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Your Vision, Our Future

Business Process Reengineering Project 2: Innovative Technology Development

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Agenda

- **Challenges to current situation, risk and environment change**
- **R&D Activity Examples**
- **Innovation Risk Management**

1. Priority Issues and Response Measures for R&D Group

- **Improve R&D efficiency**

(Ratio of R&D expenditures to revenue 11%* (FY2017))

* Product development expenditures

- **Address risks arising from technological innovation (AI, robotics, ICT)**



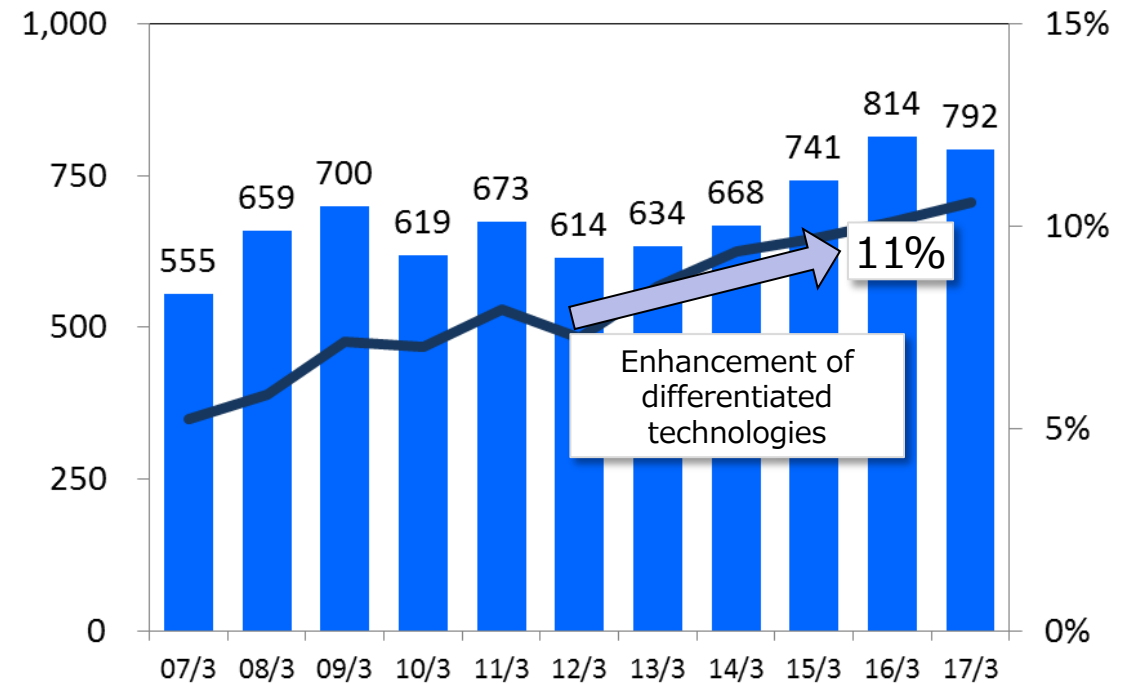
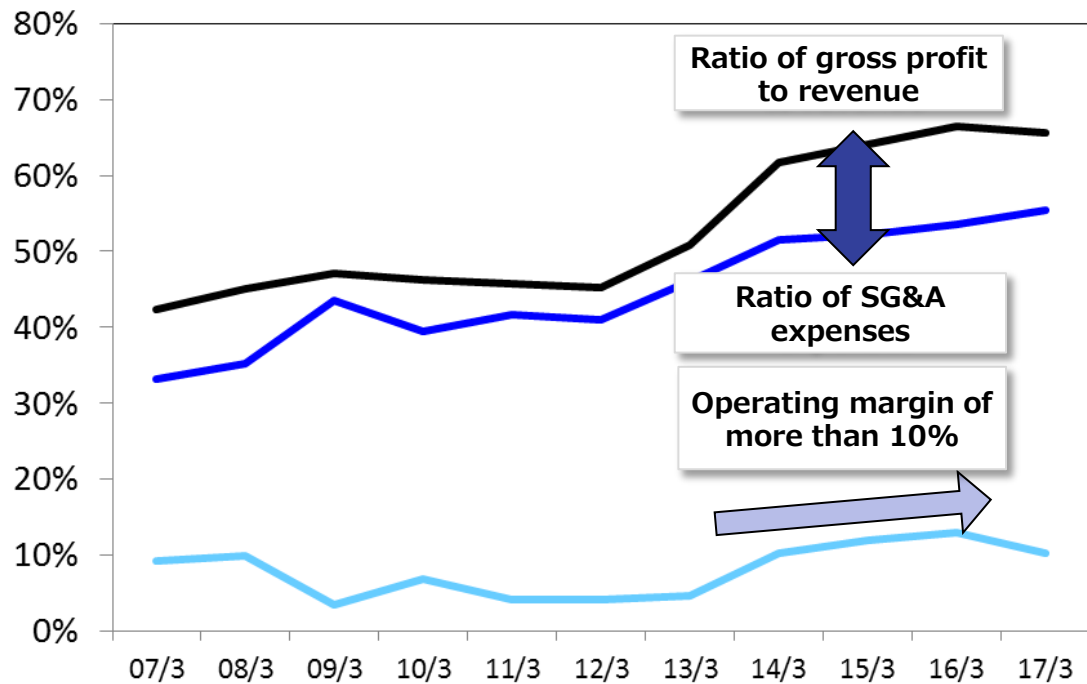
- **Business Process Reengineering (BPR) Project**

