

**Industrial
Products
Business**

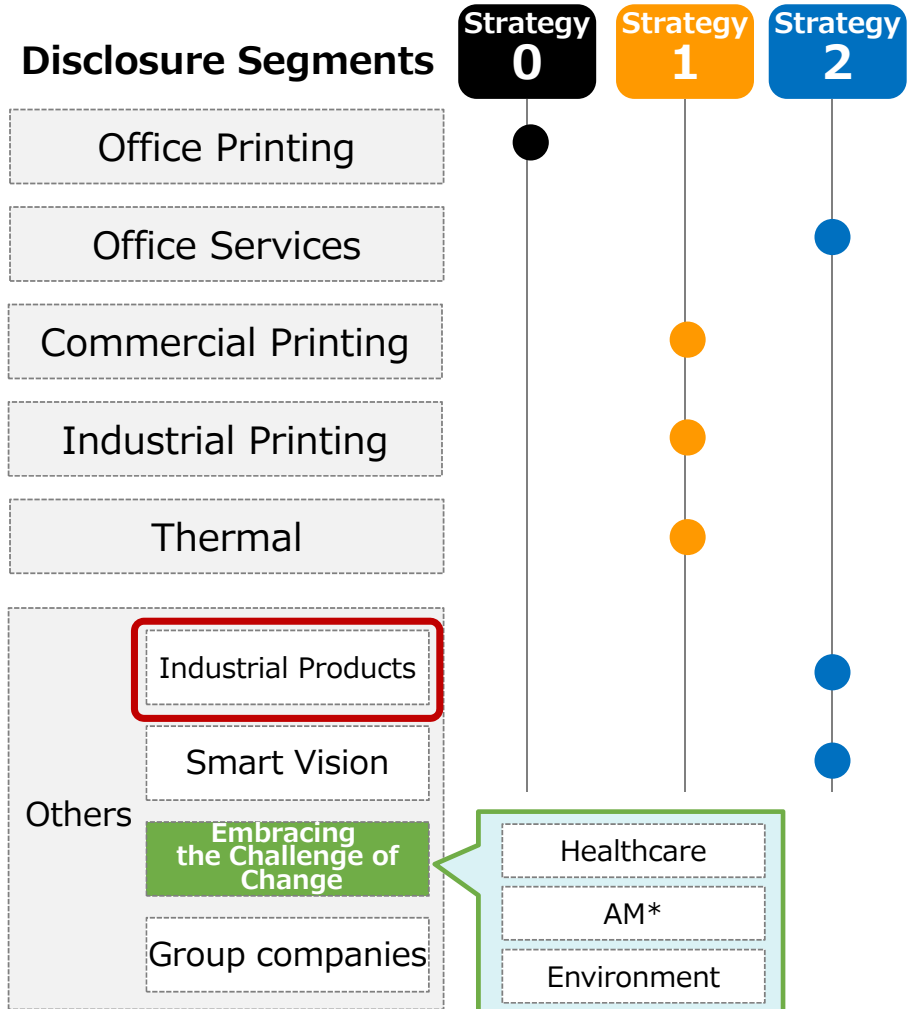
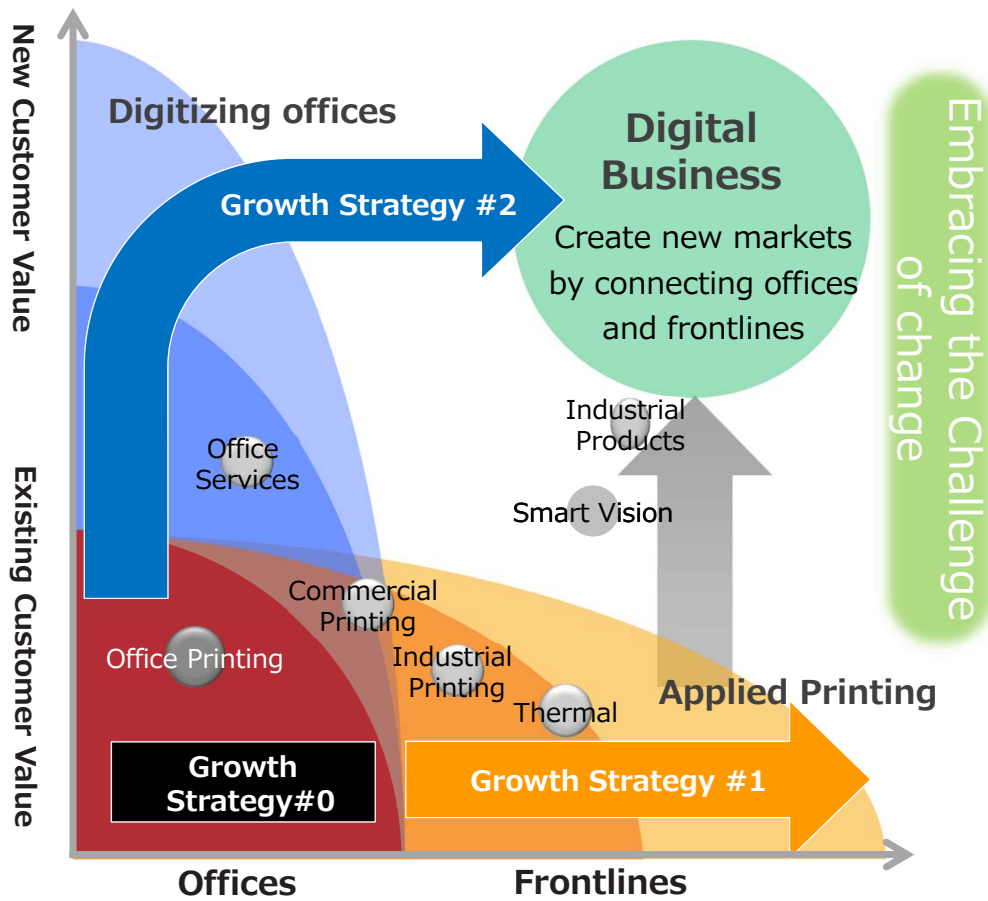
April 11, 2019

