

Growth Strategy for Medical Systems Business

Shimadzu Corporation

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and Medical Systems Division General Manager

Current Status of Business

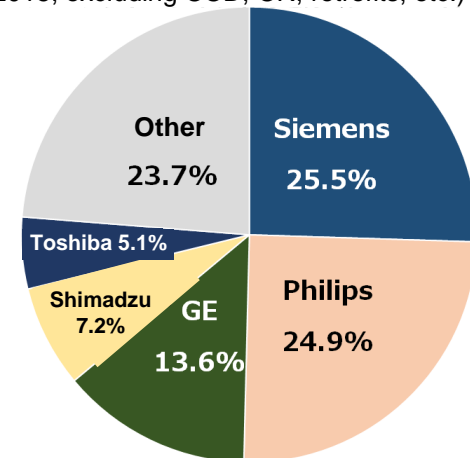
Overview of Diagnostic Imaging Equipment Market

● Global market for diagnostic imaging equipment is about 3 trillion yen with strong growth.

➢ Of that, global market size for diagnostic X-ray systems is about 700 billion yen.

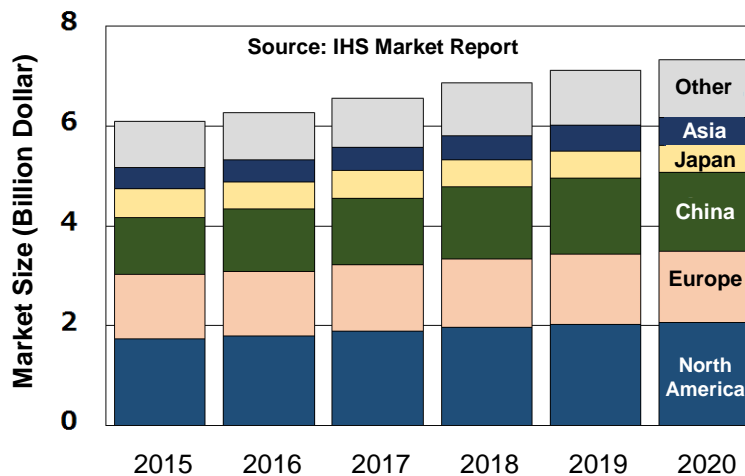
- ◆ Globally, Shimadzu is the fourth largest (7.2 %), after the three major non-Japanese manufacturers.
- ◆ Increasing number of companies have entered the radiography system market (general radiography systems and mobile X-ray systems). Intense price competition and commoditization
- ◆ The most important regions are the United States, China, and Japan, which have large domestic markets.

Diagnostic X-Ray System Market Share (2015, excluding CCD, CR, retrofits, etc.)



Source: IHS Market Report

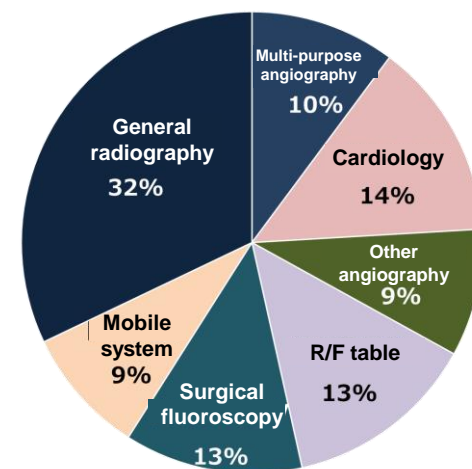
Diagnostic X-Ray System Market by Region (Excluding CCD, CR, retrofits, etc.)