Prioritization of R&D themes and standardization of R&D processes

- **Innovation Promotion System**

Identify risks with potential to impede future growth and advance initiatives for transforming risks into opportunities

2. Ratios of SG&A Expenses and R&D Expenditures to Revenue



— Ratio of gross profit to revenue (%)
— Ratio of SG&A expenses to revenue (%)
— Operating margin (%)

■ R&D expenditures (¥ Billion, Left)
— Ratio of R&D expenditures to revenue (% , Right)

- Balanced ratios of gross profit and SG&A expenses to revenue over long-term range while achieving operating margin of more than 10%
- Increased ratio of R&D expenditures to revenue in conjunction with enhancement of differentiated technologies

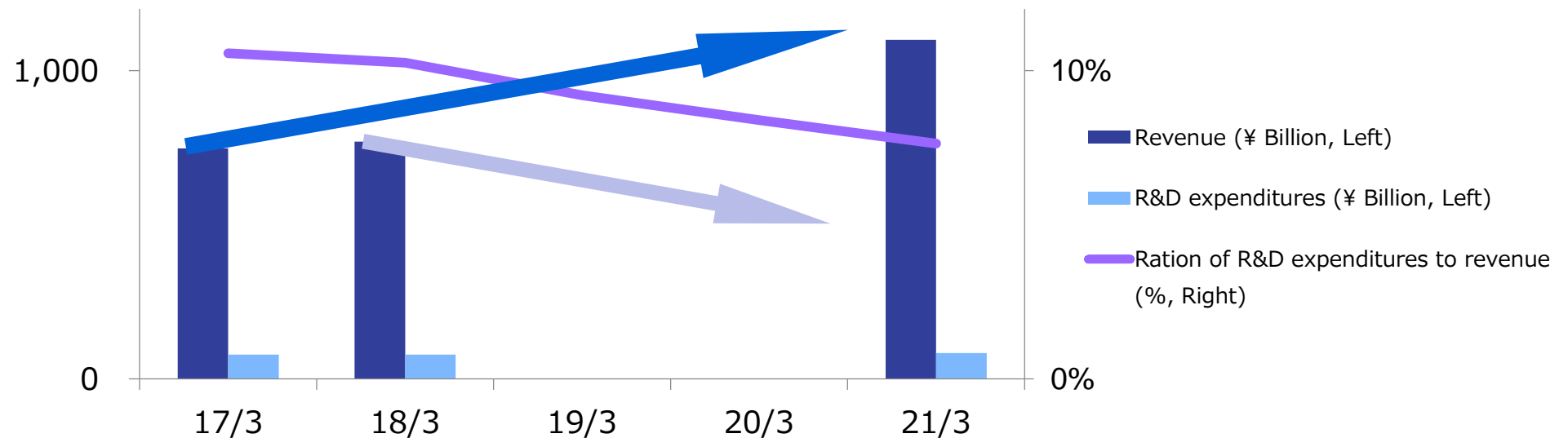
3. Awareness Reforms in Relation to R&D

- **Recognize low efficiency of Olympus' R&D activities**

- Restrict R&D expenditures in existing businesses to level similar to that of competitors
- Secure "innovation budget" to prepare for technological innovation

