

**TOSHIBA**

Leading Innovation >>>

# **Infrastructure Systems & Solutions Company Business Strategy**

**Shinichiro Akiba**

**Company President and CEO**

**Infrastructure Systems & Solutions Company**

**Representative Executive Officer**

**Corporate Senior Executive Vice President**

**Toshiba Corporation**

**July 6, 2016**

# I . **Company Overview**

## II . **Core Businesses**

## III . **Initiatives for Growth**

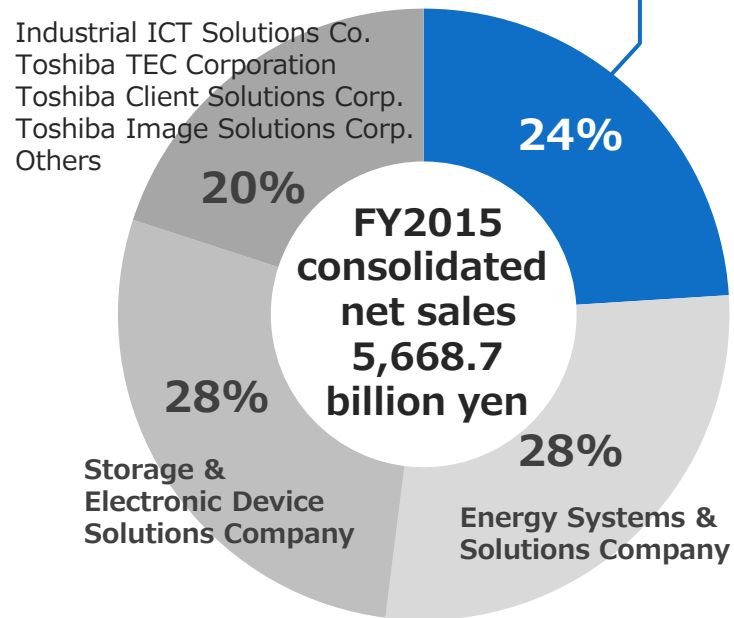
# Positioning of Infrastructure Systems & Solutions Company

Responsible for infrastructure business that sustains quality lives

## Infrastructure Systems & Solutions Company

FY2015 consolidated net sales

**1,354.6 billion yen**



Provide Numbers of Specific Important Customers with the best solutions in three business areas

### Public Infrastructure



- Central government
- Roads
- Communication
- Municipalities
- Broadcasting
- Finance

### Buildings & Facilities



- Developers
- General contractors & Sub contractors
- Buildings & Facility owners

### Industrial Systems










- Railways
- Logistics
- Chemicals
- Automobiles
- Machinery
- Iron & steel, etc.

# Business Areas

Provide products and services based on strengths in each of the 3 business areas

## Public Infrastructure

 <p>Monitoring and Electrical Systems</p> <p><b>No. 1 Share</b> 25%*</p> <p><b>Water Treatment Systems</b></p>	 <p>Airport Substation, Supplementary Lighting</p> <p><b>No. 1 Share</b> 70%*</p> <p><b>Substation Systems</b></p>	 <p>Multiplex Radio System</p> <p>Share 30%*</p> <p><b>Disaster Prevention Systems</b></p>	 <p>Central Server System</p> <p><b>No. 1 Share</b> 50%*</p> <p><b>Highway Systems</b></p>
 <p>Digital Master System</p> <p><b>No. 1 Share</b> 53%*</p> <p><b>Broadcasting &amp; Network Systems</b></p>	 <p>Global Navigation Satellite System Aircraft Surveillance radar</p> <p>Share 23%*</p> <p><b>Air Traffic Control Systems</b></p>	 <p>Small Mail Processing Equipment</p> <p><b>No. 1 Share</b> 70%*</p> <p><b>Postal Automation Systems</b></p>	

## Buildings & Facilities

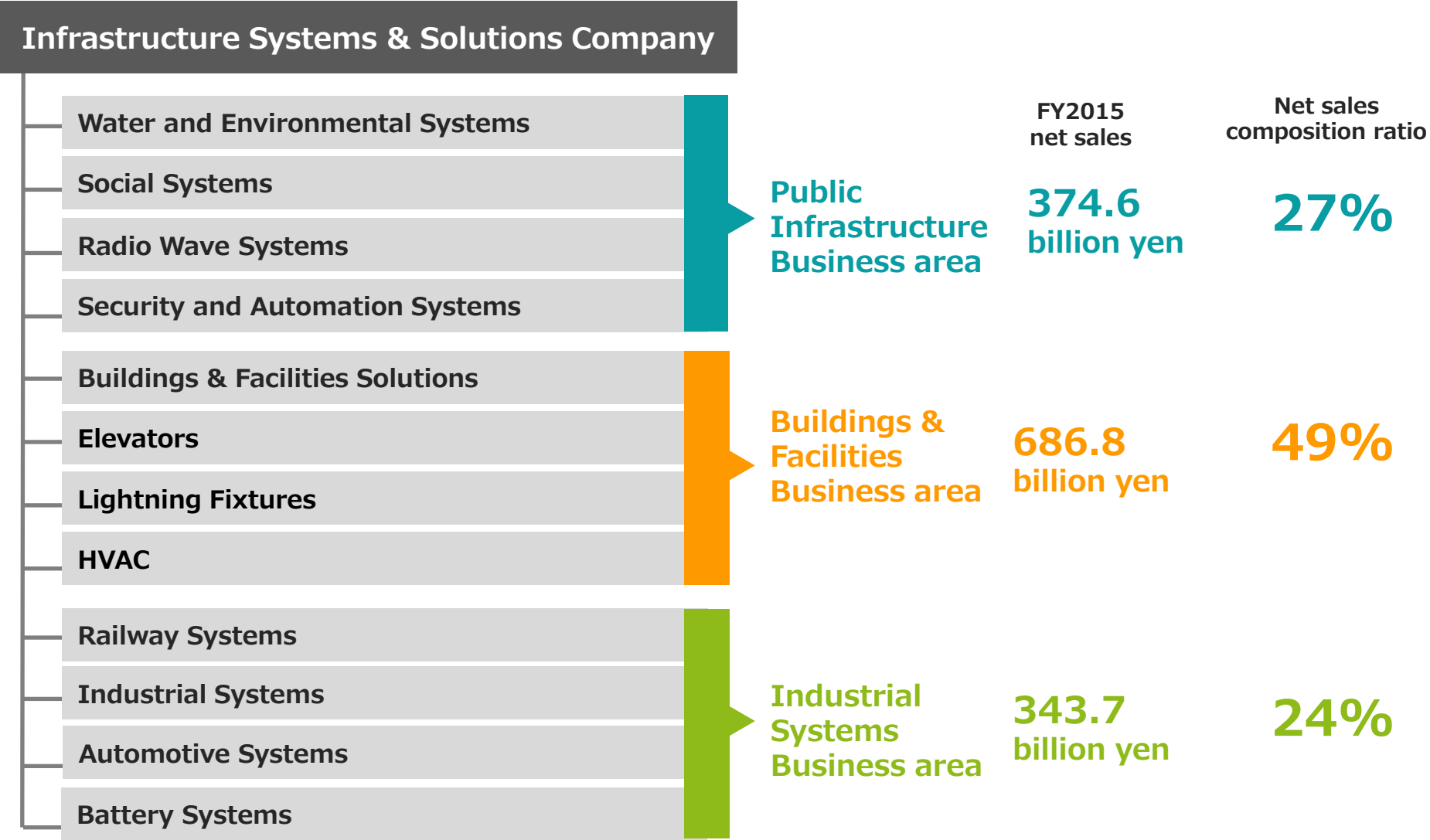
 <p>Uninterruptible power supply systems</p> <p>Share 26%*</p> <p><b>Building Power Supply</b></p>	 <p>Elevators</p> <p>Share 22%*</p> <p><b>Elevators</b></p>	 <p>Lighting Fixtures</p> <p>Share 20%*</p> <p><b>Lighting Fixtures</b></p>	 <p>Ventilating and Air-conditioning (HVAC)</p> <p><b>No. 1 Share</b> 40%*</p> <p><b>HVAC***</b></p>
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## Industrial Systems