Source: IHS Market Report

Diagnostic X-Ray System Market Share by Model

Source: IHS X-Ray Intelligence Database, 2016



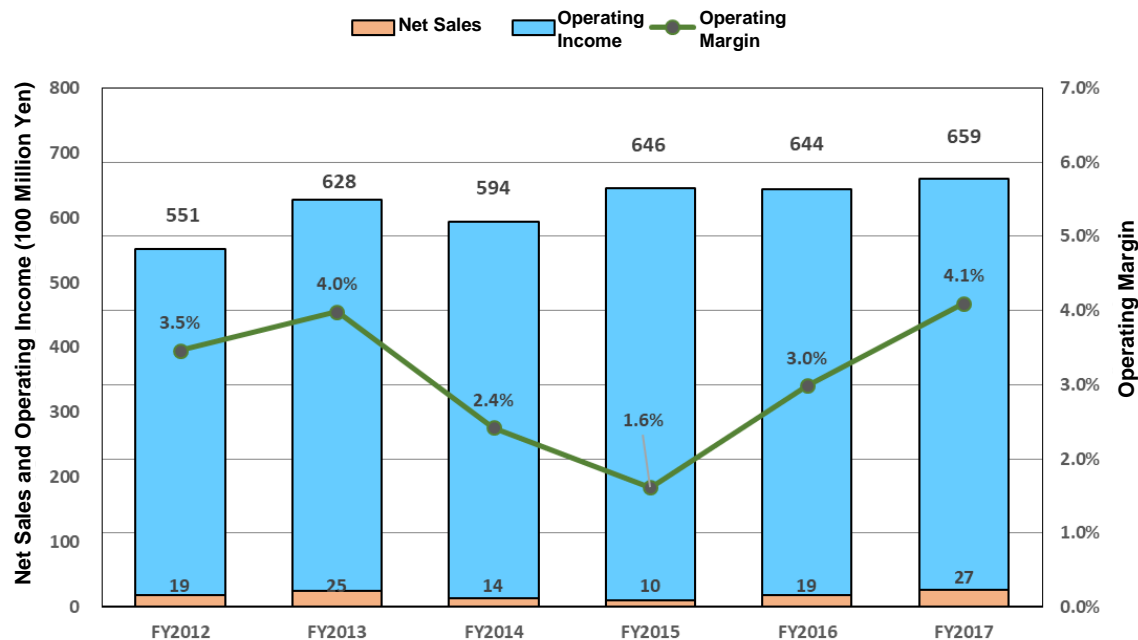
Current Status of Business

Medical Systems Business Results

● Improving growth potential and reforming profit structure

- Consolidated net sales grew by 10.8 billion yen in five years (+20 % at 3.6 % CAGR).
In addition to strengthening the base of key businesses (X-ray businesses), also establish businesses in new areas.
- Consolidated operating income grew by 0.8 billion yen during the same time (+41 % at 7.2 % CAGR)

Shimadzu Medical Systems Business Results



Diagnostic X-Ray Systems

Expanding/Improving Diagnostic Capabilities



General Radiography System



Mobile X-Ray System



Fluoroscopy System

Improving Procedure Support Functionality



Mobile C-arm System



Angiography System

Fluoroscopy/Video Recording Functions

Medical Service Efficiency Improvement Solutions



Electronic Medical Records System
Automatic Returning Patient Reception and Payment System

Advanced Diagnostic Solutions



Dedicated Breast PET System



Near-Infrared Imaging System

New Procedure Support Solutions



Fluorescence Imaging System



Radiation Therapy System

Medium-Term Management Plan

Overview of Medium-Term Management Plan

Achieving Sustained Growth and Improved Profitability by Strengthening Angiography System, North America, and Aftermarket Businesses**Performance Targets for Year Ending March 2020**

Consolidated Sales	71.0 billion yen (10 % increase from year ending March 2017)
Consolidated Operating Income	4.0 billion yen (135 % increase from year ending March 2017)

Angiography System Business

Target sales for year ending March 2020:
57 % increase from year ending March 2017

North America Business

Target sales for year ending March 2020:
26 % increase from year ending March 2017

Aftermarket Business

Target sales for year ending March 2020:
9 % increase from year ending March 2017