Yasutomo Mori

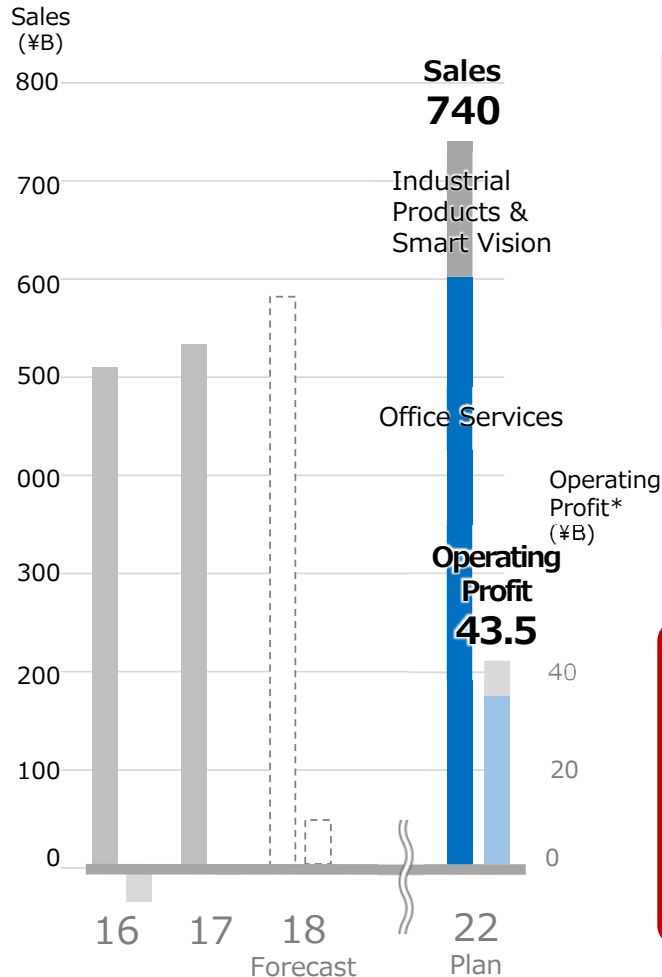
**General Manager of
Industrial Products Business Group**

Ricoh Company, Ltd.

