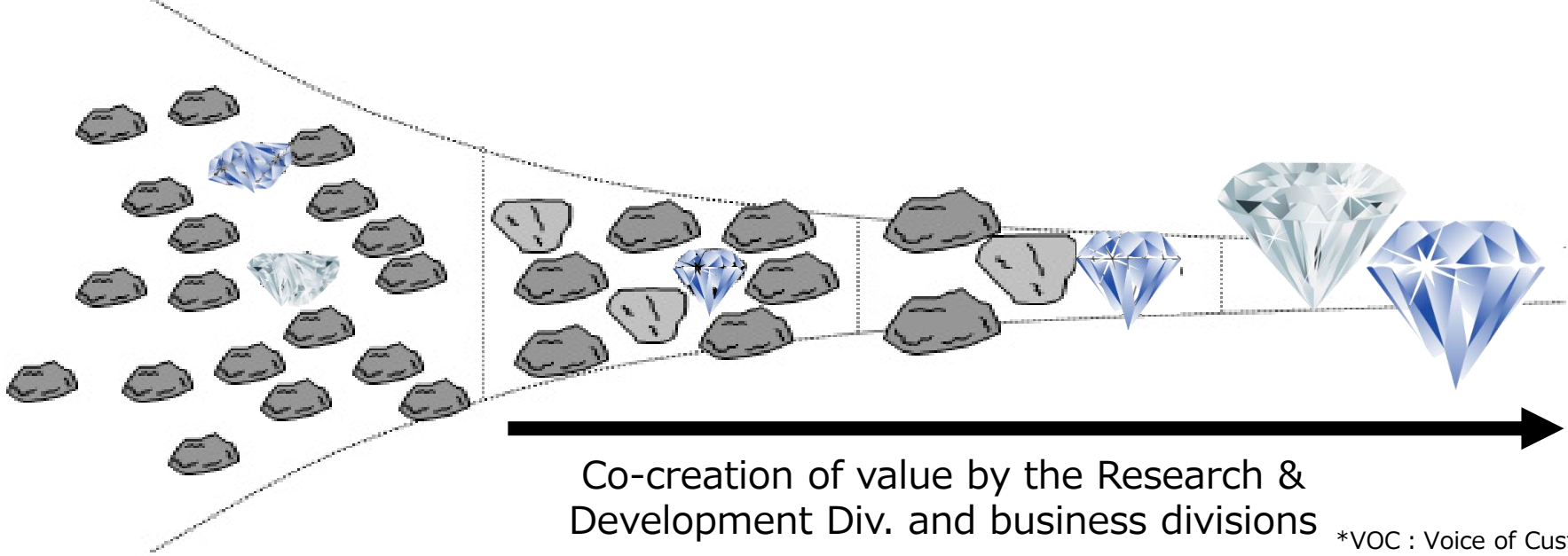






# Sharing process of value offering with R&D Div.

Collect VOC\*/VOS\*\* with a focus on quality



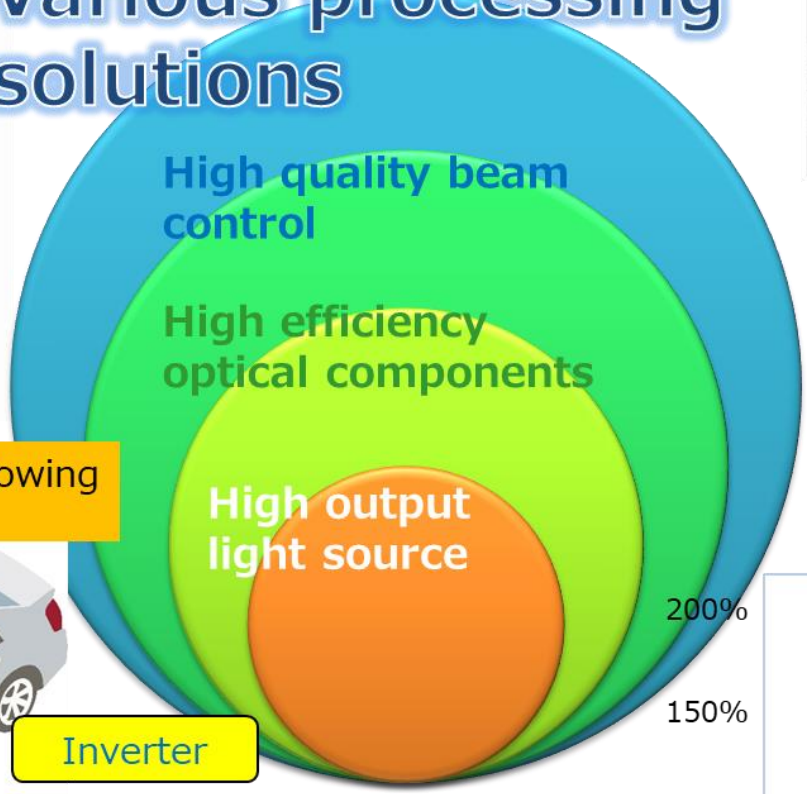
\*VOC : Voice of Customer  
 \*\*VOS : Voice of Society



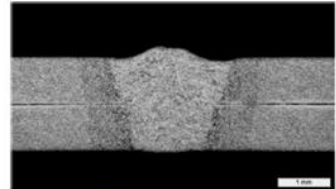
# Industrial lasers

Propose solutions that meet customer needs with the high output lasers and high quality beam control

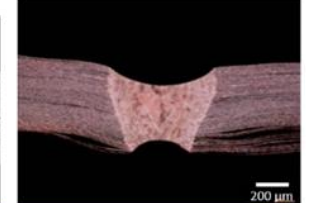
## Various processing solutions



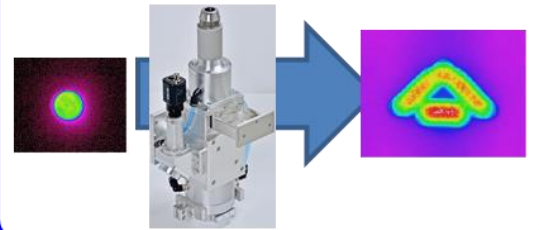
Welding galvanized steel plates



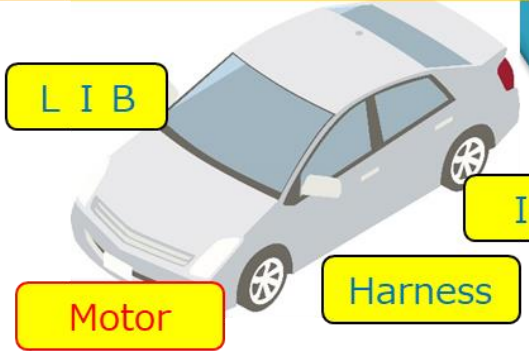
Welding copper foil



Beam mode control technology



Demand for copper following the trend towards EV



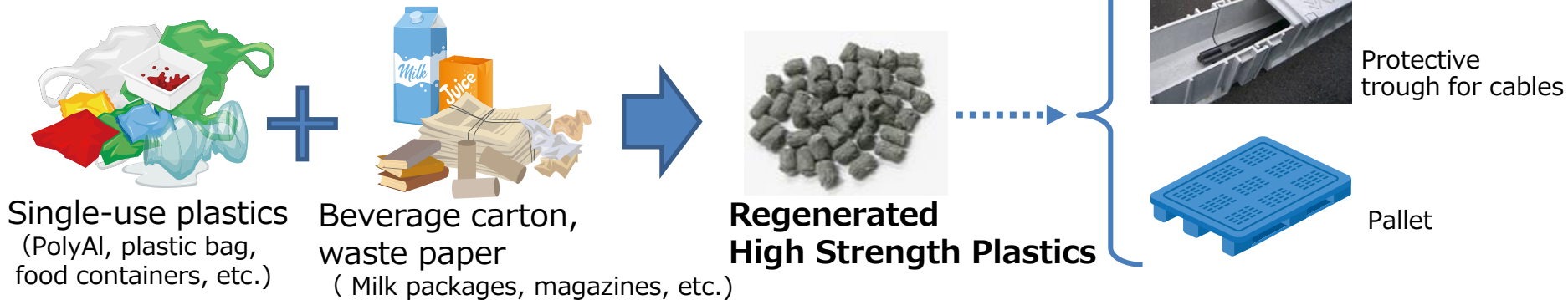
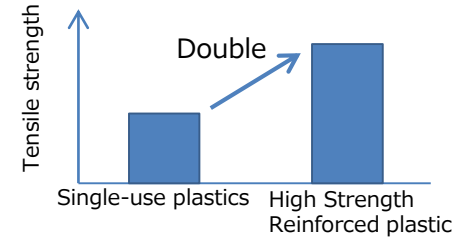
Industrial laser sales (2017=100%)



## Development of Technology to Regenerate Single-use Plastics into High Strength Reinforced Plastic

■ Succeeded in regenerating single-use plastics and waste paper into high strength reinforced plastic through a unique single process

- Double the mechanical strength of single-use plastics
- Can also be used for injection molding and extrusion
- A solution to regenerate waste across the world, which is burned, buried, buried, landfilled after China's import ban on waste



■ Material to be processed in the Pilot Line, and begin using the material in our product lineup from June

■ In cooperation with the world's leading food packaging company Tetra Pak and their recycling partner Veolia, a global resource management company, spread this technology globally and contribute to **improving the world environment**

(Plan to announce at the "Plastic Recycling Technology" conference to be held in Germany on June 18)