 <p>Permanent magnet synchronous electric motor (PMSM) system</p> <p>Saving in energy consumption 39%**</p> <p><b>Railway Systems</b></p>	 <p>Industrial Motors</p> <p><b>No. 1 Share</b> 28%*</p> <p><b>Industrial Systems and Automotive Systems</b></p>	 <p>With 6-minute rapid charging capacity</p> <p>Approx. 80%</p> <p><b>Battery Systems</b></p>
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# Organizational Structure

## Our 12 businesses divisions



# Major Bases in Japan

The HQ function in Kawasaki cooperates with plants and branch offices



**Kawasaki Smart Community Center**

Head office functions, sales, engineering



**Fuchu Complex**

Water and environmental systems, Substation equipment, Disaster communication systems, Broadcasting systems, Elevators, Railway systems and Locomotives



**Komukai Complex**

Automation equipment (mail-sorting machines, banknote inspection machines, public transportation equipment), Radio wave systems, Highway systems



**Mie Operations**

Motors and inverters, Small and medium-sized transformers



**Kashiwazaki Operations**

Rechargeable batteries (SCiB)



**Fuji Operations**

Air-conditioning and heat source equipment



**Kanuma Operations**

Lighting Fixtures

\* Other plants not shown above : Uenohara, Himeji, Yokosuka, Numazu, Imabari, and Tsuyama