Medium-Term Management Plan

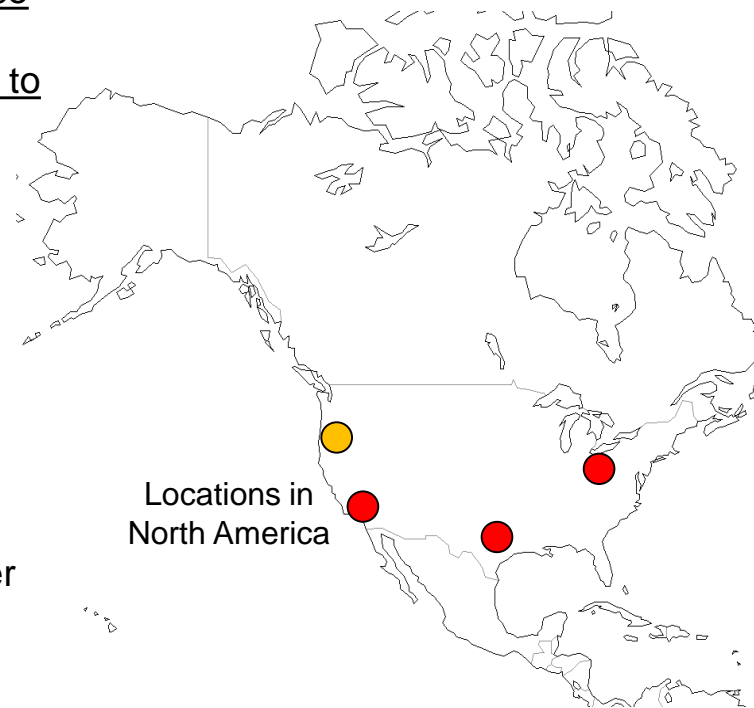
Strengthening the North America Business

● Achieve the next growth by strengthening business capabilities and releasing new products.

Target sales for year ending March 2020: +26 % increase from year ending March 2017

- Special demand for digital X-ray systems that continued since 2017 will return to normal from the second half.
- Acquire Core Medical Imaging Inc. in the U.S. and transition to direct sales to strengthen profitability.

- Expand sales of diagnostic X-ray systems.
 - ◆ Increase usage rate of SONIALVISION G4 examination room.
 - ◆ Completed transition smoothly to new mobile systems.
 - ◆ Promote sales of radiography systems in clinic market.
- Expand sales of angiography systems.
 - ◆ Strengthen sales capabilities and prepare service capabilities.
 - ◆ Establish installation records for cardiovascular and lower extremity interventional applications.
- Strengthen support for customers in the East.
 - ◆ Establish East Parts Center and Training Center.



Medium-Term Management Plan

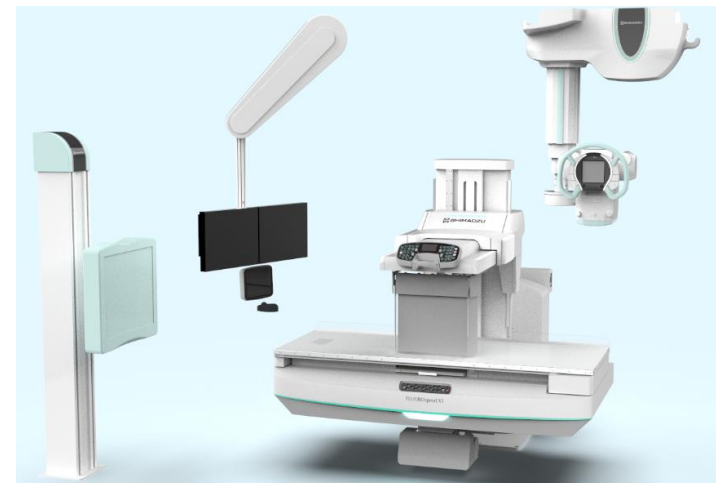
Strengthening the North America Business

● Release new products, especially Radiography/Fluoroscopy products

➤ **FLUOROspeed X1** (2nd half of FY 2019)

Offer an ultimate multipurpose X-ray examination room

- ◆ High quality digital system equipped with FPD and state-of-the-art radiation dose reduction functionality
- ◆ Table-side operability demanded in the U.S.
- ◆ Also include features for examining elderly and obese patients, in addition to regular examinations



New FLUOROspeed X1

➤ **SONIALVISION G4** (1st half of FY 2019)

Strengthen digital radiography functionality and include chest exam capability

➤ **RADspeed Pro with dynamic image analysis capability** (Feb. 2019)

General radiography system with new diagnostic functionality

- ◆ Lung function visualization, breathing function assessment, and postoperative follow-up observation

Evaluation about Shimadzu Medical Business in U.S.

Shimadzu Received #1 Customer Experience from IMV*

Benchmarking for 2019

The Diagnostic Imaging Equipment Customer Experience in the U.S.