## 2. Future initiatives

### ( 1 ) 2020 Mid-term Management Plan – Quantitative management targets



# 2020 Mid-term Management Plan

## – Quantitative management targets

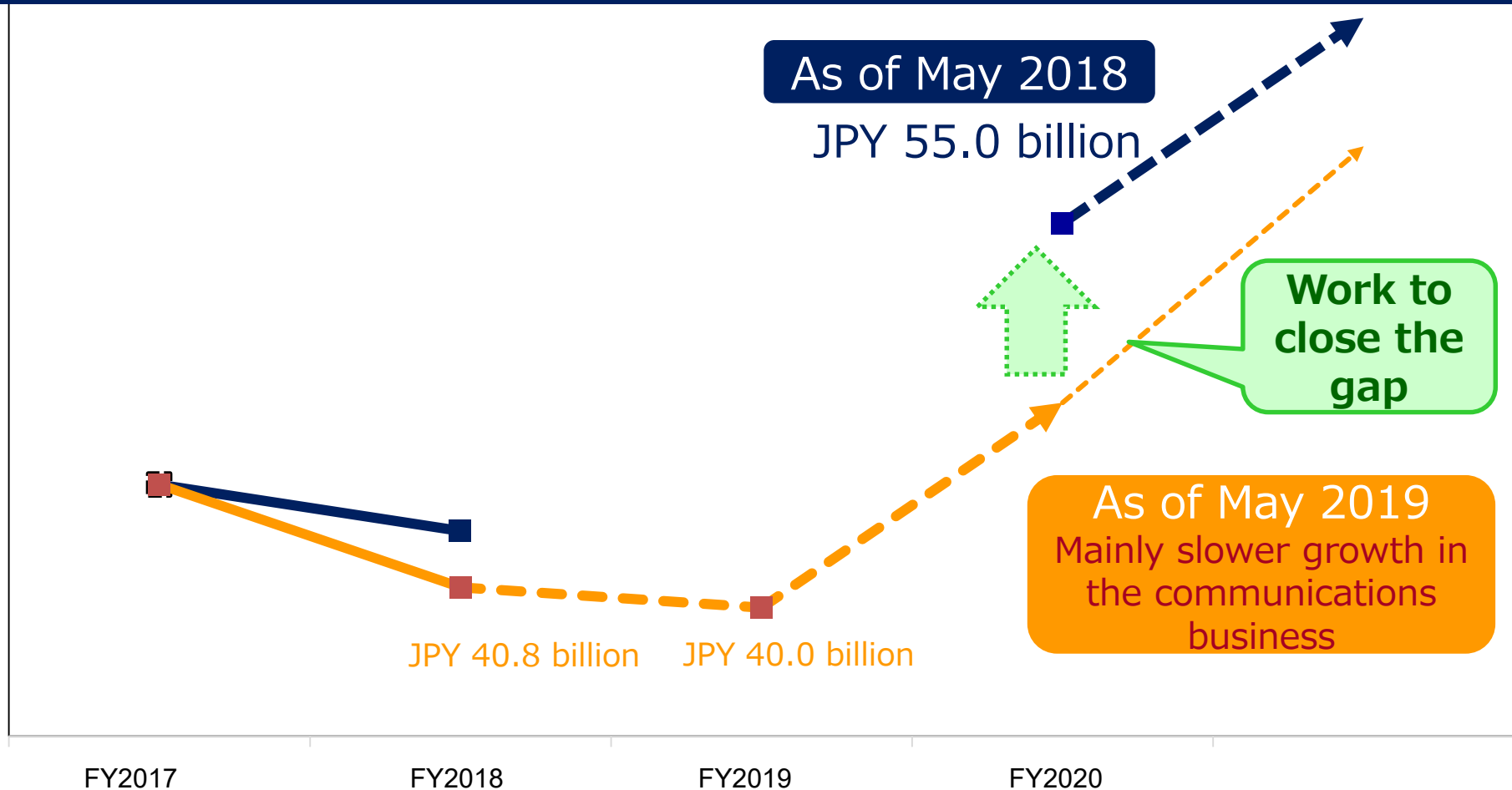
**Achieved the quantitative management targets set forth in the Mid-term Management Plan in FY2017, 3 years earlier than planned.  
Last year, set new quantitative management targets for FY2020**

	FY2015 Result		FY2016 Result	FY2017 Result	FY2018 Result	FY2019 Forecast		2020 Mid-term Management Plan		As of May 2016	As of May 2018	As of May 2016  (As the level for the 2020 Mid-term Management Plan and beyond)
								As of May 2016	As of May 2018			
<b>Operating income</b>	JPY 27.1 billion		JPY 38.6 billion	JPY 44.8 billion	JPY 40.8 billion	JPY 40.0 billion		At least JPY 40.0 billion	<b>At least JPY 55.0 billion</b>			
<b>Net income</b>	JPY 10.0 billion		JPY 17.6 billion	JPY 28.5 billion	JPY 29.1 billion	JPY 21.0 billion		At least JPY 20.0 billion	<b>At least JPY 30.0 billion</b>			
<b>NET D/E Ratio</b>	1.19		0.99	0.88	0.81	0.8		–	<b>&lt;0.8</b>			<0.8
<b>Equity capital ratio</b>	24.5%		27.6%	29.0%	30.3%	31%		–	<b>&gt;30%</b>			> 30%
<b>R O E</b>	5.5%		9.3%	12.9%	12.0%	8%		> 8%	<b>&gt;10%</b>			> 10%
<b>Return on operating assets</b>	9.1%		12.1%	13.1%	11.2%	11%		At least 10%	At least 10%			

# 2020 Mid-term Management Plan

## – Quantitative management targets

Due to slower growth in the communications business, the bar has been raised for achieving the quantitative management targets. Promote initiatives to strengthen the earnings capability of the group companies and ability of the organization to execute





## 2. Future initiatives

### (2) Establishment of the Transformation Div.

## Division dedicated to activities for strengthening the earnings capability and ability of the organization to execute through a thorough review of costs and operational processes

Increase the probability and speed of improvements to “purchasing methods”, “manufacturing methods”, “sales methods”, “transportation methods”, “holding inventories methods” and “work methods”

- ◆ In order to fully achieve “strengthen and transform the businesses, and enhance profitability” set forth as a major initiative in the 2020 Mid-term Management Plan, the Transformation Div. was established on April 1, 2019
- ◆ Start the “transformation project” that will thoroughly utilize the PDCA cycle

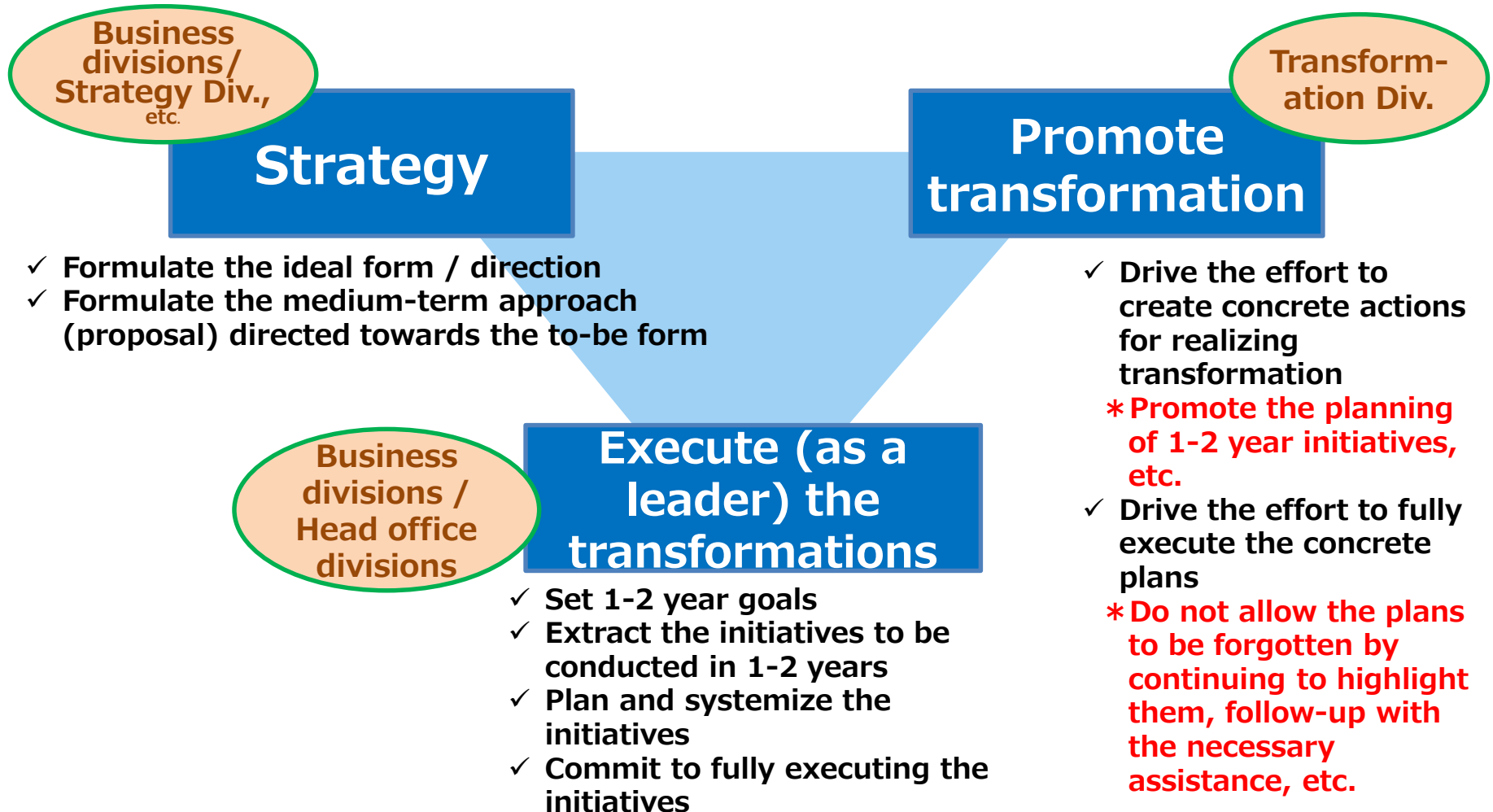
### Main initiatives

- **Accelerate the growth of the Optical Fiber and Cable Products business again globally**
- **Increase the probability and hasten the timing of realizing the benefits from the Energy Infrastructure strategy**
- **Further optimize the product mix in the Copper & High Performance Material Products business**