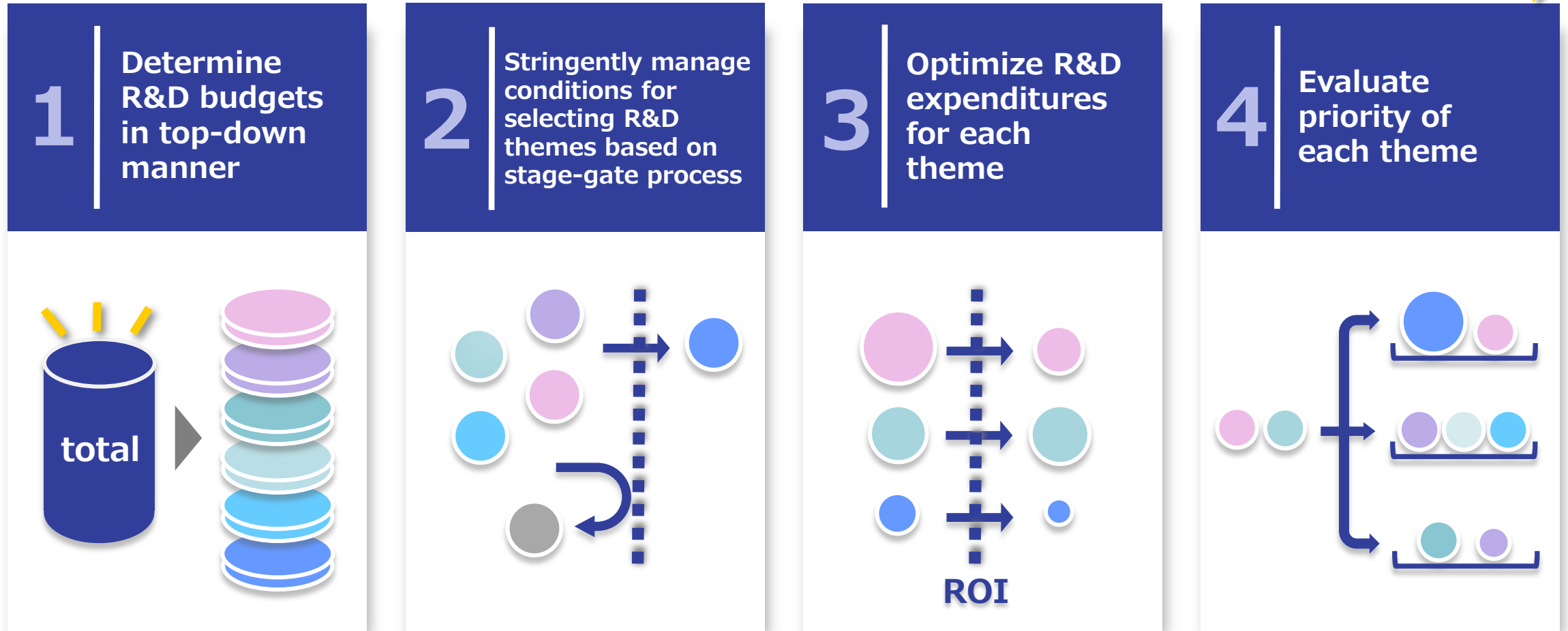
- **Leverage strengths of matrix organizational structure**

- Generate synergies by utilizing unique development capabilities of each business
- Reflect successes of upstream R&D activities into product development