RICOH Ignite Growth Strategy



*AM: Additive Manufacturing



*: excluding extraordinary costs

Growth Strategy #2 toward FY2022

Expand Office Services business earnings and create new businesses

Office Services:

Reinforce our structure and invest extensively to expand operations and create a business model that produces stable earnings
Digitizing frontlines : RICOH360 data service

Industrial Products:

Combine optical technologies that Ricoh has amassed over the years with Internet of Things, artificial intelligence, and other advanced technologies and visualize information through information conversion from data recognition processes to enhance the productivity of societies

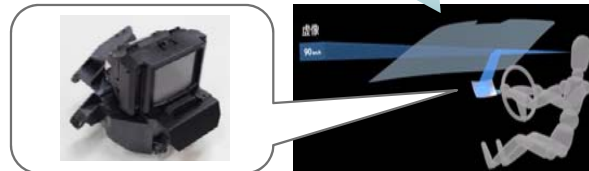
Industrial Products Business Overview (Products)

Industrial Products Business

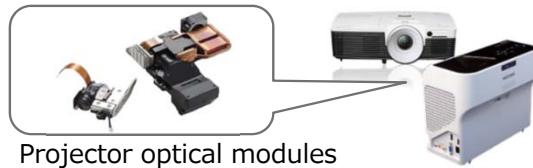
Supplying modules and devices by leveraging our prowess in miniaturization, precision machining, and digital technologies amassed in cameras, watches, and MFPs, focusing on automakers and industrial equipment manufacturers