“Strengthen the ability of the organization to execute” and thoroughly use the PDCA cycle to support the realization of the above

## Mission of the Transformation Div.:

Create and incorporate ways to trigger “transform into an organization that can realize the strategy”. Approach from the aspects of business/ operational processes and organization / culture, and accelerate the speed of the transformation



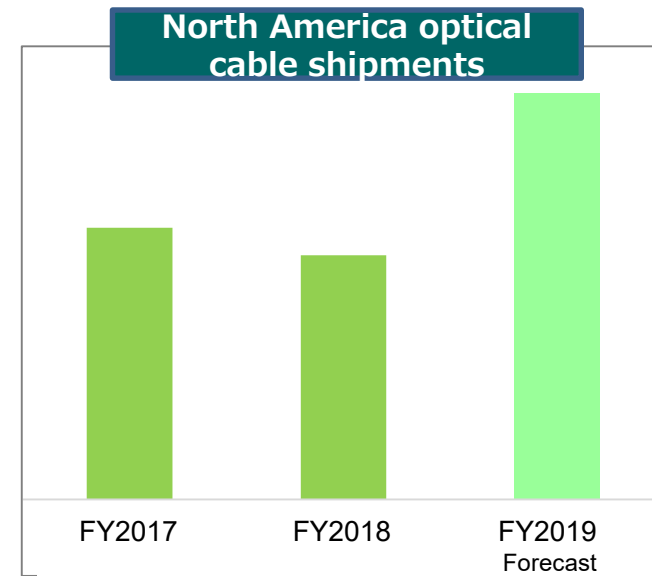
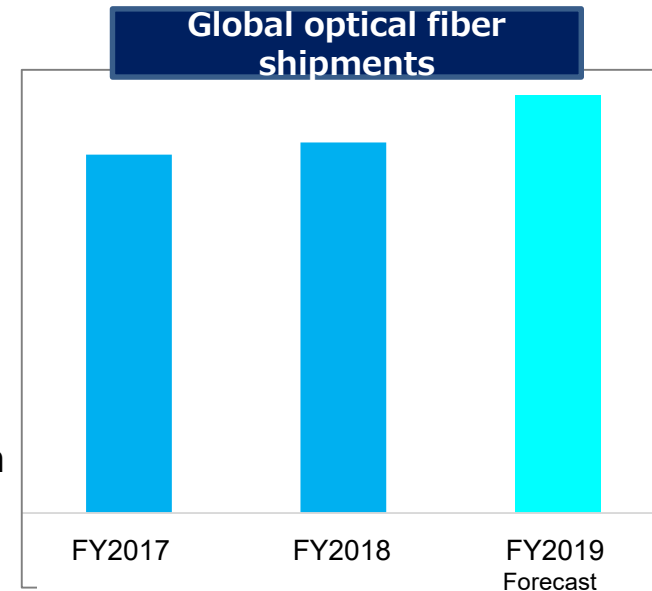
## 2. Future initiatives

### **(3) Growth scenarios for the main businesses**

**Communications Solutions,  
Energy Infrastructure,  
Copper & High Performance  
Material Products**

## <Optical fiber and cable>

- Orders have recovered mainly among customers in North America, Central America and South America
  - ex)
    - Increase in RBOC related orders
    - Increased orders for ultra-high count multi-core cable
    - Full-scale deliveries in relation to the large FTTH migration project for izzi telecom in Mexico
  
- Partial revision to the investments in increased production of optical cable
  
- Expand and strengthen sales of high value-added products
  - Ultra-high count multi-core cable using rollable ribbon
  - Micro cable
  - Highly bendable fiber/cable      • Ultra-low loss fiber
  
- Strengthen cost competitiveness by improving productivity and other means      (including insourcing within the group)



## <Optical products (devices)>

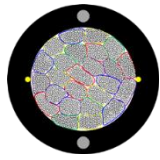
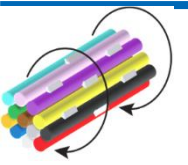
- For digital coherent products (ITLA / TOSA), accelerate the movement towards small, high output, narrow bandwidth and energy saving (mass production/ development of next generation products)
- For industrial lasers, specialize in high output fiber lasers  
Strengthen the ability to propose solutions that respond to customers' requests

## <Network systems>

- Introduce new products that support higher speed and higher performance FTTH
- Realize connectivity and create services that combine FTTH lines and local 5G

## <Solutions>

- Continue to roll-out the business model of the South American FSC to the Asia region  
(Thailand, etc.)

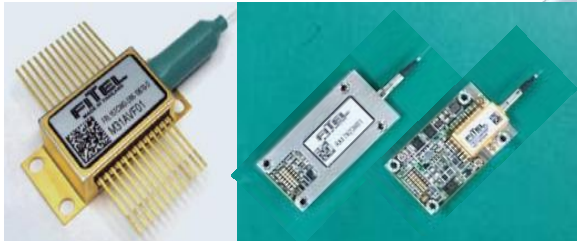


**Ultra-High Speed / Large Capacity**

Red: Product / Elemental Technology that supports 5G  
Blue: Use realized through 5G

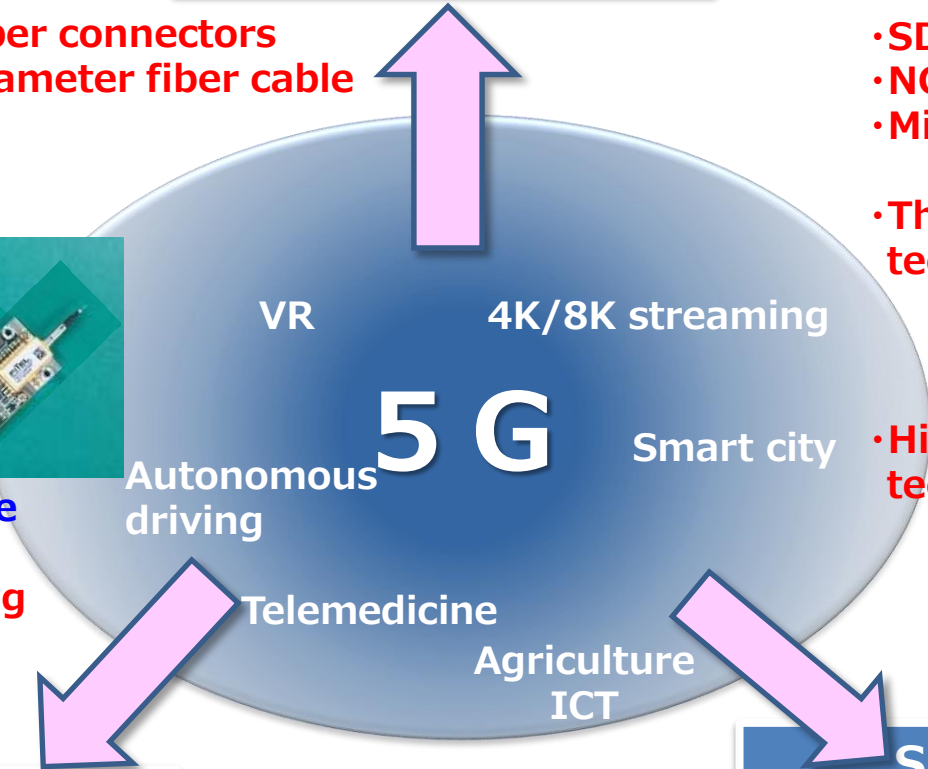
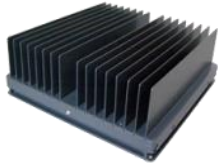
- High-Density Multi-fiber connectors
- High-Density small diameter fiber cable
- Micro ITLA

- SDN/NFV technology
- NG-PON2
- Microwave transmission



- High speed in-vehicle communications
- Peripheral monitoring radar (First Japanese manufacturer)

- Thermal management technology



- High frequency substrate technology (copper foil)