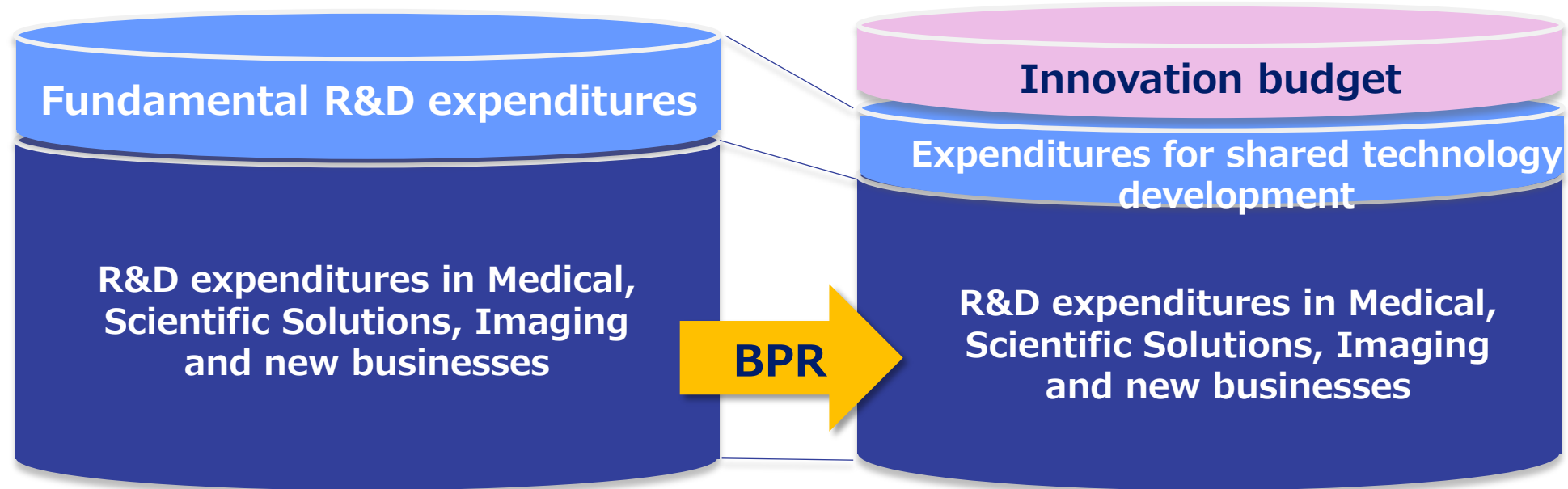
4. Four Steps of R&D Expenditure Reform

Business Process Reengineering (BPR)