Optical modules

Automotive

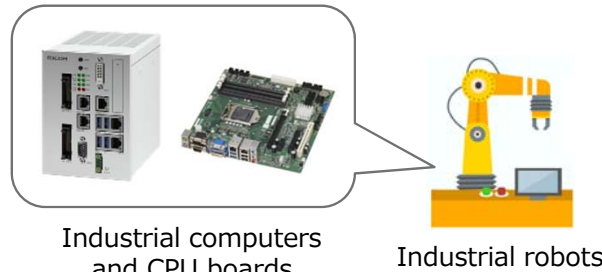


Projection



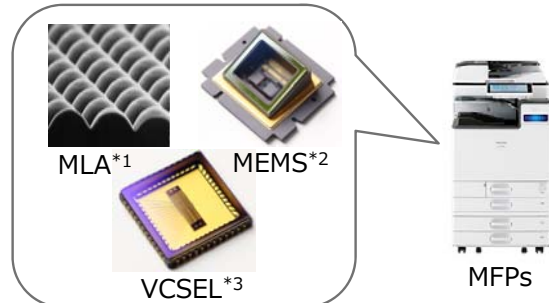
Industrial smart systems

Industrial computers



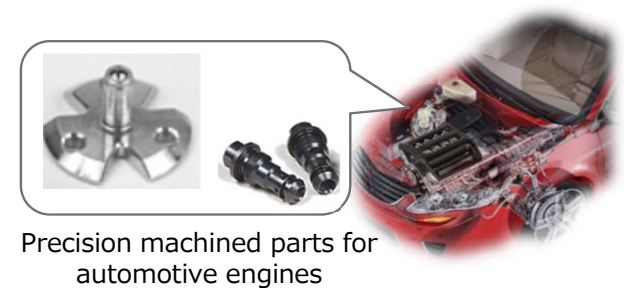
Industrial robots

Key optical devices

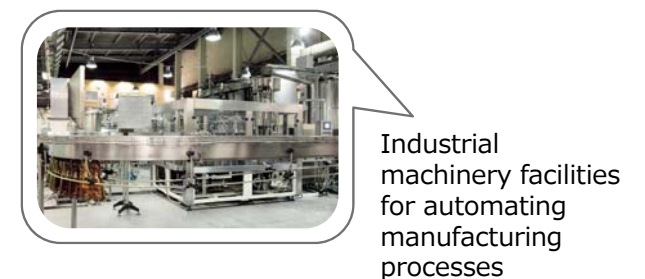


Precision equipment parts and industrial equipment

Precision equipment parts



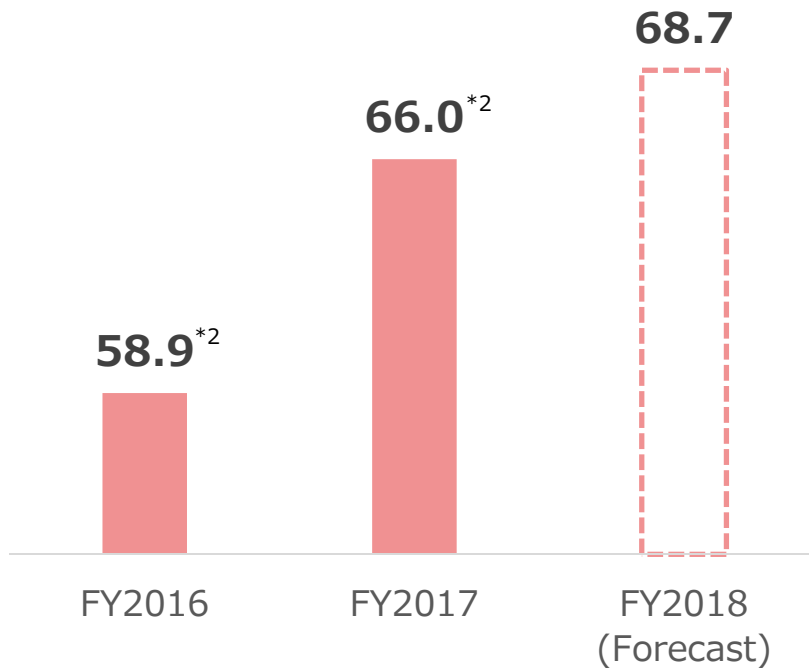
Industrial equipment



*1: Microlens Array *2: Micro Electro Mechanical Systems *3: Vertical Cavity Surface Emitting Laser

Sales*1

(Billions of yen)



*1 : Sales include Ricoh-group sales
*2 : Excluding Sales of Ricoh Electronic Devices

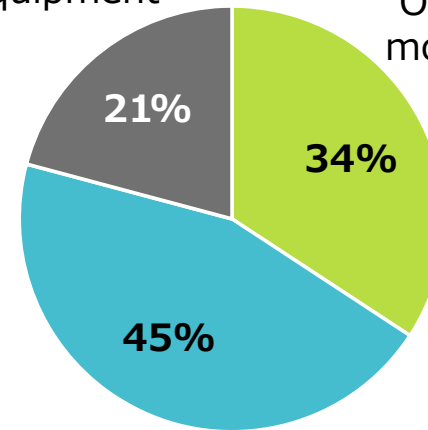
Sales composition by business

FY2016

FY2018
(Forecast)

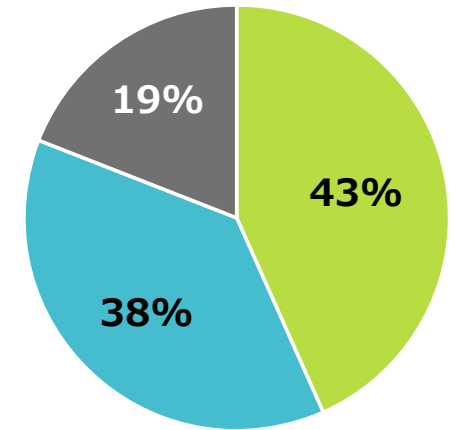
Precision equipment
parts and industrial
equipment