**Low Latency**

**Simultaneous Connection of Multiple Terminals**

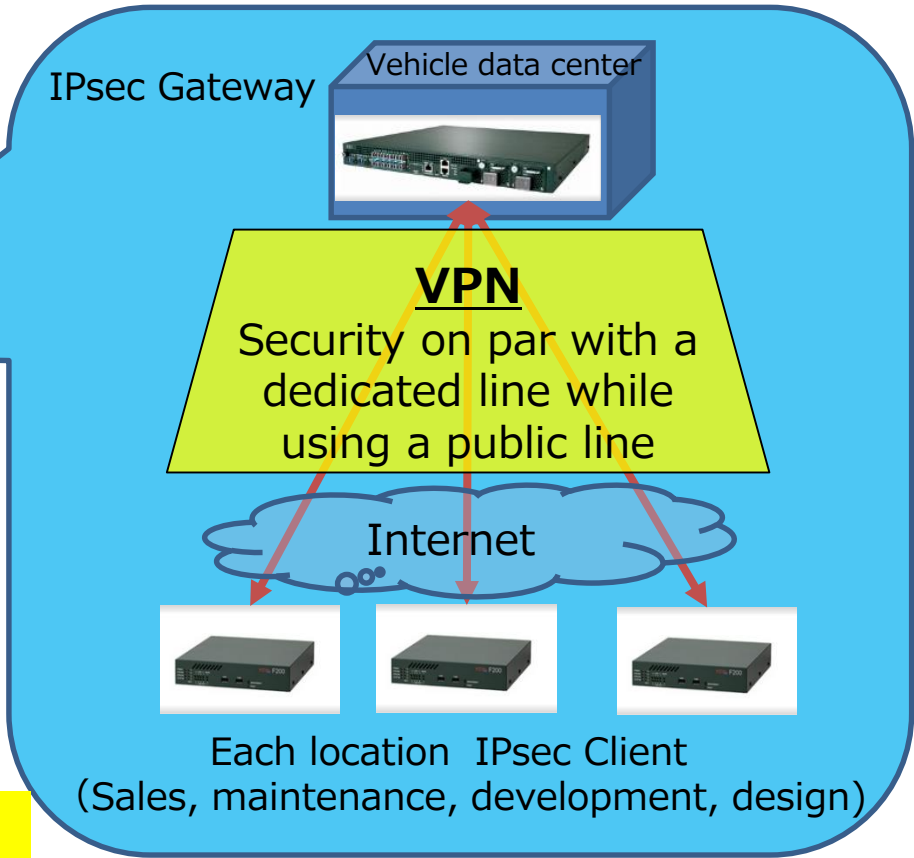
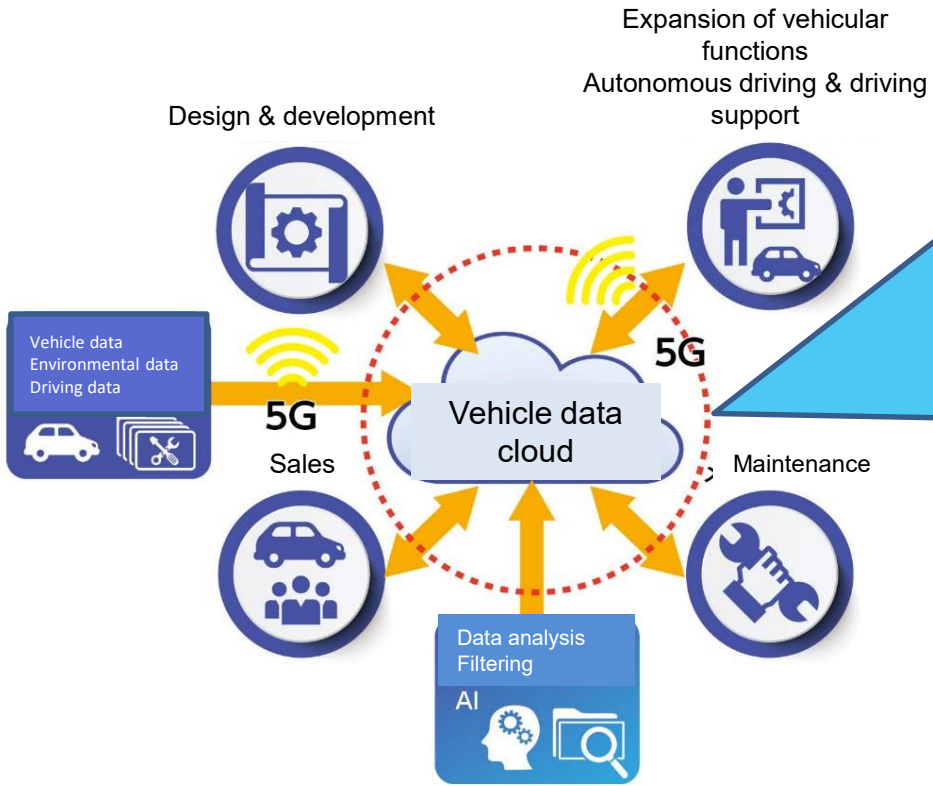
- Virtual router
- Dead band system for radio waves
- Next generation distribution automation system
- IoT system

- Optical line monitoring/control system



Multi-Mode Radar

# Activity for 5G "Safe connections"



Network technology that enables security on par with a dedicated line while using a public line

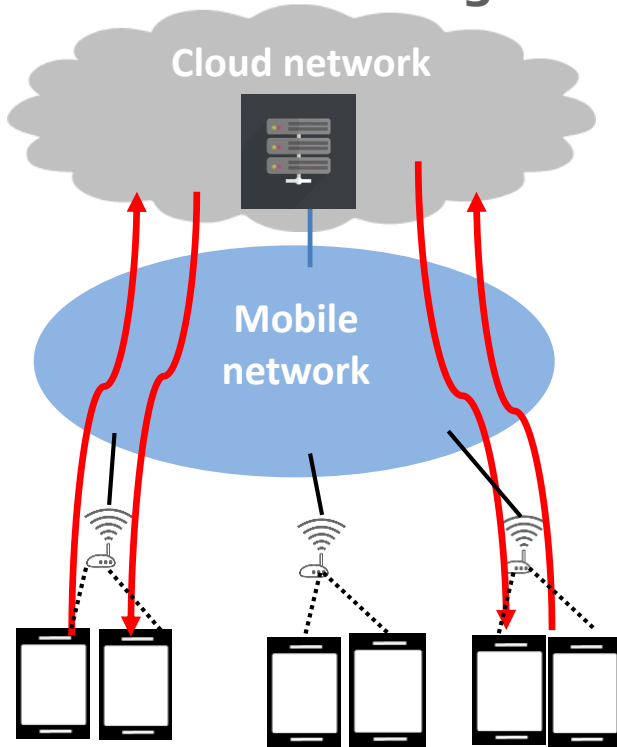


# Activity for 5G [MEC]

Shift from servers that have provided cloud-based services to mobile edge computing (MEC) located close to the user. We will further develop the virtualization technology (VPN) accumulated through many years in the router business and play a role in MEC

**[Present]**

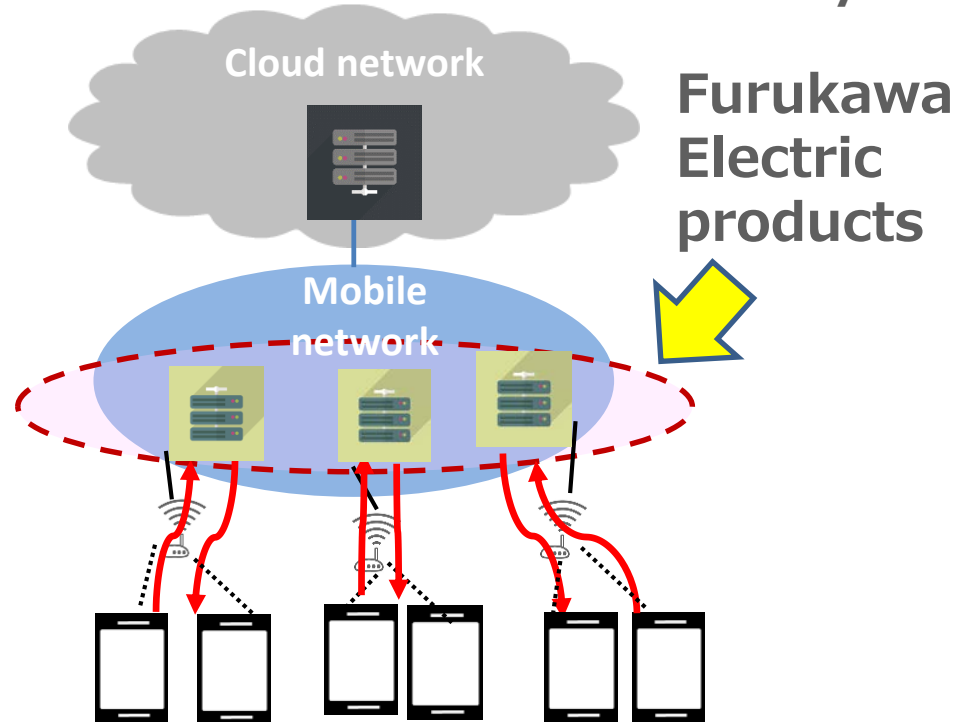
All data is processed in the cloud network = High latency