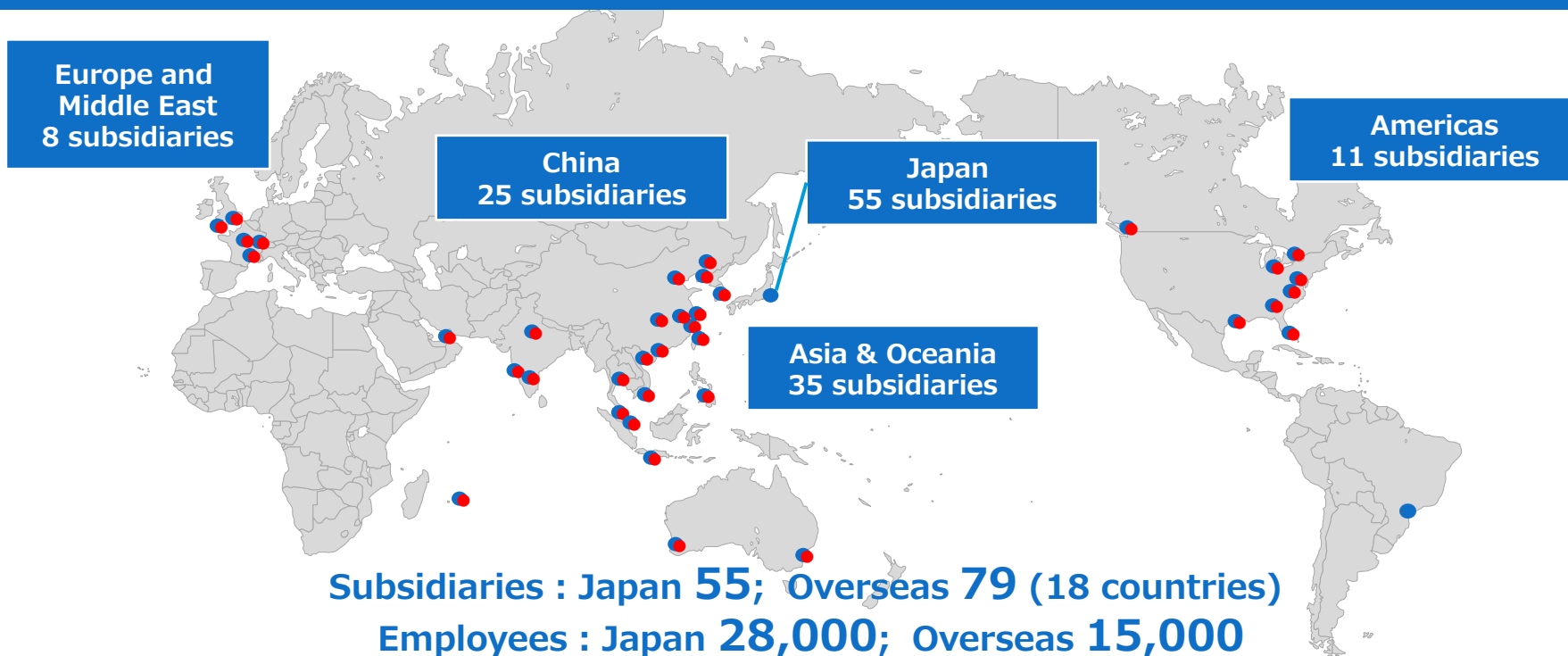
## Domestic branches and sales offices

Toshiba Corporation **41 locations**, Toshiba Elevator and Building Systems **164 locations**, Toshiba Lighting & Technology **75 locations**, Toshiba Carrier **40 locations**



# Overseas Subsidiaries

Take advantage of the overseas branch network to accelerate global growth



**Subsidiaries : Japan 55; Overseas 79 (18 countries)**

**Employees : Japan 28,000; Overseas 15,000**

**Overseas sales ratio 27%**



**UEM India Pvt. Ltd.**  
Water treatment systems (EPC\*)



**TOSHIBA ELEVATOR (CHINA) CO., LTD.**  
Elevators



**Dalian Toshiba Locomotive Electric Equipment Co., Ltd.**  
Railway systems



**Thai Toshiba Lighting Co., Ltd.**  
Industrial lighting



**Toshiba Carrier (Thailand) Co., Ltd.**  
Air conditionings



**Toshiba Industrial Products Asia Co., Ltd. (Vietnam)**  
Industrial motors



**Toshiba International Corporation**  
Industrial motors and inverters  
Automotive motors

Photos of Major Global Manufacturing Sites

# Business Objectives and Core Competencies

Contribute to the customers who support society and industry with our technology platforms and adaptability to customers

What we aim for

Support the growth and evolution of our customers across a wide range of areas where high reliability and strong involvement with the public is required



Public Infrastructure



Buildings & Facilities



Industrial Systems

## Technology Platforms

### Technology platforms and core products

Monitoring Control, Power Electronics, Mechatronics and Image Processing, Wireless Communications, Heat Pumps, Lighting Controls and Batteries, Motors, Inverters, Transformers, Switchgear, and Others

## Adaptability to customers

### Familiarity with customer businesses and problem solving

Be familiar with the customer's business and business operations, discover customer problems, build solutions to solve those problems, and provide a total service from development and manufacturing through to construction and maintenance

### Accumulation of fundamental technologies by plants

1936~ Yanagicho Plant*	Mechatronics technology
1937~ Komukai Complex	Radio and communication technology
1940~ Fuchu Complex	System control technology Motor drive technology

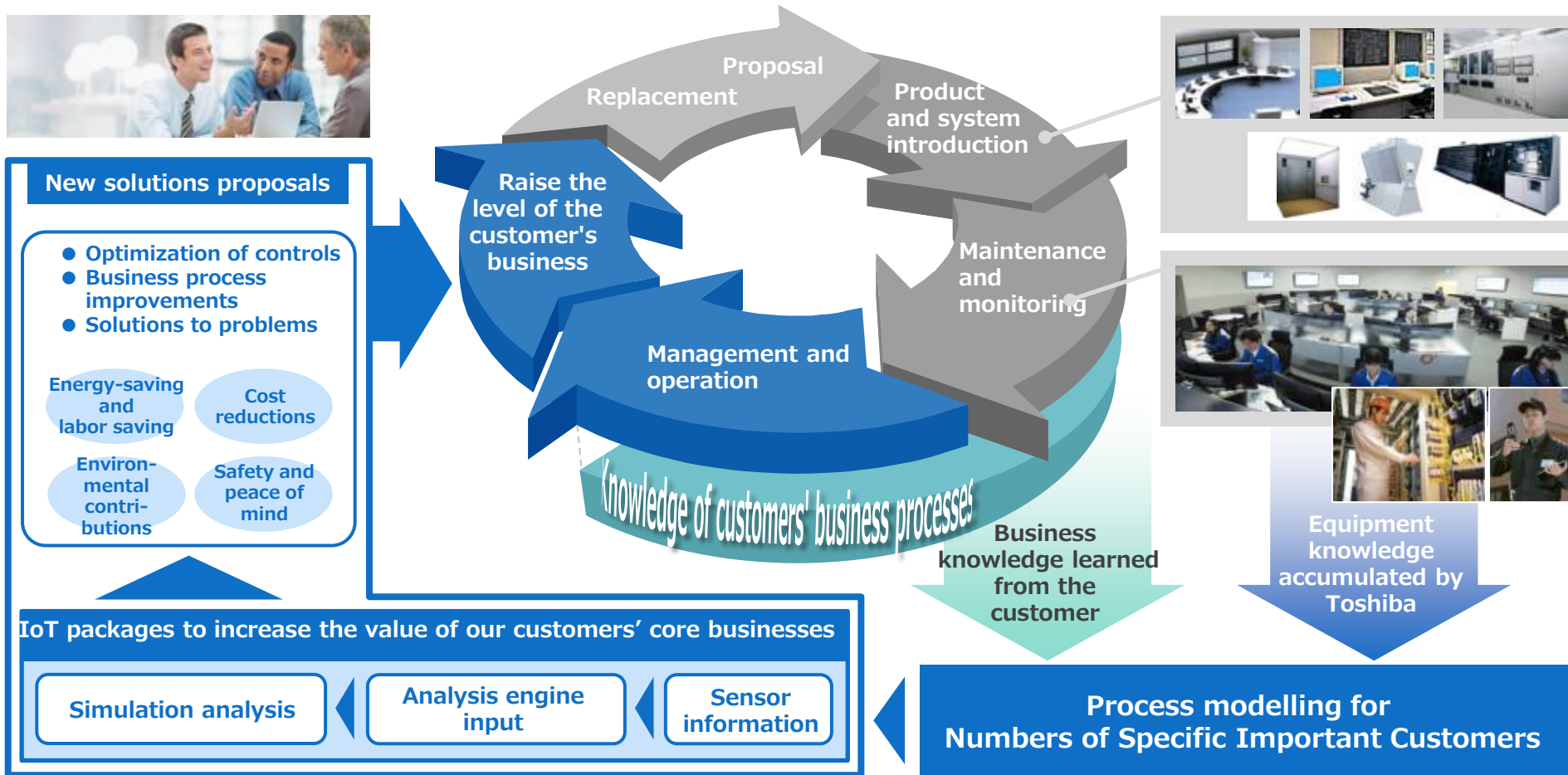
### Number of specific important customers (9,000 companies)