Optical
modules



Industrial
smart systems

¥58.9 billion



¥68.7 billion

Optical Modules Business (Review)

	Market trends	Core customers	Ricoh's strengths	Initiatives and results
Stereo cameras	<ul style="list-style-type: none"> Growing adoption of crash-prevention systems and rising demand for stereo cameras <p>(Billions of yen) Global auto stereo camera market forecast*1</p> <p>FY2016 FY2017 FY2018 FY2019 FY2020 FY2021 FY2022</p>	Automotive parts manufacturers	<ul style="list-style-type: none"> Distance measurement technology (parallax calculation algorithm) that can accurately measure small obstacles Three-dimensional image recognition and data processing technologies that can swiftly detect road surface irregularities 	<ul style="list-style-type: none"> Launched the world's smallest*2 vehicular stereo camera Lead*3 the domestic market for installations on compact cars, accounting for 24% of unit sales Created world's first collision-avoiding automatic steering system (installed on premium Japanese car models)
Head-up displays	<ul style="list-style-type: none"> Installation rate to keep rising Displays to become larger <p>(Billions of yen) Global head-up display market forecast*4</p> <p>FY2016 FY2017 FY2018 FY2019 FY2020 FY2021 FY2022</p>	Car manufacturers	<ul style="list-style-type: none"> Developing vehicular laser head-up display units free of postcard-sized*5 rectangles and featuring high contrast, and wide color gamut Laser scanning method for large displays 	<ul style="list-style-type: none"> Head-up displays materialized with Ricoh's key devices Micro Electro Mechanical Systems and (MEMs and Micro Lens Arrays) <ul style="list-style-type: none"> → Collaborating with automakers to develop world's first laser head-up display
Projectors	<ul style="list-style-type: none"> Projector market flat overall <ul style="list-style-type: none"> → Business and education markets shrinking → Consumer and industrial demand growing 	Projector manufacturers	<ul style="list-style-type: none"> Ultra short-focus and high-precision molding technologies to create high-quality lens units with short focal lengths 	<ul style="list-style-type: none"> Supply bright, high-definition lenses to 13 top projector manufacturers No.1 in projector lens market, with a share of 23%*6

*1: Techno Systems Research survey (2018) *2: From Ricoh research as of April 2017 *3: Ricoh estimate for domestic compact car unit sales in 2018 *4: Ricoh estimate based on Techno Systems Research unit forecasts (large displays with horizontal viewing angles exceeding 7%) *5: LCD head-up displays with backlight leaks reflects on screen shapes, seen mainly in low-light conditions *6: Techno Systems Research survey in 2017

Optical Modules Business (Business Strategies)



Key business strategy	Develop and deploy products delivering original customer value by harnessing our strengths in optical technology	FY2022 sales target: ¥48 billion
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	Domain strategy	Measures	KPI (FY2022)	Results stance
Stereo cameras	<ul style="list-style-type: none"> ● Deploy in upmarket models ● Expand in overseas markets ● Use in in-vehicle cameras 	<ul style="list-style-type: none"> ● Propose new products for Japanese and European premium cars ● Jointly promote with Chinese auto parts manufacturers ● Jointly develop automotive seat sensors with major European player IEE*1 	<ul style="list-style-type: none"> ● Supply to more than 2 new customers * Business scale exceeding ¥20 billion (FY2018 result: ¥11 billion) 	Further expanding earnings
Head-up displays	<ul style="list-style-type: none"> ● Establish new position in large head-up displays with high contrast and wide color gamut displays 	<ul style="list-style-type: none"> ● Agree on specifications with joint developers and commercialize ● Supply samples to customers other than above and globally market with demo cars 	<ul style="list-style-type: none"> ● Supply to 1 current codeveloper ● Secure more than 2 new customers 	Make forward development investments
Projectors	<ul style="list-style-type: none"> ● Leverage strengths in ultra short-throw projectors to cultivate new consumer and industrial markets 	<ul style="list-style-type: none"> ● Bolster laser TV*2 lens lineup ● Strengthen embedded projector proposals in signage field*3 	<ul style="list-style-type: none"> ● Laser TV lens unit sales: More than 500,000 ● Industrial embedded projector orders: From more than 10 companies 	Secure stable earnings