**[5G]**

Some of the data is processed close to the user = Low latency

**MEC**



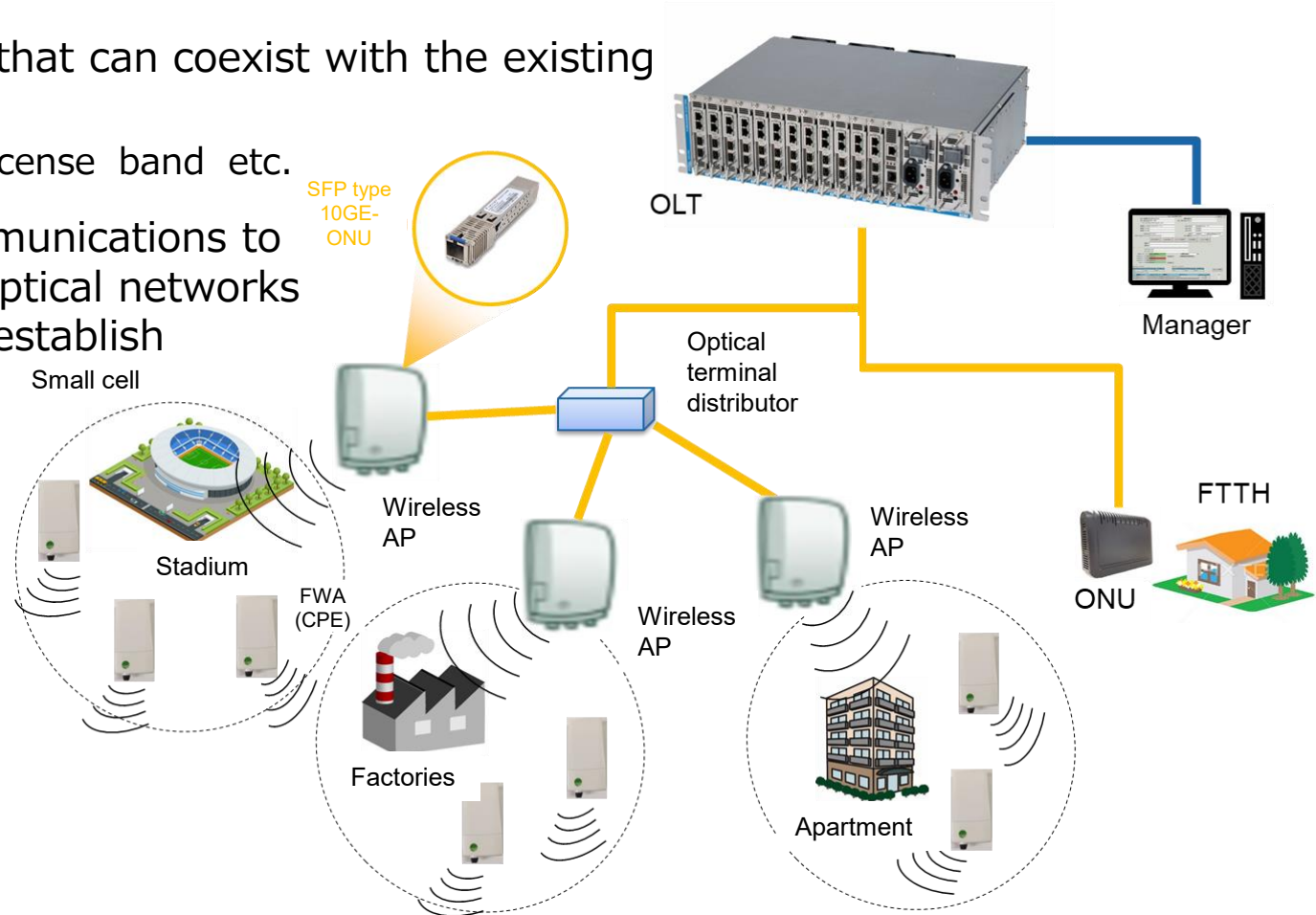
## Technology that enables connections with optical fiber and wireless

For 5G Fixed Wireless  
Access

- 5G access points that can coexist with the existing GE-PON

Local 5G, 60GHz unlicense band etc.

- Provide 10G communications to regions in which optical networks will be difficult to establish

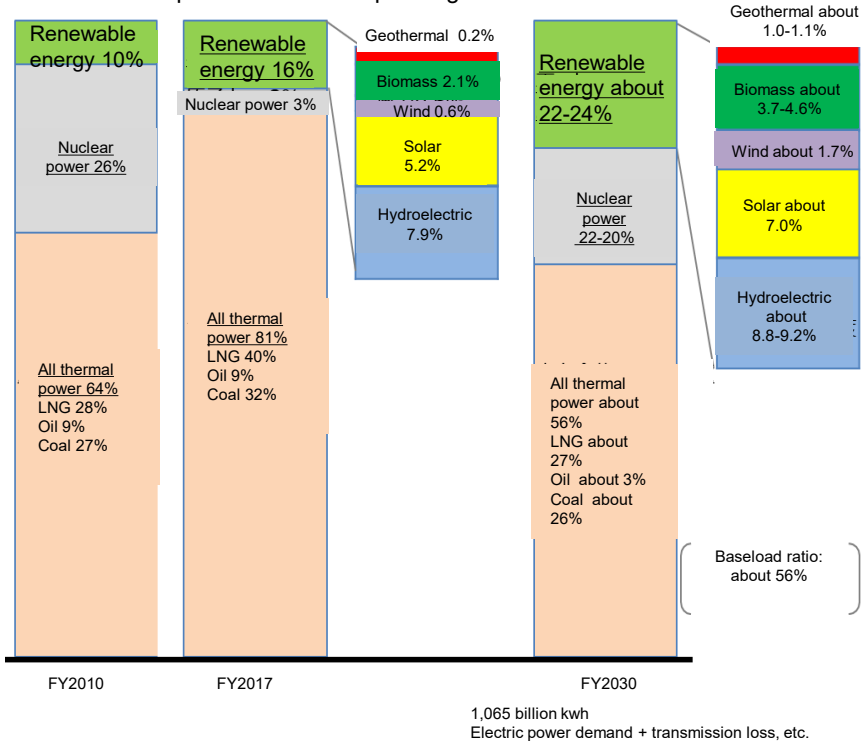


# Energy Infrastructure (Power Cable) FURUKAWA ELECTRIC

In Japan, based on the policy of “make renewable energy a main source of power”, it is necessary to ①prepare and reinforce the power lines in response to increasingly distributed electric power generation and ②strengthen the interconnections

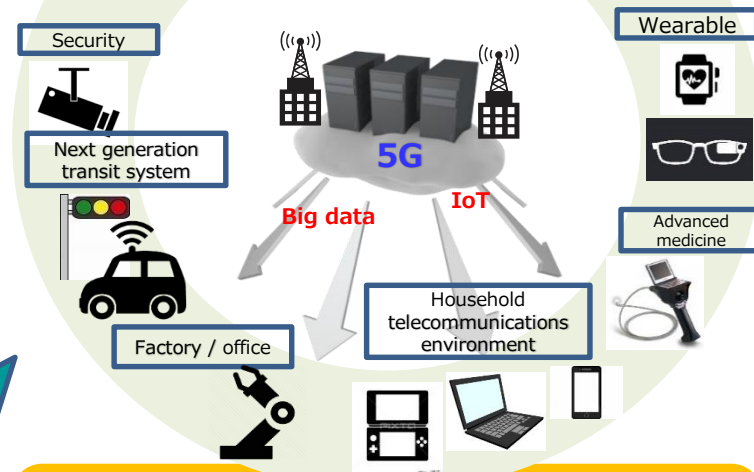
Directed towards Society 5.0, a stable supply of high quality electric power will be increasingly important

Composition of electric power generation



Renewable energy power sources will become more distributed

Through advances in 5G, the amount of energy used in the telecommunications field will increase



Stable supply of electric power will be essential

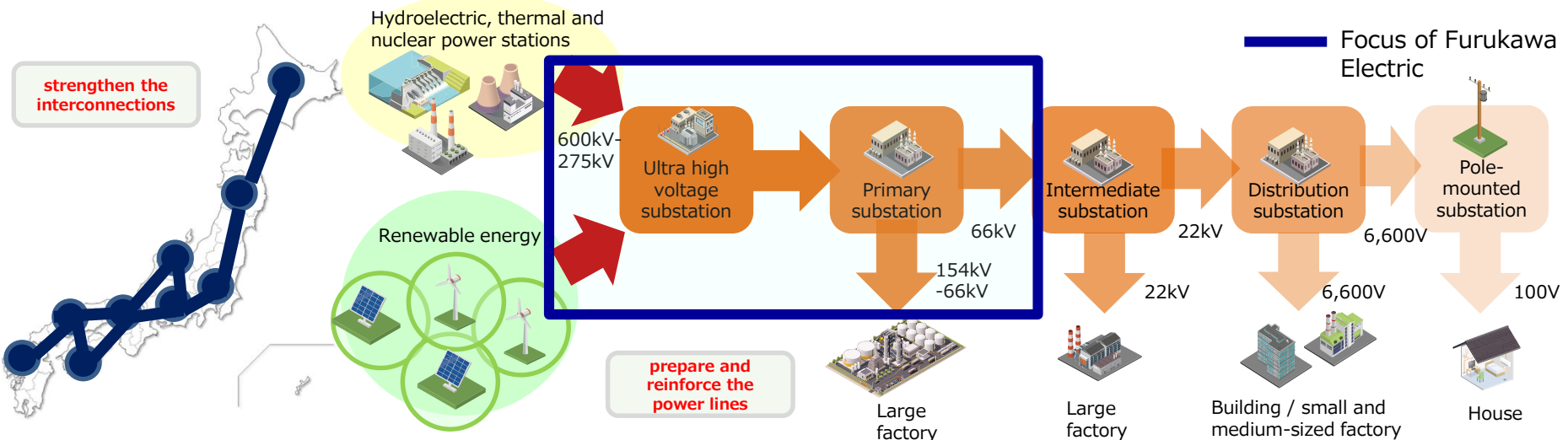
Source : Fundamental revision of the FIT system and reestablishment of the renewable energy policy, on April 22, 2019

# Energy Infrastructure (Power Cable) **FURUKAWA ELECTRIC**

**Narrow down the areas on which the company will focus, and direct efforts towards the areas in which the company's strengths can be utilized**

Contribute to the shift towards the future energy mix, such as making renewable energy a main power source, and become a main player in the ultra-high voltage domain in Asia

Target market	Concept	Status
Japan	Ultra-high voltage underground cable (backbone line projects such as the replacement of OF with CV)	Secure a stable foundation for the business
	Renewable energy (Submarine power cable, underground power cable)	Capture the robust demand for offshore wind power
Asia	Submarine power cable	Secure future growth opportunities



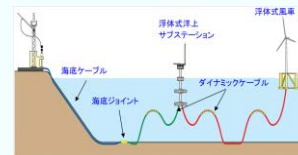
## Steady progress towards achieving profitability in FY2020

1. Respond to potential orders and secure orders
  - First large scale submarine commercial live power line in Japan (received order in 18/Q2, start installation in 19/5)
  - To begin, steadily capture the robust demand in Japan (solidify the foundation of the business)
2. Production system / personnel system
  - Revise the plant layout directed towards improving productivity and longer cable lengths (from 19/H2 renew and restore to operational status the facilities of the No. 2 works)
  - Currently strengthening installation capabilities
3. Development system
  - Develop next generation power cable, connectors, etc.