Over a long period of time, teams of sales and sales engineers have built direct relationships with numbers of specific important customers, and work with them from initial negotiations through to construction and maintenance



# Development of "Spiral Life Cycle Business"

By continually providing services that increase the value of our customers' core businesses, ensure that Toshiba products and systems are applied repeatedly and more widely for long periods of time, and develop "Spiral Life Cycle Business"



# Results and Plan

**FY16 : Net sales of 1,340 billion yen,  
Operating income of 51 billion yen and a ROS of 3.8%**

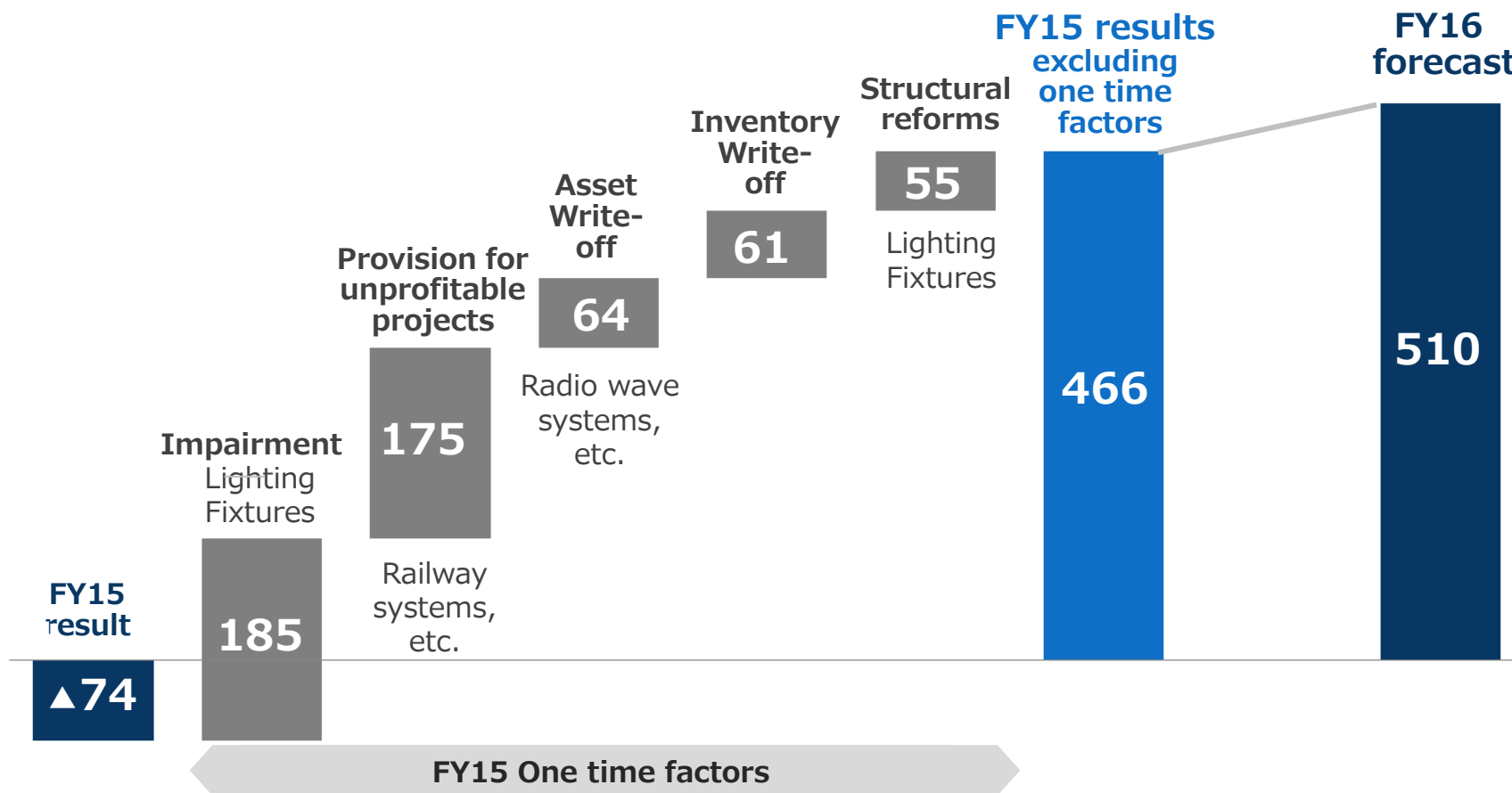
(Unit:100 million yen)		FY15 Results	FY16 Forecast	YoY change	FY18 Provisional Target
<b>Net Sales</b>	Public Infrastructure	3,746	3,623	▲ 123	
	Buildings & Facilities	6,868	6,799	▲ 69	
	Industrial Systems	3,437	3,403	▲ 34	
		<b>13,546</b>	<b>13,400</b>	<b>▲ 146</b>	<b>14,200</b>
<b>Operating Income</b>	Public Infrastructure	103	208	105	
	Buildings & Facilities	▲ 27	252	279	
	Industrial Systems	▲ 150	50	200	
		<b>▲ 74</b>	<b>510</b>	<b>584</b>	<b>320</b>
	Operating income margin	▲0.5%	3.8%		2.3%
<b>FCF</b>		<b>1,446</b>	<b>▲ 180</b>		<b>190</b>