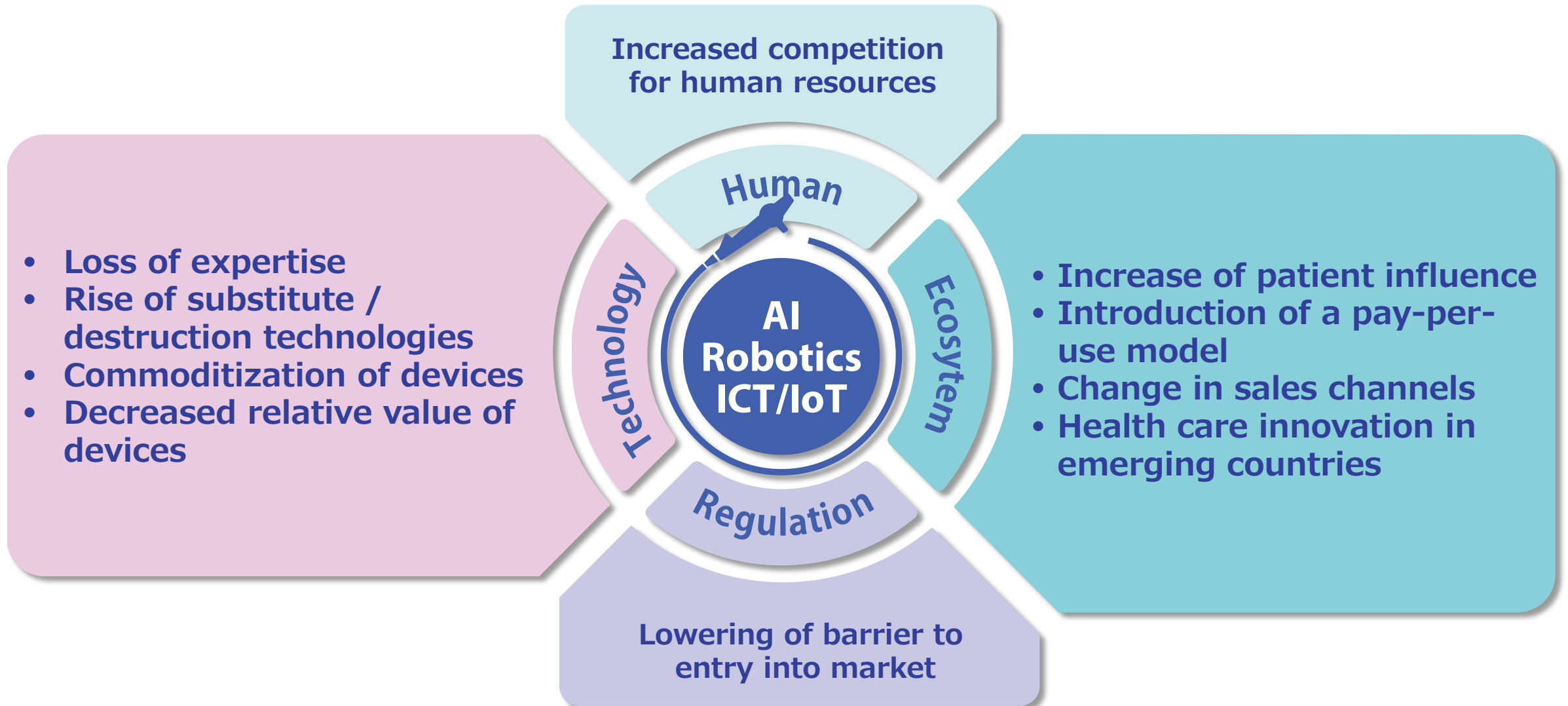


5. Secure of Innovation Budget

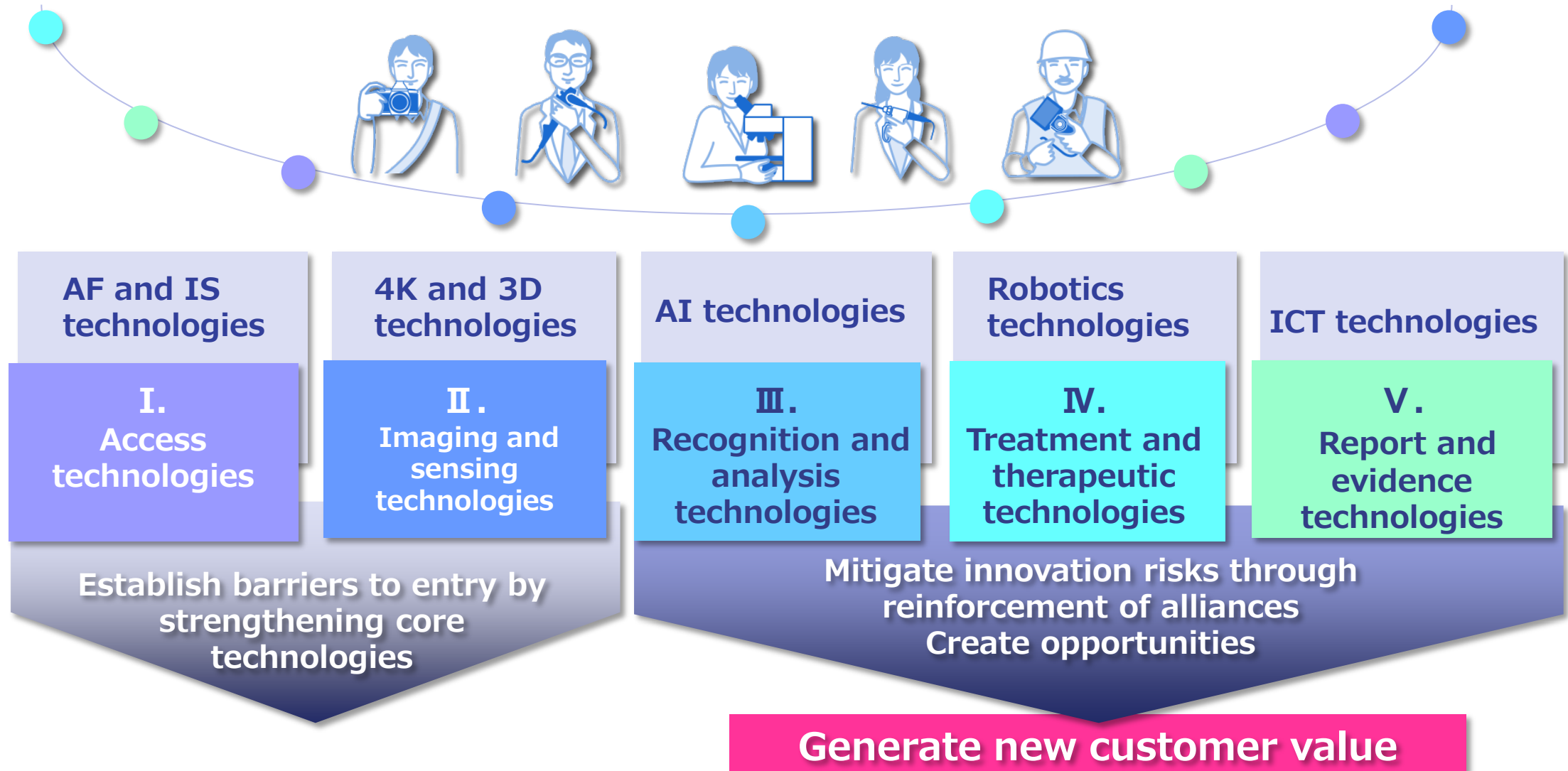
- Define R&D budgets in a top-down manner
- Prioritize R&D expenditures in specific businesses based on the ROI of each theme
- Concentrate fundamental R&D activities on the development of technologies shared between businesses (maintain differentiated status by strengthening core technologies)
- Secure innovation budget to address technological innovation risks