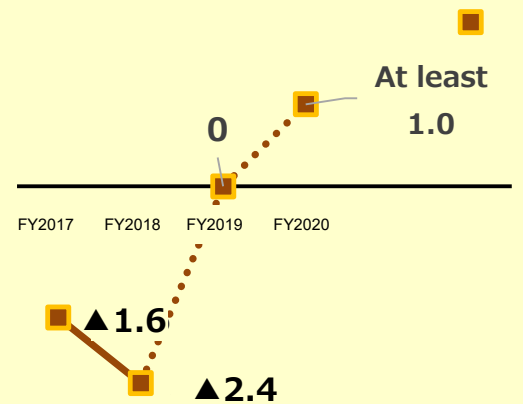
### Measures to strengthen the response to offshore wind power

Received an order from the England based Carbon Trust for the development of ultra-high voltage dynamic submarine cable for floating offshore wind plants

Concerning the “floating offshore wind power plants” that are expected to become more prevalent in the Asian market in the future, develop 130kV – 250kV ultra-high voltage dynamic submarine cable that will transmit electric power from the offshore substation to land. Aim to further contribute to the renewable energy field.

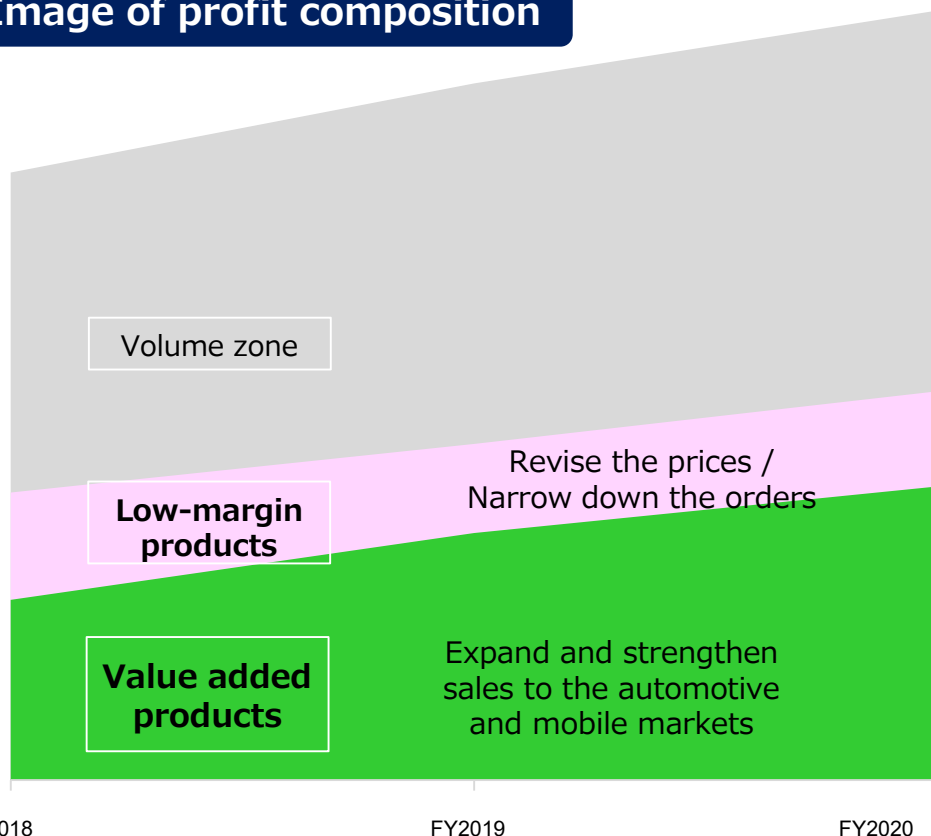


### Operating income trend in the Energy Infrastructure segment (JPY billion)

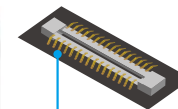


Along with increasing the ratio of value added products\*, steadily improve profits by revising the prices and narrowing down the orders for low-margin products

## Image of profit composition



## Operating income margin in the Copper & High Performance Material Products Div.



Ultra-small connectors for smartphones

Examples of resistance material applications – Battery state sensor

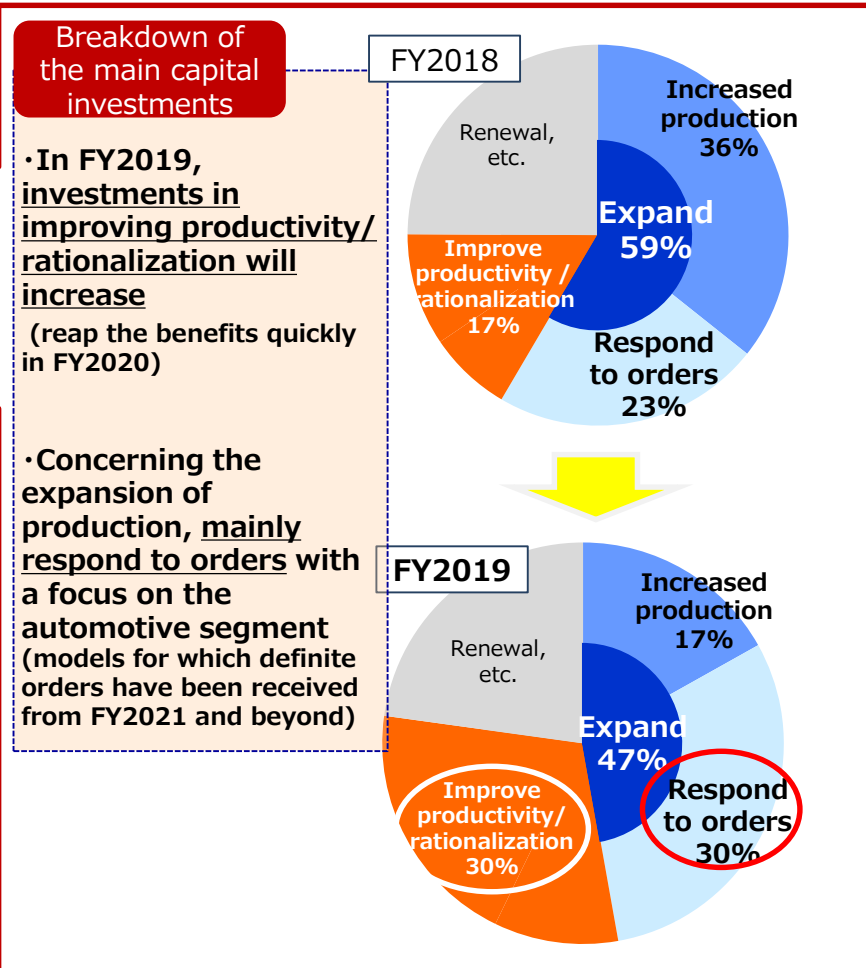
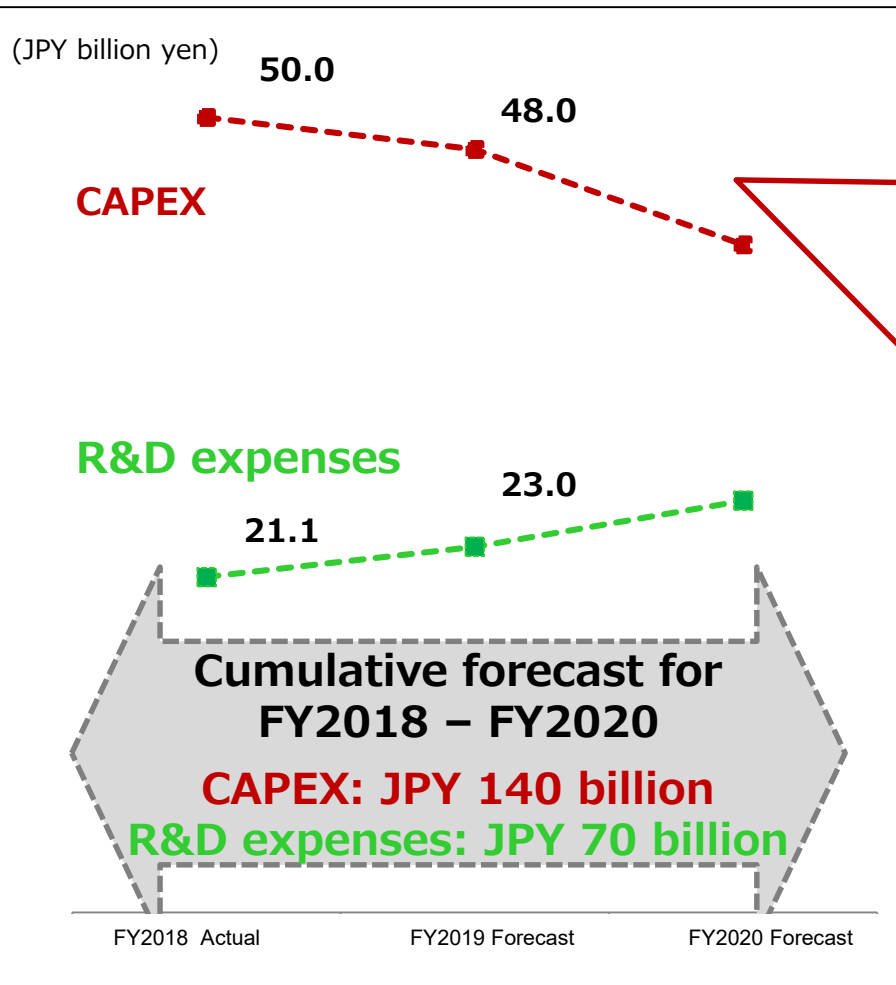
\* Value added products: Lead frame materials, connector materials, resistance materials, etc.