\* Net sales totals include internal write-offs and adjustments

# Operating Income

Recognized the costs of FY15 asset write-downs, provisions for unprofitable projects and structural reforms, and realize a V-shaped recovery in FY16

(Unit: 100 million yen)



I . **Company Overview**

**➤ II . Core Business**

III . **Initiatives for Growth**

# Water Systems (1/2): Business Overview

Expand the EPC\*1 and O&M\*2 businesses for water treatment plants with monitoring and control technologies

## Products and Services Overview

- Substation systems
- Monitoring control systems
- Water treatment systems
- Sludge drying systems
- O&M services



Monitoring control systems



Substation systems



A fuel cell power plant running on ADG\*5



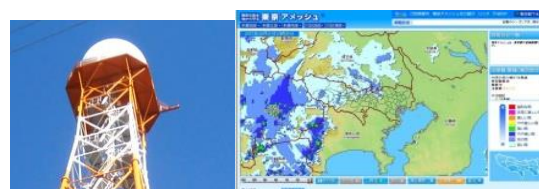
O&M services

## Major Accomplishments

**Japanese water and sewerage plants: More than 1000 locations**  
**Overseas water treatment facilities: More than 700 locations**



Okinawa Prefectural Enterprise Bureau  
Shin-ishikawa water purification plant  
monitoring and control equipment



Tokyo Metropolitan Government  
Bureau of Sewerage  
Radar rain gauge system



Kitachiba Water Supply Authority  
Advanced water treatment facility



Indonesia MMID\*3  
Water supply plant for MM2100  
Industrial Town



India & Jharkhand Urban  
Development Corporation  
Sahebganj public sewer maintenance

- \*1 EPC: Engineering, Procurement, Construction
- \*2 O&M: Operation, Maintenance
- \*3 MMID: Megalopolis Manunggal Industrial Development (management company)
- \*4 B-DASH: Breakthrough by Dynamic Approach in Sewage High Technology Project
- \*5 ADG: Anaerobic Digester Gas

# Water Systems (2/2): Business strategy

**Japan** : Expand service business by strengthening the revenue base in the replacement market  
**Overseas** : Accelerate the business by leveraging the strength of Toshiba and local subsidiaries in the targeted market

## Market environment

**Japan** Replacement demand in the facilities construction market is key  
  
 Private commissions are expanding due to Municipalities financial difficulties and a lack of engineers

**Overseas** Water environment improvement is active in areas that are industrializing and have growing population

## FY2016 Priority Measures

- Japan** : Strengthen the revenue base, expand service business
- Ensure stable revenues through replacement orders
  - Expand service business supporting customers' needs to operate efficiently over a wider area, by unifying monitoring control systems and know-how from O&M with ICT\*1

\*1 ICT : Information and communication Technology

- Overseas** : Expand the business in the targeted markets with local subsidiaries as the core
- Cultivate the water and sewerage treatment business by unifying resources and the experience of subsidiaries with Toshiba's technology and project experiences
  - Expand the EPC services businesses With the experience of the Indian subsidiary and its global operation network

**Overseas subsidiaries**  
 India: UEM India Private Limited  
 Indonesia: PT. Envitech Perkasa

## Targeted markets and Fighting fields

	Japan	Asia (including India)	Middle East, Central and South America
<b>EPC</b>	Get Replacement Orders	Increase Installations / Find new customers	Expand orders for new facilities
<b>Maintenance, O&amp;M</b>	Strengthen O&M	Cultivate Maintenance & O&M businesses	Develop Maintenance systems
<b>Market</b>	Mature	Rapid growth	Rapid growth



# Elevators (1/2): Business Overview

Create safe, secure and comfortable moving spaces through reliable technologies and high quality

## Products and Services Overview

New construction of elevators and escalators; renewal and maintenance; building energy-saving services



Order type Elevator  
Apply high efficiency gearless traction machine



Standard Elevator  
Industry's first no-gap threshold



Escalator  
Apply soft material in step leading edge for safety



Maintenance service



Service information center

Advanced maintenance systems by latest ICT

## Major Accomplishments

FY2015 overseas sales ratio: 43%



**Taipei 101**  
**World's fastest class high speed elevator**  
12-year accident free operation  
61 elevators installed  
(Including 2 ultra high speed elevators)



**Shanghai World Financial Center**  
11 elevators installed  
(3 ultra-high speed elevators and 8 double deck elevators)



**Tokyo Sky Tree®**  
**Longest travel distance in Japan (464m)**  
6 elevators installed  
(Including 4 ultra high speed elevators)



**Abeno Harukasu**  
**Tallest high-rise building in Jaapan**  
29 elevators installed  
(Including 22 high speed elevators)



**UAE-Damac Towers**  
38 elevators for installed  
(of which:  
34 high speed elevators)  
(installation in early 2017)

# Elevators (2/2): Business Overview

Generate profit by high quality maintenance services for maintenance stock, which is created by new construction and renewal projects in the Japanese, Chinese, Indian, Southeast Asian and Middle Eastern markets

## Market Environment

Japan	Expanding new construction market by urban redevelopment and increasing renewal market
China	Despite squeezing in overall market, affordable housing, office and commercial facilities segments are growing
India	In addition to the high-end segment, continue growth in middle-upper segment

## FY2016 Priority Measures

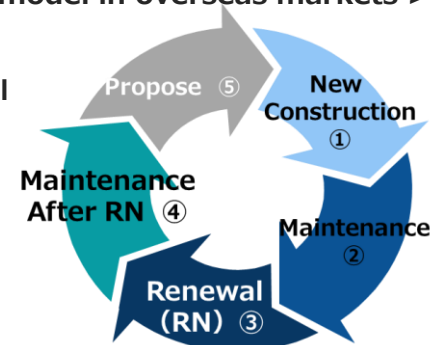
- Japan: Expand new constructions and strengthen field services**
- Expand new construction share by new model SPACEL-GR II introduction
  - Maximize customer benefit by Proposing maintenance and renewal services and developing new ICT / IoT products
- Overseas: Expand business in growing markets**
- China: Focus on offices and commercial facilities and strengthen field service operations (call center, parts center and remote monitoring system)\*
  - India: Enter into the middle upper segment with the introduction of local-fit products through collaboration with Johnson Lifts Limited