- Research about customer experience of pre/post-purchase support, product integrity and overall product satisfaction, only Shimadzu received high rankings (★) at all customer touchpoints out of twelve manufacturers

High Performance on Multiple Touchpoints Contributes to the Best Customer Experience Scores

	Customer Experience Score Ranking	Equipment Awareness	Equipment Knowledge	Equipment Selection	Equipment Integrity	Service Provided	Manufacturer Support	Satisfaction & Loyalty
Shimadzu	1	★	★	★	★	★	★	★



Fluoroscopy



Radiography



Mobile X-ray

Remarks* : IMV was established in 1977, a leader in markets research for the medical imaging and clinical diagnostic instruments markets.
<https://imvinfo.com>

Medium-Term Management Plan

Strengthening the Angiography System Business

Target sales for year ending March 2020: +57 % increase from year ending March 2017

- **Expand market for minimally invasive catheterization procedures**

Increasing consolidation of high-end diagnostic equipment

Expansion trend in markets for urgent-care angiography systems outside Japan

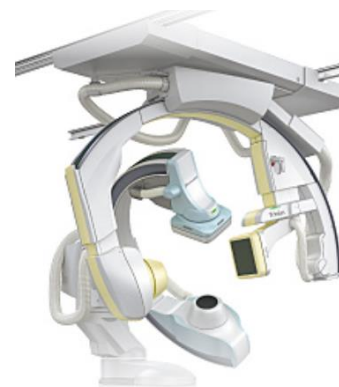
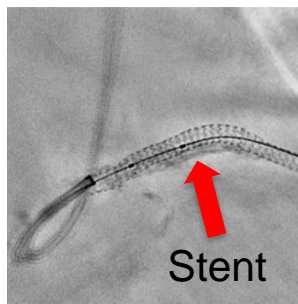
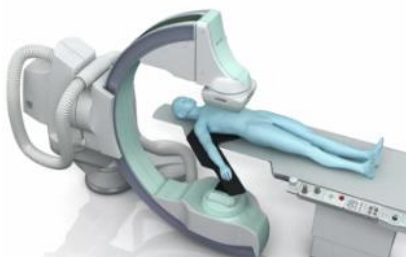
- **New product release**

Trinias unity smart edition (April 2018)

◆ Expand/improve product line and provide multipurpose clinical applications

SCORE Chase lower extremity interventional support software (October 2018)

◆ Automate treatment support starting with examination of lower extremities



Shimadzu Serial Exposure Control Technology Using Digital General Radiography for Dynamic Chest Diagnostics

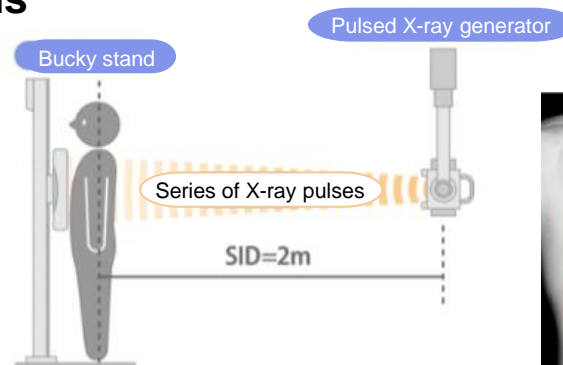
● From static to dynamic diagnostic imaging

DR “NEUTRAL” 2.0 supports a wide range of clinical applications

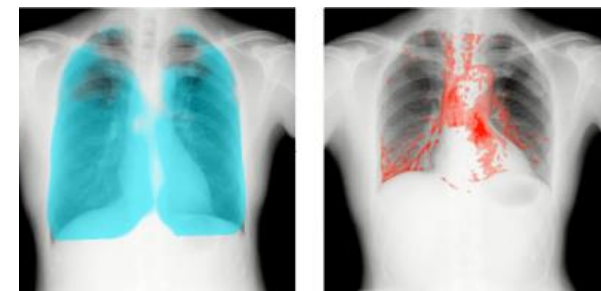
- Shimadzu X-ray technology + Konica Minolta FPD/dynamic image data analysis
- Serial exposure technology with low dose X-ray pulses at 15 fps (exposure dose is equivalent to IAEA guidance values for static frontal + lateral radiography)
- Enables dynamic image examinations in general radiography rooms