6. Four Operating Environment Changes and 10 Risks Brought About by Technological Innovation



7. Development of Scenarios to Change Risks into Opportunities through Early Identification of Risks



8. R&D Activity Examples

Ⅲ. Recognition and analysis technologies : Colon Diagnosis Support (CAD : Computer Aided Diagnosis)

8. R&D Activity Examples

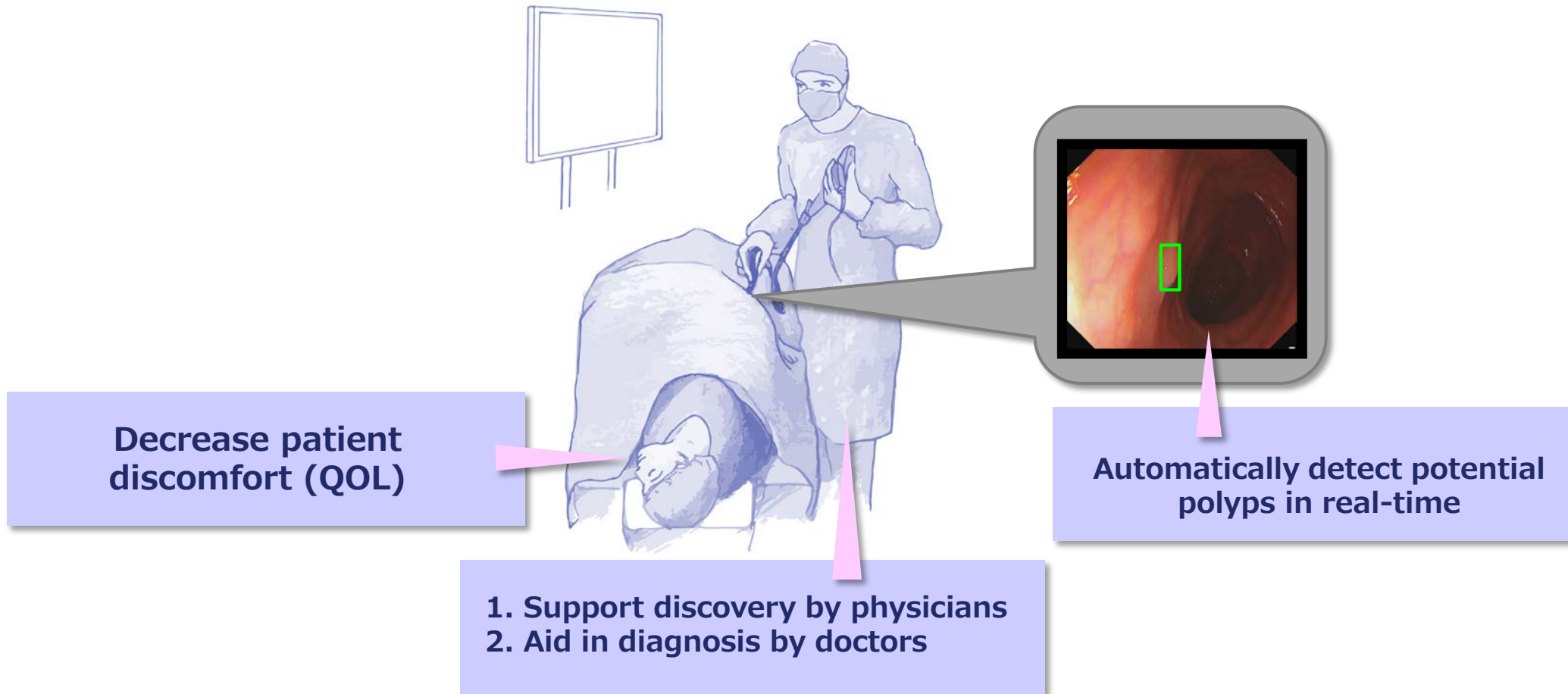
III. Recognition and analysis technologies:

Utilization of AI for Examination and Diagnosis Technologies



In a development phase

Colon Diagnosis Support (CAD : Computer Aided Diagnosis)