## Targeted markets and Fighting fields

	Japan	China	India, Middle East Southeast Asia
New construction		Toshiba Elevator → Expand new Construction	
Field (maintenance, replacement)	2 Japanese competitors	Strengthen Service business	4 Big overseas competitor 2 Japanese competitor
Market	Mature	Depend on segment	High growth

< Realize Spiral stock business model in overseas markets >

1. Installation
2. Free maintenance/ Commercial Maintenance/ Refurbishment
3. Renewal control system/ Full renewal
4. Commercial Maintenance
5. Scrap & build/ Win order



# HVAC (1/2): Business Overview

By heat pump technology\*, provide environmentally friendly and energy saving products

## Products and Services Overview

- Chiller & heat source systems
- Air-conditioning for shops & offices
- Multi-air-conditioning units for buildings
- Ventilation fans and ventilation systems
- Water heaters (Eco Cute)
- Home & central air conditioners
- Cold-chain equipment
- Compressors
- Air conditioning equipment for trains



## Major Accomplishments

FY2015 overseas sales ratio: 51%



"Hangzhou Bafang Castle City Comprehensive System" (China)  
3,790 units  
Multi-air-conditioning unit



HAYDARPAŞA PALACE HOTEL (Turkey)  
180 units  
Multi-air-conditioning unit



"M3M Woodshire" (India)  
5,426 units  
home air-conditioning unit



Station building heat source equipment replacement (Kyoto)  
28 units  
chiller

# HVAC (2/2): Business Overview

Accelerate growth through Carrier Corporation's sales network in over 150 countries, and strengthen the Japanese B2B business

## Market Environment

- Japan** Continue renewal demand for energy saving and low CO2 emissions equipment
- America** Grow ductless air-conditioning market
- Asia** Continue market growth
- China** Decelerate growth but huge market size
- India** Steady growth

## FY2016 Priority Measures

### Japan: Growth in new areas

- Acquire replacement demand from combustion-type heat sources (utilize superiority in energy saving and environmental-friendliness) by strengthening cooperation with energy companies
- Strengthen further product competitiveness for heat pump chillers, which we have No.1 share
- Propose one stop proposal to multi-store chains (retail and restaurant) by our air-conditioning and showcase products

### Overseas: Strengthen business operation by strategic investment for growth

- Found Sales Engineering Center (SEC) in Europe and US. Marketing, Development for local-fit product and spec-in activities by sales engineering
- Accelerate growth by expanding the dedicated sales network of Toshiba HVAC business in China

## Targeted markets and Fighting fields

	Japan	China	Southeast Asia	India	EU & US
<b>B2B</b>	<b>Toshiba Carrier</b> Strengthen cooperation with distributors Strengthen sales network SEC: marketing Product development spec-in activity				
<b>B2C</b>		US Carrier Corporation sales network			

\* India SEC is under discussion



# Railway Systems (1/2): Business Overview

Provide competitive core components and maintenance services for railway rolling stocks over the long term

## Products and Services Overview

- AC-DC drive systems
- Power supply systems
- Air-conditioning systems
- Battery systems
- Locomotives
- Information systems and signalling systems
- Power supply systems
- Information systems, the station service systems\*1



Main circuit systems for railway vehicle



Power systems for railways



Information systems



Automatic ticket gate\*1

## Major Accomplishments

## Orders won for PMSM\*2 in Japan and Overseas in FY15



(photo provided by JR Hokkaido)

H5 Bullet Train\*4 vehicle electrical products



N700A Bullet Train vehicle electrical products



Hankyu Railway 1000 series electrical products



Bangkok Purple Line FTK (Full Turn Key)



Singapore SMRT (Singapore mass rapid transit)



Electrical components of China Electric locomotives



JR Freight railway company Hybrid replacement locomotives

# Railway Systems (2/2): Business Overview

Cultivate new customers and enter new markets with energy saving, local-fit products and refurbishment as the core

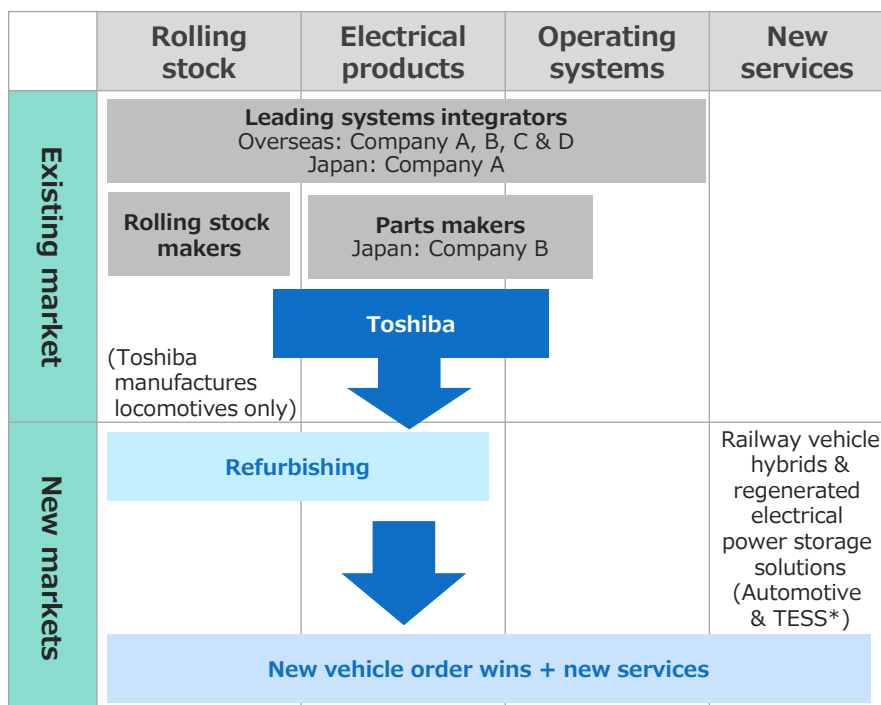
## Market Environment

- Progress in industry alliances
- Renew aging stock to operate on existing infrastructure