➤ Anticipated clinical applications

- ◆ Visualization of lung function
- ◆ Assessment of breathing function (COPD*, etc.)
- ◆ Follow-up observation of chest area after surgery



DR “NEUTRAL” 2.0

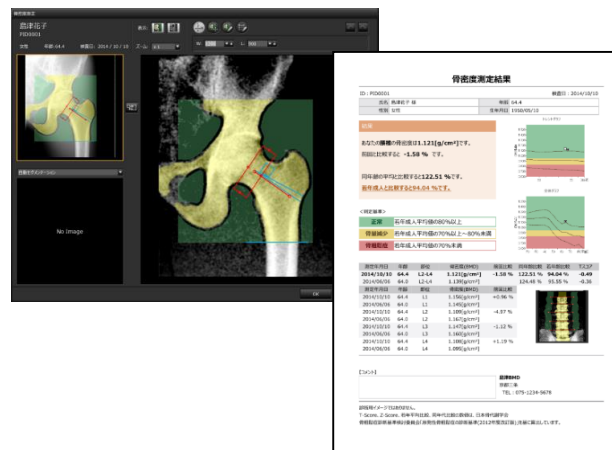


* COPD (chronic obstructive pulmonary disease) is a general term for chronic bronchitis and emphysema. In Japan, there are an estimated about 5.3 million COPD patients, or 8.6 % of the population over 40 years old (Source: Japanese Respiratory Society website)

Shimadzu X-Ray Video Control Technology Bone Diagnostics for “Super-Aging” Society

- **Increases usage rate of examination rooms**
 - Supports bone density measurements using **SONIALVISION G4 fluoroscopy system**
 - New first-in-Japan osteoporosis examination system serves three roles:
 - (1) Bone density exam, (2) Plain radiography, (3) Tomosynthesis radiography
 - **AI used: SmartBMD AI Assist automatically detects femur measurement area (1st half 2019)**
 ⇒ **Improves work efficiency at healthcare providers**

SmartBMD Bone Density Measurement
(released to Japanese market only)



SmartBMD AI Assist
(W.I.P)



Measurement area selection
process automated by AI

Medium-Term Management Plan

Strengthening the Aftermarket Business

● Service businesses

Target sales for year ending March 2020: +9 % increase from year ending March 2017

➤ Utilize customer support centers

Strengthen support for users of diagnostic/treatment support systems

- ◆ Offer 24-hour on-site service and periodic inspections on holidays and closed days
- ◆ Deploy in China (scheduled to open in January 2020)

➤ Utilize Global Parts Center (Singapore)

- ◆ Expand/improve capabilities for supplying parts from Asia region.

➤ Expand service coverage area (U.S.: January 2019)

- ◆ Strengthen direct service capabilities, expand sales, and increase profitability

➤ Use IoT to collect information for predicting failures

- ◆ Remote troubleshooting/repair and interactive remote maintenance services
- ◆ Analyze data, accumulate experience, and deploy outside Japan.

Call center available 24-hours a day, 365 days a year

The center can be called anytime, 24-hours a day, 365 days a year, and even at night or during holidays.

Calls answered directly by expert engineers

The call center is staffed by engineers with extensive field experience and specialized skills. That means they can directly troubleshoot problems or provide operating instructions quickly and accurately.

24-hour instrument monitoring

By using remote maintenance to monitor instruments, failures can be prevented before they occur and preventive actions can be suggested or implemented (on systems with a service contract including Site-View).



Achieving Additional Growth

Increase/Strengthen Production Capacity and Reduce Costs

- **New building completed at manufacturing subsidiary Shimane Shimadzu Corp.**
Investment: 1.74 billion yen; Completion: February 2019
- Main plant for manufacturing diagnostic X-ray systems
- **Expand production capacity by 50 % (by 2025).**
 - ◆ Uses IoT to automate conveying and improve production efficiency
 - ◆ Increased/improved machining equipment
- Established design prototyping center
 - ◆ Evaluate prototypes quickly and reduce costs
- Centralize product distribution.