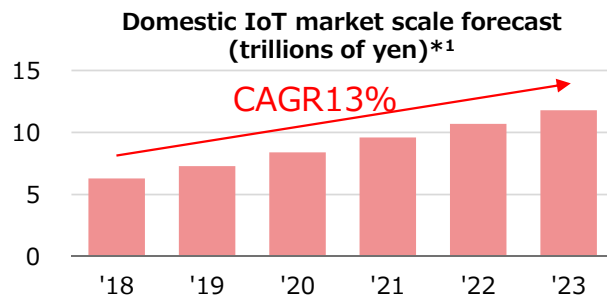
*1: IEE S.A. is a leading automotive sensor company based in Luxembourg *2: Large-screen televisions employing projector technology *3: Including guidance displays for passage walls and floors

Industrial Smart Systems Business



Market trends	Core customers	Ricoh's strengths	Initiatives and results
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- Growing need for embedded controllers and sensors for IoT and AI applications



Industrial machinery manufacturers (including of robots, machine tools, measuring equipment, and cash machines)

- High quality and stable supplies of controllers
- Advanced data analysis technology employing sensing devices and digital data processing technology

- Long-term stable supply of top-quality products for robots, medical devices, financial equipment, and other platforms for which operational reliability is essential
⇒ No. 1 in domestic industrial embedded controller market, with 22.3% share*2

Key business strategy	Develop and market products delivering new value (IoT, artificial intelligence, and advanced sensing technology)	FY2022 sales target: ¥35 billion
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Domain strategy	Measures	KPI (FY2022)	Initiatives and results
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- Strengthen sensing business in industrial fields requiring site digitization

- Market launches: Sensing business example
 - Machine tool vibration diagnostics system
 - Advanced sensor VCSEL lighting
 - CowTalk cattle management system

Businesses from new product lines: More than 3 businesses (each worth ¥3 billion)

Expand sales by launching new products in new domains

*1: From IDC Japan press release issued on March 11, 2019, titled, Announcement of Forecasts by Domestic IoT usage cases (applications) and industrial sectors
*2: 2018 Fuji Keizai survey of unit sales numbers
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Precision Equipment Parts and Industrial Equipment Business



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Market trends	Core customers	Ricoh's strengths	Initiatives and results
<ul style="list-style-type: none"> Sales of vehicles with internal combustion engines (mainly gasoline and diesel models) should keep rising, necessitating better environmental performances Lithium-ion battery market, principally for electric and hybrid vehicles, should expand significantly 	<p>Automotive parts manufacturers</p> <p>Electrical machinery manufacturers</p>	<ul style="list-style-type: none"> Precision machining technology for materials that are hard to cut and shape Automated facilities development and integration Image inspection technology 	<ul style="list-style-type: none"> Expanding business in automotive engine precision machined parts for which high quality and stable supplies are vital Supplying labor-saving automated production and image inspection equipment <ul style="list-style-type: none"> Expanding orders for brisk lithium-ion battery market