## FY2016 Priority Measures

- Secure stable profits by promoting energy saving, such as **PMSM** systems in Japan
- Enter the Indian market with **local-fit** products by launching an India manufacturing base in FY2016
- Strengthen the **refurbishing** business by upgrading electrical products in existing trains to increase **life of rolling stock, reduce life cycle costs**, and propose **performance improvements**  
Strengthen direct distribution routes with railway operators and aim to win orders for new rolling stock
- Develop the business with JV "Railise", cooperate with railway operator Singapore SMRT
- Respond to the refurbishment of locomotives and enter the EU market
- As new services, provide energy regeneration system and storage of electricity solution which allow to continue service during power outage

## Targeted markets and Fighting fields





# Battery Systems (1/2): Business Overview

Provide rechargeable batteries that are outstanding in high output, long service life, low-temperature performance and safety

## Products and Services Overview

**Toshiba SCiB:**  
A lithium-ion rechargeable battery (LIB) that uses lithium titanate (LTO) in the negative electrode

- High output: Can absorb and output high current
- Long service life: Service life over 15k cycles
- Low-temperature performance: Can be used in cold climates (-30 °C)
- Safe: Less prone to rupture or catch fire



3Ah

High output-type battery cells

Application: ISS\*, micro HEV



10Ah



20/23Ah

High capacity-type battery cells

PHEV/EV, stationary type, etc



Battery module

Automotive and stationary use

## Major Accomplishments

Battery cell caused market failure accident track record of zero (below 0.1 ppm)



Suzuki: ENE Charge, S-ENE CHARGE, Mild Hybrid for use on-board ehicles



Van Hool EV Tram-buses  
Operating in more than 10 EU cities



Tohoku Electric Power Minami Soma substation supply and demand balance improved by storage battery system



Tokyo Subway Ginza Line



Tokyo University of Marine Science and Technology Electric propulsion ship

# Battery Systems (2/2): Business Overview

Expand the battery cell module system into areas where stringent specifications are required with a focus on automotive and industrial applications, taking advantage of top-class high input-output characteristics and long service life

## Market Environment

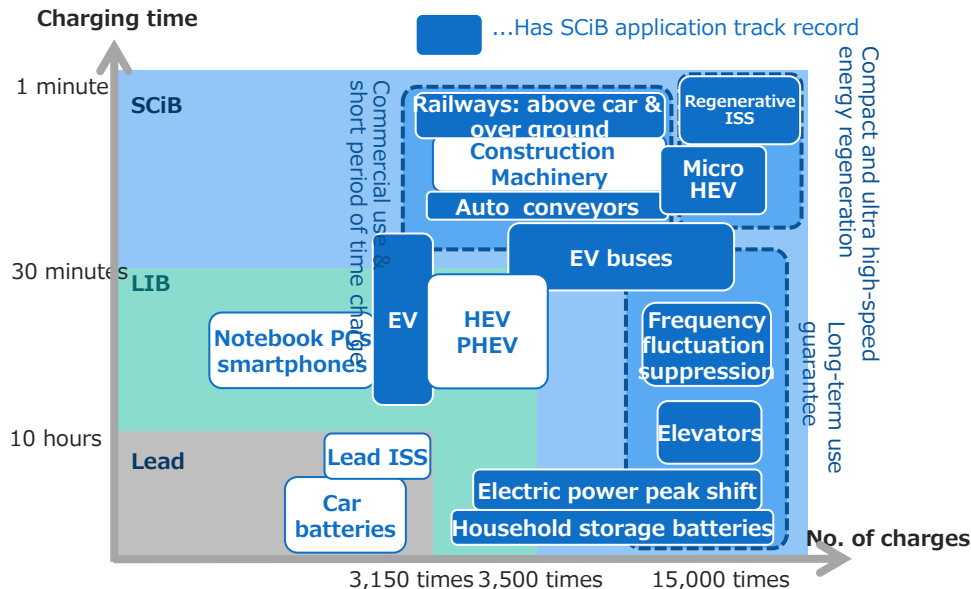
- ISS, China EV bus and EU PHEV demand is growing with the tailwind of automotive environmental regulations
- Industry demand is expanding due to replacements of lead batteries
- Demand in railways and power generation is growing due to environmental factors

## FY2016 Priority Measures

High input / output type 3~10Ah

- Take advantage of **small size and ultra high-speed energy regenerating capacity** to incorporate the growing **automotive market (ISS, micro HEV)** and expand scale

## Targeted markets and Fighting fields



High capacity type 20Ah~

- Expand business for **Automotive (EV bus) and auto conveyors** which match with SCiB advantage such as **commercial use and short charge times**
- Products which is required to guaranteed **long-term use** over several decades, such as **Electric power peak shift and Household storage batteries**
  - For automotive (EV buses), railways, industry, and power systems
- Apply to other **in-house businesses and increase competitiveness**
  - Batteries for power, railways, elevators, households, etc.

I . **Company Overview**

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**➤ III . Initiatives for Growth**

# The Middle and Long-term initiative

Take opportunities in middle and long-term mega trends and in market needs

## Mega Trends by 2025

## Toshiba's initiative

### Climate Resources Population

Global warming, Stricter environmental regulations and Increase renewable energy  
Climate change and Increase extreme weather  
Emerging countries: Population growth, Water and food shortages  
Developed countries: Population aging and Labour shortages

### Respond to the risk of climate change and resource depletion

- Storage battery systems for electric power systems
- Disaster prevention solutions
- Water and environmental solutions

### Urban areas

Emerging countries: Progress in rapid urbanization  
Developed countries: Increase aging infrastructure (railways, roads, water supply, etc.)  
Japan: Progress in large-scale urban re-development projects

- Takeshiba district
- Toranomon area
- Tokyo station area
- Shibuya Station area
- Shinagawa Station area
- Tokyo Olympic Games

### Contribute to create comfortable urban environment by upgrading and renewing aging infrastructure

- Elevators, HVAC, lighting fixtures and power substations
- Water and highway equipment
- Railway refurbishing