8. R&D Activity Examples

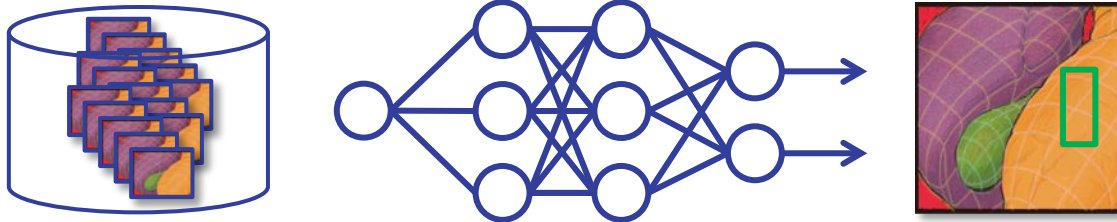
III. Recognition and analysis technologies:

Utilization of AI for Examination and Diagnosis Technologies



In a development phase

Utilization of AI (Deep Learning)



Take advantage of superiority of customer contact points achieved through **leading endoscope market share** to collect data on endoscopy image data from around the world

8. R&D Activity Examples

IV. Treatment and therapeutic technologies : Multi-Jointed, Flexible Robotic Assisted Surgery System

8. R&D Activity Examples

IV. Treatment and therapeutic technologies:

Application of Robotics Technologies to Treatment and Therapeutic Technologies

Development and verification testing of multi-jointed, flexible robotic assisted surgery system
(Funding Program for Development and Testing of World-leading Medical Devices)

FY2012 — FY2013 — FY2014

Therapeutic Support System for Gastrointestinal Endoscopies



Electrically Driven Laparoscope with Multiple Degrees of Freedom



Fukushima Subsidy for Development of Medical and Welfare Devices
(Development of high-power endotherapy devices and training equipment)

FY2015 — FY2016

High-Power Endotherapy Device

Expands functionality of therapeutic support system for gastrointestinal endoscopies



Training Equipment

Promotes spread of therapeutic support system for gastrointestinal endoscopies



8. R&D Activity Examples

IV. Treatment and therapeutic technologies:

Application of Robotics Technologies to Treatment and Therapeutic Technologies

Therapeutic Support System for Gastrointestinal Endoscopies: Realizes Precision Movement of Endoscope Tip

Characteristics:

- Effective control of two, multi-jointed endotherapy devices
- Left hand for lifting, right hand for cutting
- Capable of delicate motions, such as peeling of thin surface layers



8. R&D Activity Examples

V. Report and evidence technologies : +ICT Strategy

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Strategic Directives

Target higher earnings by increasing customer value and service level through “+ICT strategy” focused on products embodying Olympus’ strengths (equipment terminals)



1. Increased Customer Value

Improve efficiency of customer procedures and create new services by mixing products and ICT in relation to diagnosis support, work support, training, and other existing procedures and frameworks

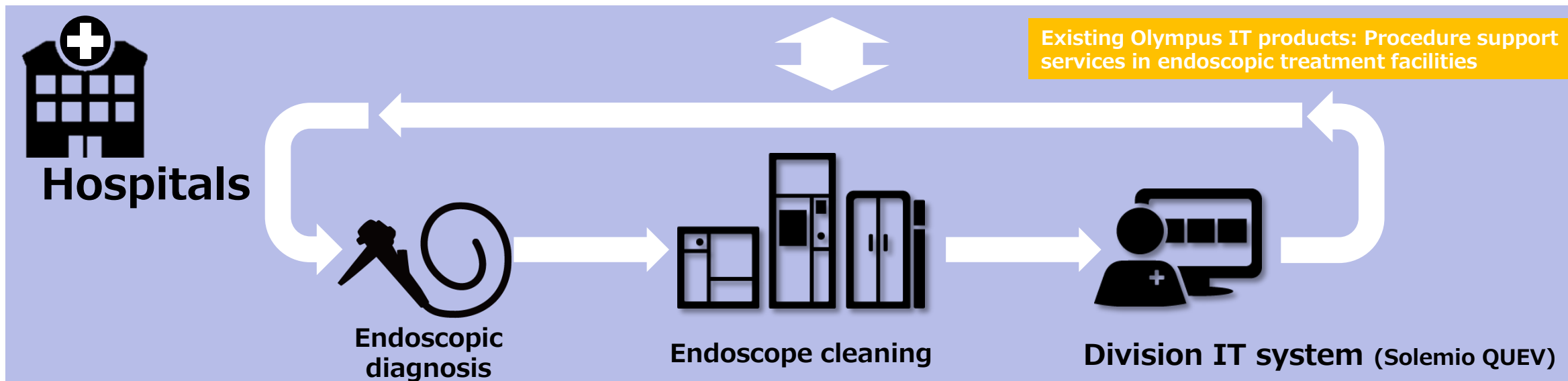
2. Olympus Management Reforms and Operational Efficiency