Shimane Shimadzu Corporation (Izumo City, Shimane)

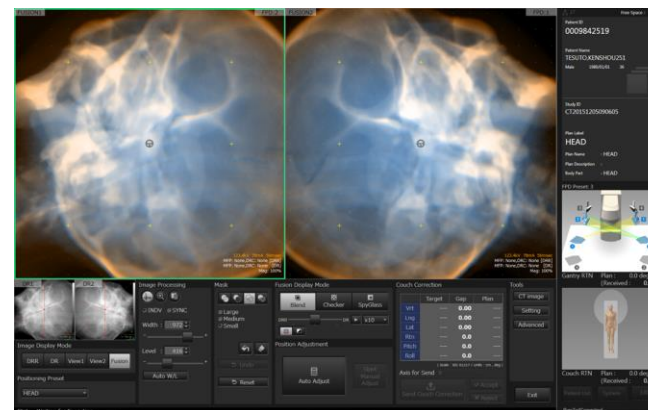
Achieving Additional Growth Progress Establishing Track Record for Radiation Therapy Systems

- **Promote the widespread use of high precision cancer treatments with SyncTraX series tumor-tracking systems for radiotherapy**

- 15 systems delivered in Japan (as of end of March 2019)
- Two-directional X-ray fluoroscopy system with FPD + 3-dimensional dynamic position detection technology
- Irradiated with radiotherapy beam only when tumor with movement enters planned treatment area
- Smart Aligner static positioning function (optional)
- Target areas: lungs, liver, prostate cancer (stereotactic body), head and neck tumor (stereotactic head)



Example of delivered system (Uonuma Kikan Hospital)



Smart Aligner static positioning function

Achieving Additional Growth

Increasing Awareness of Dedicated Breast PET (DB-PET) in Japan and Deploying DB-PET outside Japan

- Progress in Japan

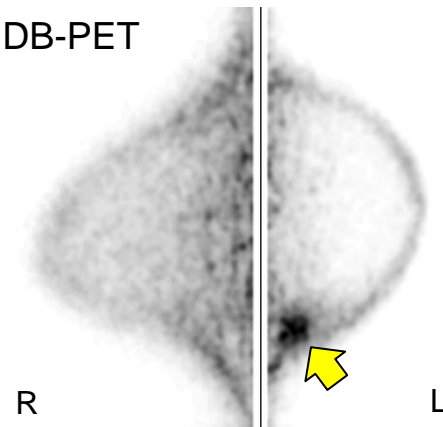
- 2018 Clinical Practice Guidelines for Systemic Treatment of Breast Cancer (issued by Japanese Breast Cancer Society) was revised to affirm using DB-PET for opportunistic breast cancer screening.
- The cancer detection rate for breast cancer screening by breast PET is about 1.0 %, which is high.
- Health management: To increase breast cancer screening rate, the entire cost of breast PET screening is covered for employees.

- Deploying DB-PET outside Japan

- Currently in product registration application process for planned release in China



Example of DB-PET



Recurrence discovered during screening after reconstructive breast surgery (mammography not usable and ultrasound showed no abnormalities)

Achieving Additional Growth - Support for Working Practice Reforms at Healthcare Institutions

Streamlining Patient Processing at Healthcare Institutions, from Reception to Payment

- Sales and service started cooperatively by Shimadzu Group companies

- For hospitals

Extensive product line and total support for outpatient processing

- ◆ Returning patient reception system
- ◆ Examination/payment display system
- ◆ Treatment fee payment system

- For clinics

- ◆ Countertop payment system that can link payments to electronic medical records



Smooth and Reliable Processing within Hospitals

Products for Hospitals



MERSYS-IV
Returning Patient
Reception System



MERSYS-AR
Treatment Fee
Payment System



MERSYSid
Examination
Display System

Products for Clinics



Mer'C
Countertop
Payment System



SimCLINIC T3α
Clinic Electronic Medical
Records System

Achieving Additional Growth

Providing Surgical Support with Near Infrared Light Technology and Deploying Technology outside Japan