## 2. Future initiatives

### (4) Growth investments

# Growth investments

While leaving the investment forecast for FY2018-FY2020 unchanged, the capital investments this year will focus on improving productivity and rationalization





## 2. Future initiatives

**(5) Measures to strengthen the  
main businesses  
Automotive Products,  
Functional Products**

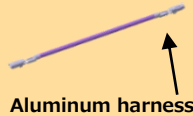
## Response to "CASE" through the strengths of aluminum wire harnesses and characteristic products

### <Wire harnesses>

- Respond to the requests for lighter weight, and further expand the orders



In addition to the 3 global vehicle models of 3 companies, received multiple orders for new models



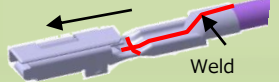
Aluminum harness

- Leader in aluminum harness technology and mass production.

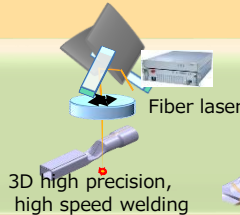
Currently working to make the α terminal (anti-corrosion terminal) the de facto standard

#### α terminal

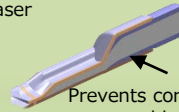
Furukawa Electric's original alloy



Weld



3D high precision, high speed welding



Prevents corrosion through the power cable coating crimp

### <Products>

- Currently expanding sales of the product line-up that will contribute to autonomous driving



- Peripheral monitoring radar: Also has non-automobile applications (construction equipment, robots, etc.)
- BSS\* : Realize new functions that support higher reliability power sources

\*BSS: Battery State Sensor

- Strengthen the high voltage products

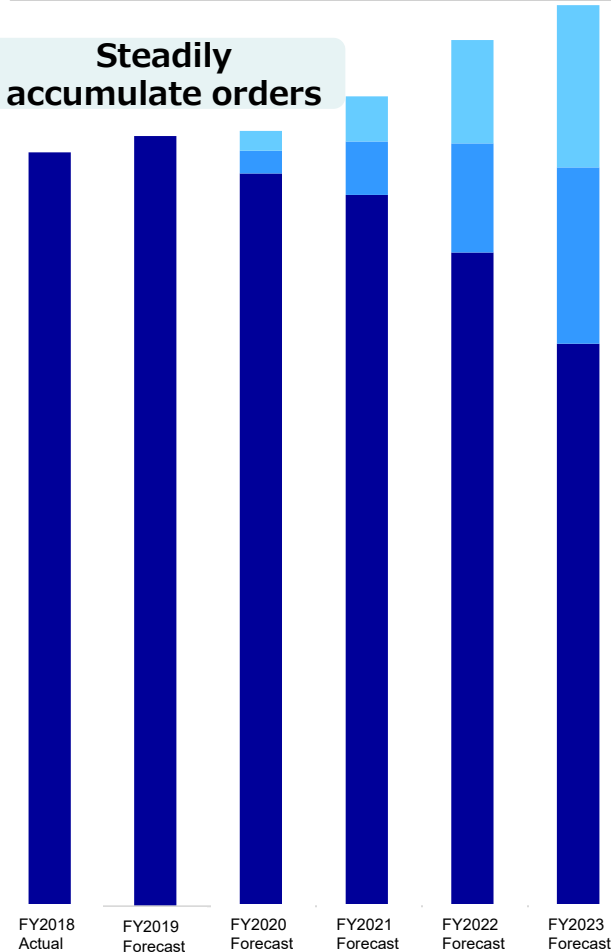
Capture the growing demand for vehicle electrification in China and India



- Strengthen the presence in India by making MFE a consolidated subsidiary

### Status of Automotive Products net sales and orders

Steadily accumulate orders

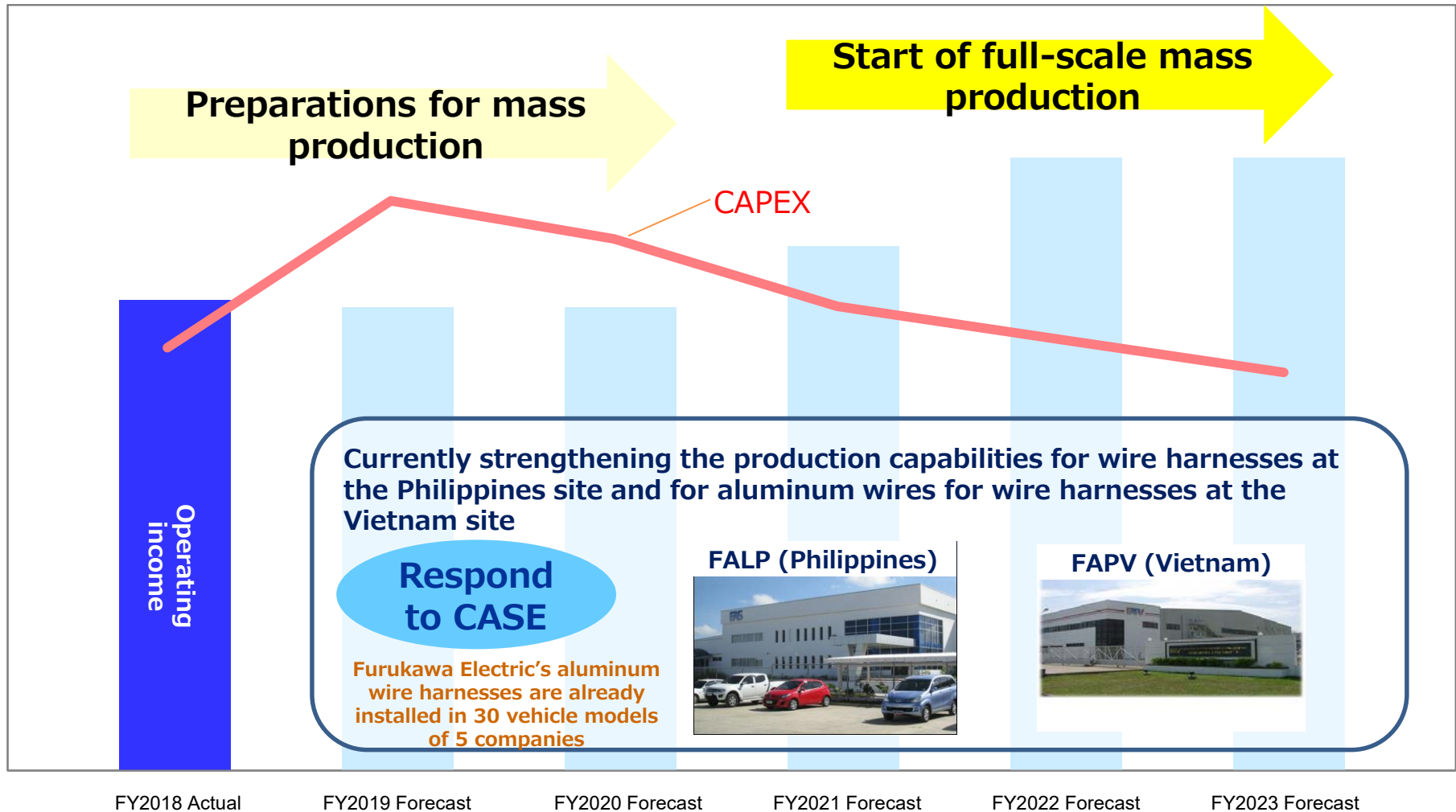


Making an approach

Highly probable order

Order received

Recently, depreciation expenses have increased as a result of the advanced investments, but large profits will be reaped from FY2022 when full-scale mass production begins and the depreciation expenses decrease