Key business strategy	Bolster existing customer base and expand business in new growth markets, centering on automotive industry	FY2022 sales target: ¥17 billion
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Domain strategy	Measures	KPI (FY2022)	Results stance
<ul style="list-style-type: none"> Expand orders for environmental parts (including for clean diesel and hybrid, fuel cell, plug-in hybrid, and electric vehicles) Broaden visual inspections to encompass the painting and other markets in which inspections are typically with the naked eye 	<ul style="list-style-type: none"> Proposal activities to secure positions in new areas (fuel cell and electric vehicles) Improve defect detection capabilities of time-correlated visual inspection equipment 	Sales in new domains: ¥2 billion increase per year in FY2022	Increase earnings through business expansion

FY2022 Goals

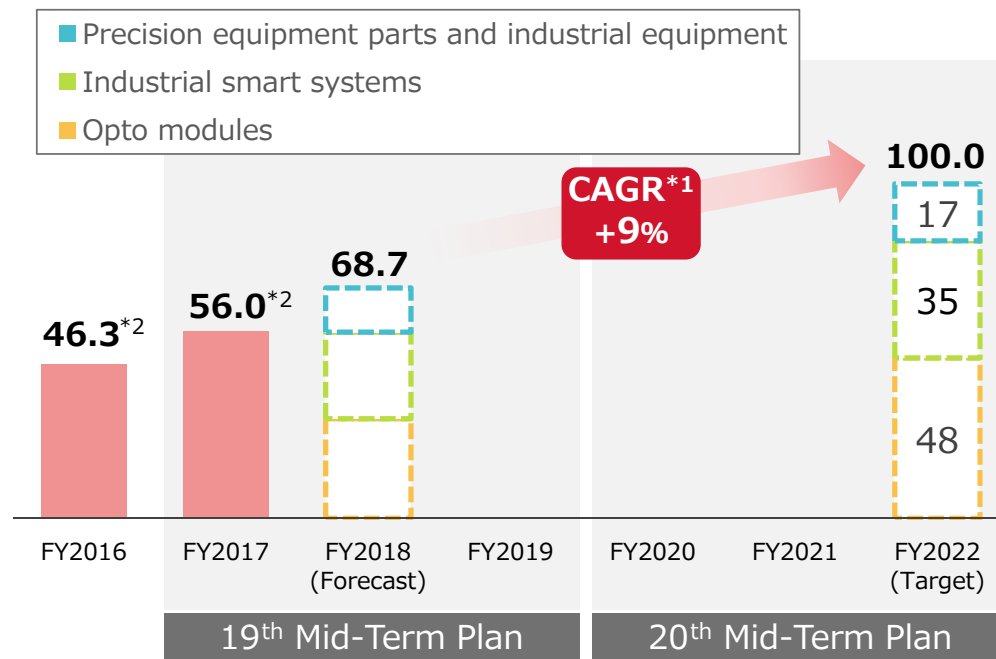
FY2022 Targets

Sales **¥100 billion**
Operating margin **Around 5%**

<Key strategy>

Improve social productivity by visualizing information through information converted from data recognition, integrating Ricoh's optical technologies with IoT, artificial intelligence, sensors, and other advanced technologies

Sales *1 (Billions of yen)



*1 : Sales include Ricoh-group sales

*2 : From FY2016 to FY2022

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Forward-Looking Statements

The plans, prospects, strategies and other statements, except for the historical events, mentioned in this material are forward-looking statements with respect to future events and business results. Those statements were made based on the judgment of Ricoh's Directors from the information that is now obtainable. Actual results may differ materially from those projected or implied in such forward-looking statements and from any historical trends. Please refrain from judging only from these forward-looking statements with respect to future events and business results. The following important factors, without limiting the generality of the foregoing, could affect future results and could cause those results to differ materially from those expressed in the forward-looking statements:

- a. General economic conditions and business trend
- b. Exchange rates and their fluctuations
- c. Rapid technological innovation
- d. Uncertainty as to Ricoh's ability to continue to design, develop, produce and market products and services that achieve market acceptance in hot competitive market

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**Note: In this document, fiscal years are defined as follows:
FY2018 = Fiscal year ended March 31, 2019, etc.**