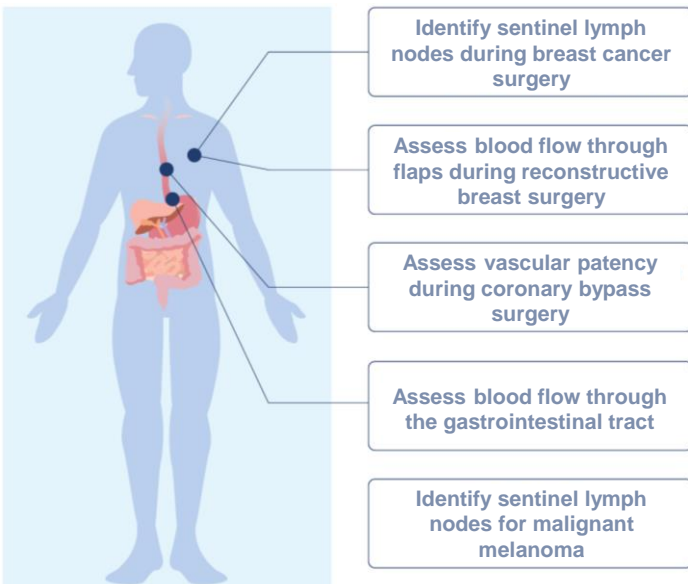
Award Received from Frost & Sullivan in the U.S.

2018 APAC Fluorescence Surgical Imaging for Breast Cancer New Product Innovation Award

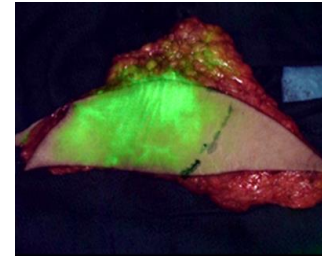
LIGHTVISION was recognized for having a major impact on healthcare practices and offering a significant potential for shortening surgery times in the future, with applicability for a broad range of surgical procedures, by offering surgeons technology that can be used to observe areas of interest in detail with a LIGHTVISION near-infrared fluorescence imaging system.



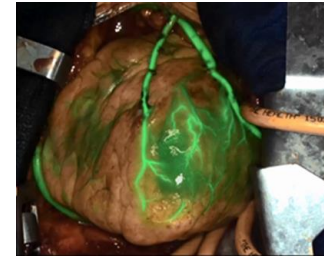
Expanding Range of Clinical Applications



Identifying sentinel lymph nodes for breast cancer



Reconstructive breast surgery



Coronary bypass surgery



Blood flow in gastrointestinal tract



Identifying sentinel lymph nodes for malignant melanoma

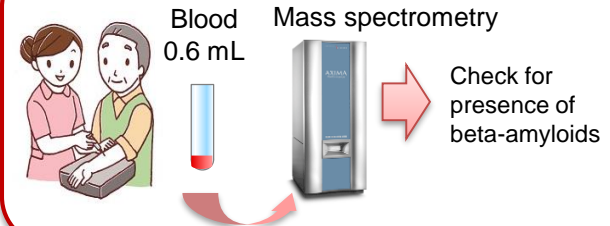
Advanced Healthcare Measures

- **Catheterization procedures based on localized blood sampling**
Examination and treatment of high blood pressure due to primary aldosteronism
 - Identify and treat region with excessive secretion, shorten procedure time, and achieve same-day outpatient procedure status in future
 - Start sales for research applications (April 2019)
- **Establish method for early detection of Alzheimer's from blood**
Estimate amyloid plaque levels in the brain from a tiny quantity of blood plasma
 - Started amyloid MS contract analysis service (August 2018)
- **Support research on new cancer treatment methods - cancer photoimmunotherapy**
Provided research support and treatment area observation for cancer photoimmunotherapy (NIR-PIT)
- **Colon cancer screening**
Conducted validation study for health screening users (October 2018)
- **Healthcare R&D Center**
Promote healthcare product development based on integrating analytical instrument and medical system technologies
Promoted open innovation (center completed February 2019)



Blood Test

(minimally invasive, inexpensive, and suitable for large-scale examinations)





SHIMADZU

Excellence in Science

Contributing to Society through Science and Technology
Realizing Our Wishes for the Well-being of both Mankind and the Earth

- Future result values indicated in this presentation document are projections of the future based on information available at the time the document was released and include potential risks and uncertainties. Consequently, due to a wide variety of factors, actual results may differ significantly from the projections indicated in this document.