# Functional Products

## - Shift to a division structure

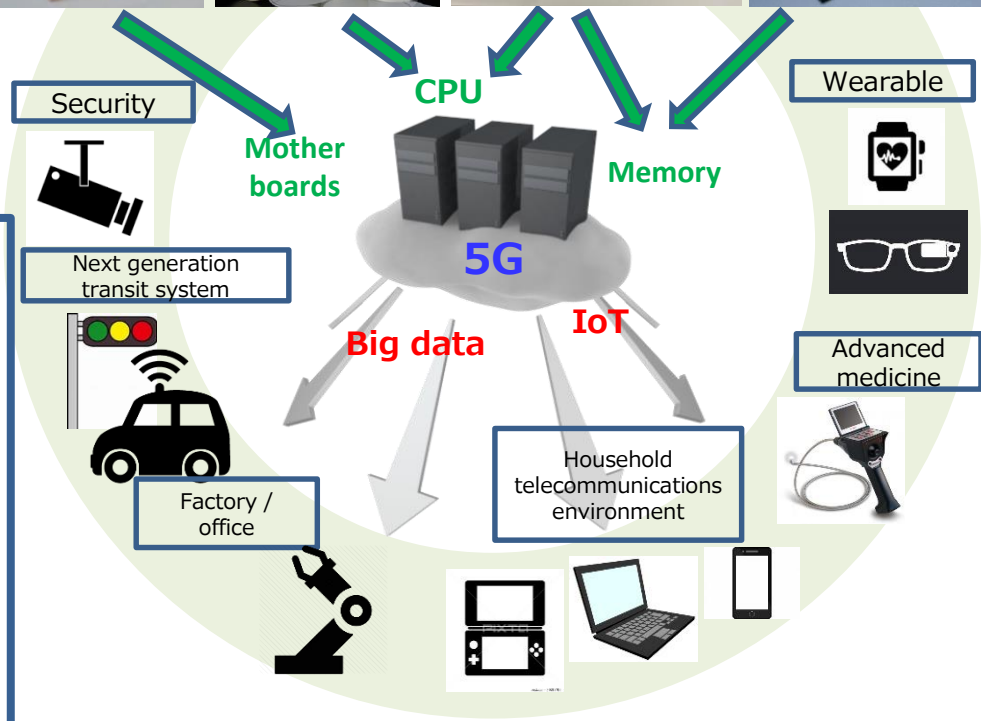
Directed towards the 5G society, data center demand will continue to expand  
 Strengthen the organization aimed at creating synergies in the areas of  
 technology development and marketing

- Communications Solutions Div.
- Energy Infrastructure Div.
- Electronics & Automotive System Div.

**19/4 - Functional Products Div.** (-19/3 Functional Products Department)



In the rapidly changing data center and smartphone markets, organize the common market information within the division.  
 Along with analyzing and sharing the market trends from a macro perspective, based on specific customer information, work with the customer to co-create, and aim to always provide solutions.



## 2. Future initiatives

### (6) Initiatives to strengthen ESG

With the aim of increasing corporate value over the medium to long-term, promote proactive initiatives

## ■ Establishment of the Corporate Sustainability Office within the Administration & CSR Div.

– With the aim of realizing management centered on ESG, create a value creation story that combines the group vision and Mid-term Management Plan, and promote a portfolio and business strategy based on this story together with the related divisions

## G Strengthen corporate governance

– Revise the Board of Directors composition:

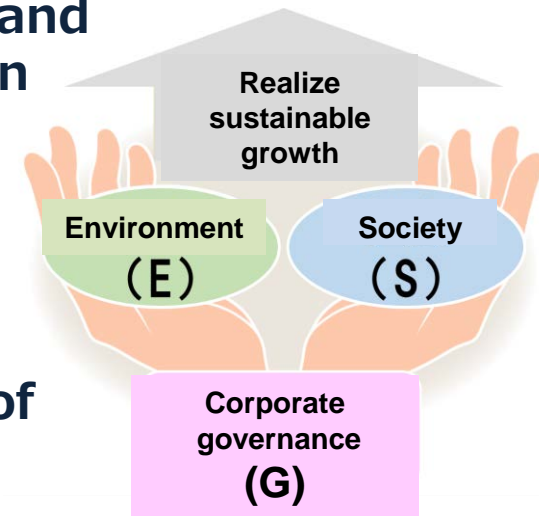
Strengthen the independence and diversity of the outside Directors (5 persons)

○ Independent outside Directors

2018: 3 ⇒ 2019 plan\*: 5 (all independent outside Directors)

○ Appoint a female outside Director (plan to do in FY2019\*)

\*Decide at the shareholders' meeting to be held on June 27, 2019



## E Environmental initiatives

Furukawa Electric's **renewable energy usage ratio is 17%**  
(Percentage of renewable energy in the use amount of electric power at group companies in Japan in FY2018)

### ■ Expanded use of clean energy

**Solar power** (@Copper Foil Div., Nikko City in Tochigi Prefecture)

As part of the initiatives to prevent global warming and with the aim of reducing CO2 emissions, install solar power generation equipment

Started generating power from February 2019. Power generation capacity: 650,000kWh/year (expected)



#### <Main sites working on reducing oxygen>

(Under consideration)  
Solar power: At the Mie Works etc., reduce the carbon footprint of automotive products



Hydroelectric power: Using water from Lake Chuzenji, the Nikko Works in manufacturing copper strip products with renewable energy



Fuel conversion: At the Mie Works, converting from LPG to the more environmentally friendly LNG



## S Promote diversity and work style reform

– Implement various initiatives that contribute to the acceptance of diverse human resources, work styles and values

- ✓ Selected as a 2019 Health and Productivity Stock under the program of the Ministry of Economy, Trade and Industry & Tokyo Stock Exchange; Only selected in non-ferrous metal company (February 2019)
- ✓ Selected as a White 500 company with excellent health and productivity management in 2019 for the 3<sup>rd</sup> year in a row (February 2019)
- ✓ Received the highest “Eruboshi” certification from the Minister of the Ministry of Health, Labour and Welfare (extended) (from April 2016)

TOPICS ✓

## 3. Group Vision 2030

- Towards accelerating the creation of new businesses



Formulate a group vision that clarifies the time frame and business domains, incorporate it into the next Mid-term Management Plan, and aim to become a company that has a presence

In order to “build a sustainable world ” and “make people’s life safe, peaceful and rewarding”, Furukawa Electric Group will create solutions for the new generation of global infrastructure combining information, energy and mobility.



## Initiatives to create “strong businesses” in the overlapping areas

- 1 . Future Infrastructure Technology Center (February 2019)
- 2 . Active use of open innovation

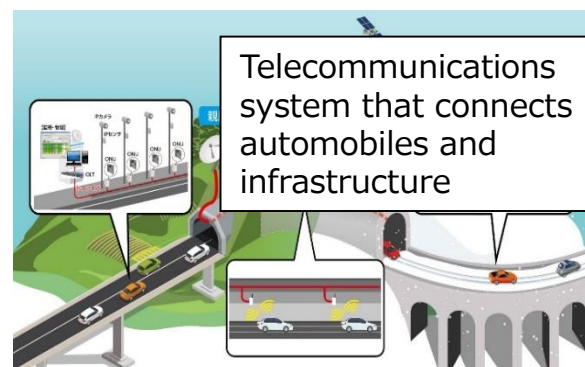
# Directed towards the realization of Vision 2030<sup>①</sup>

## Future Infrastructure Technology Center

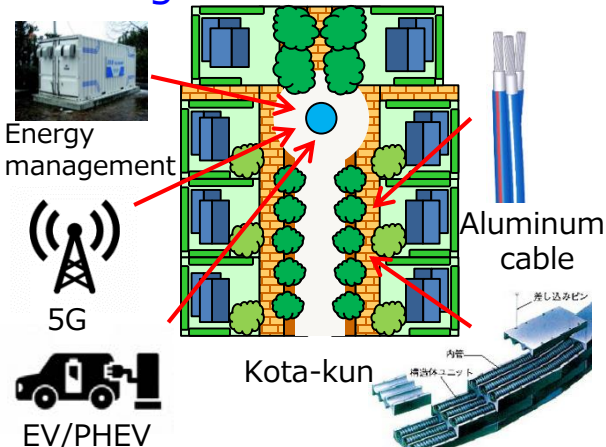
In order to flesh out **Vision 2030**, created an organization that will aim to invent "next generation infrastructure" that combines the areas of information, energy and mobility and implement it within society.

For example, through telecommunications systems (utilizing 5G) that support next generation mobility, underground cable technology that connects people and town planning and wireless power transmission technology, we are working to contribute to the **creation of a safe, peaceful and rewarding life.**

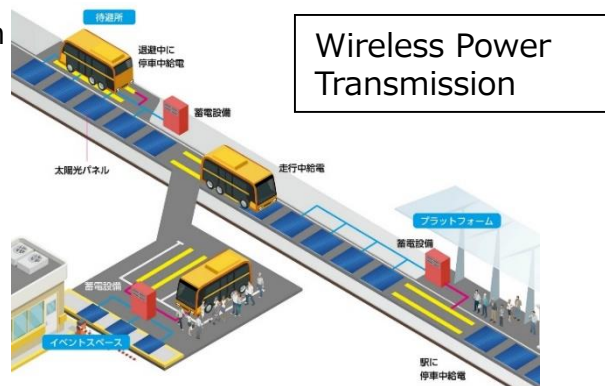
### ● Information x mobility



### ● Town planning / Underground Utilities



### ● Energy x mobility



## Reopen the renovated open laboratory Fun Lab® in June 2019 — Actively promote initiatives for open innovation aimed at accelerating the creation of new businesses

(Objective / Status of use)

- Exhibit and introduce the technological domains of Furukawa Electric. Established in August 2016 as an open laboratory for sharing information that will lead to new co-creation with the visitors and for searching out opportunities for partnerships such as joint development
- Various people visited the laboratory, including from corporations, universities and public research institutions. Technology and ideas exceeding the current business domains were combined, and vigorous discussions aimed at realizing the creation of new business and R&D in new domains were held with a total of over 1,200 people in 320 groups
  - ⇒ Also brought about benefits such as the development of new businesses through joint development with other corporations and the establishment of new programs in partnership with educational institutions

(Concept)

- Place for generating open innovation through the processes of “knowledge sharing”, “sympathizing” and “co-creation”
- Through communication directed towards realizing a rich society, create new innovation



Thank you very much  
for your attention.

***Bound to***  ***Innovate***