Utilize ICT and IoT to reform and improve efficiency of Olympus’ manufacturing system, sales support, and other procedures and frameworks

8. R&D Activity Examples

V. Report and evidence technologies: +ICT Strategy

Provide services from cloud servers through +ICT strategy (images, diagnosis data, equipment logs)



Contributions to Quality Medical Treatments

- Diagnosis support (utilizing AI)
- Report preparation support
- Reprocessing and other work support
- Training support

Cloud services

Contributions to Medical Economic Benefits

- Equipment maintenance and symptom management (utilizing IoT)
- Appropriate use of consumables
- Cost optimization through pay-per-procedure model

9. Innovation Risk Management

Alliances through Innovation Promotion System

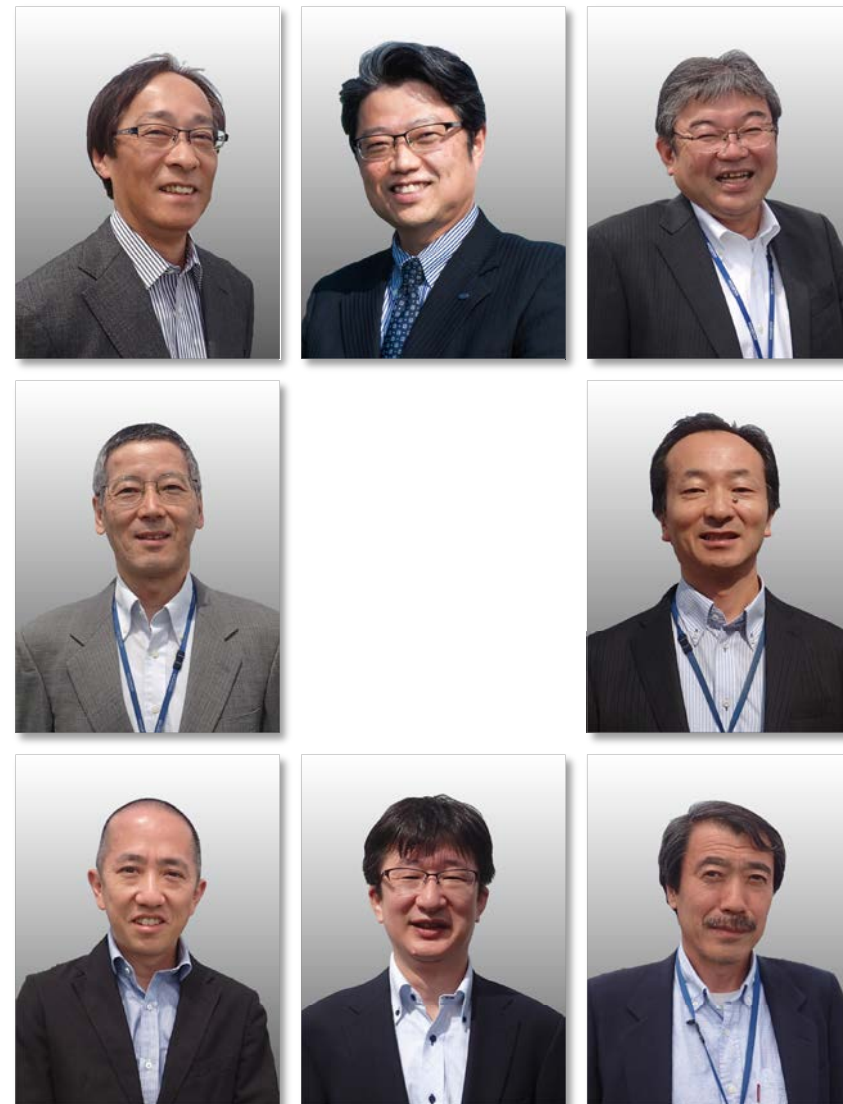
9-1. Innovation Promotion Organization and Fellowship System

Introduce new human resource system for the specialists (fellowship system for R&D group)

Establish innovation promotion organization on October 1, 2017, under direct jurisdiction of CTO* and comprised of several fellows and chief fellows, including Kazuhiro Gono, who was awarded the Medal with Purple Ribbon as part of the Cabinet Office's Biannual Conferment of Decorations in spring 2017 for the development of an endoscopy system that utilizes Olympus' NBI technologies



(*)CTO...Chief Technology Officer (Head of R&D Group)



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