### Industry

Progress in energy saving in production facilities and building equipment  
Automotive: Environmental regulations and shift to electric powertrain  
Logistics: Increase in quantity of small packages carried due to the e-commerce growth

### Contribute to energy conservation and efficiency improvement by the technology of power electronics, storage batteries and mechatronics

- High efficiency motors and inverters
- High efficiency batteries for automotives
- Postal and logistics solutions



# Creation of new business opportunities

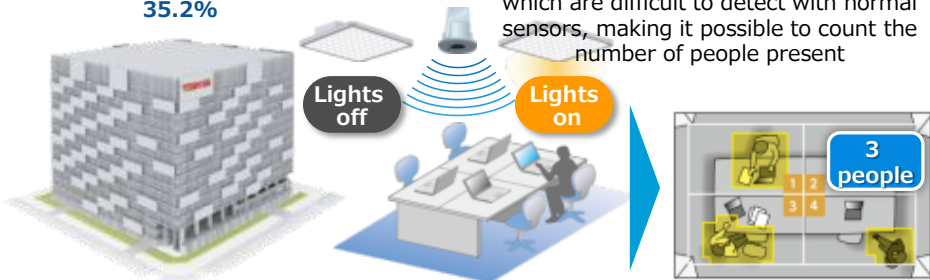
Continuously provide new solutions to improve the value of the customers' core business

## Building solutions case study

### Smart BEMS\*1

Advanced environmentally friendly office building built in the Lazona Kawasaki district. Introduction of Toshiba "Smart Community Center"

Building overall energy-saving rate: 35.2%



Comfortable air-conditioning with energy saving controls  
Air-conditioning power in summer: 15.9% reduction \*2  
Air conditioning power in winter: 13.1% reduction \*2

Image sensor applications  
Lighting control  
Electric light power: 12.8% reduction \*2

BCP\*3 response systems  
With load capacity controlled emergency generators (1,500kVA × 2), about 3 days power supply

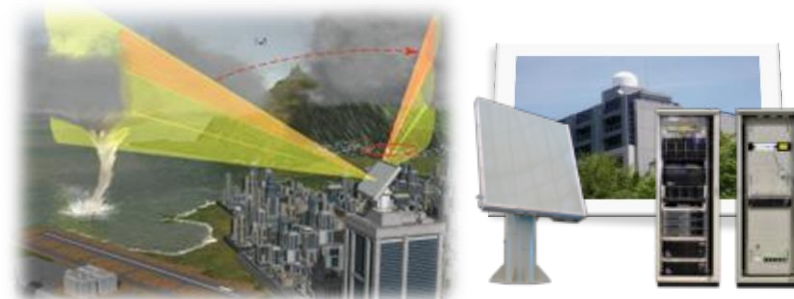
#### Improve building asset value

- Improve both comforts and energy savings
- Maximize continuation of energy supply in the event of a disaster

## Disaster prevention solutions case study

### Phased Array Weather Radar

As part of the Cabinet Office "Strategic innovation Creation Program" (SIP), implementing a demonstration project in cooperation with the National Institute of Information and Communications Technology, and Osaka University, etc.



Wide range high-speed observations  
Conventional observation space (radius 60km, height 15km)  
Observation time: 30 seconds, conventional ratio\* 1/20  
\* Comparison with parabolic antenna

Detects sudden heavy rain about 30 Minutes before it falls

#### Ensure the safety and security of people

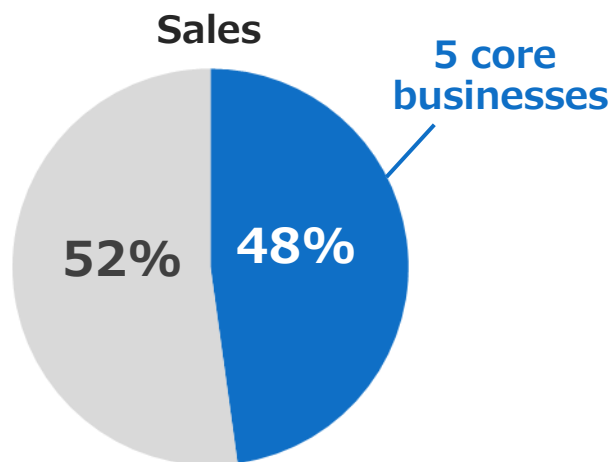
- Improve the prediction accuracy and shorten time needed to observe weather
- Guide people in accurate and quick evacuation



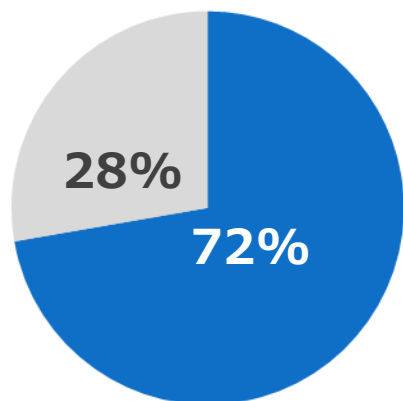
# Investment for Growth

Optimize the allocation of business resources  
to the core businesses

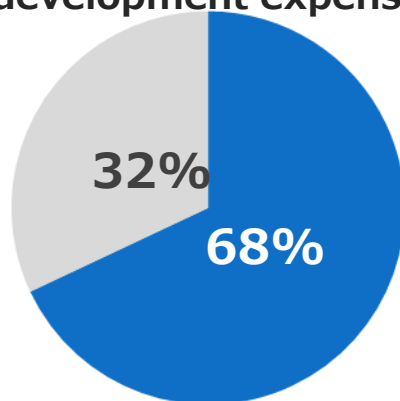
FY16 plan



Capital investment



Research and development expense



## Develop Advanced Water Solutions

Technologies of water treatment, energy-saving and energy creation

## Strengthen Elevator Field Business Operations

Expand remote monitoring maintenance system (China)

## HEVC

### New Product development

New model production equipment (New product for Overseas / B2B in Japan)

## Develop Energy-saving Solutions for Railways

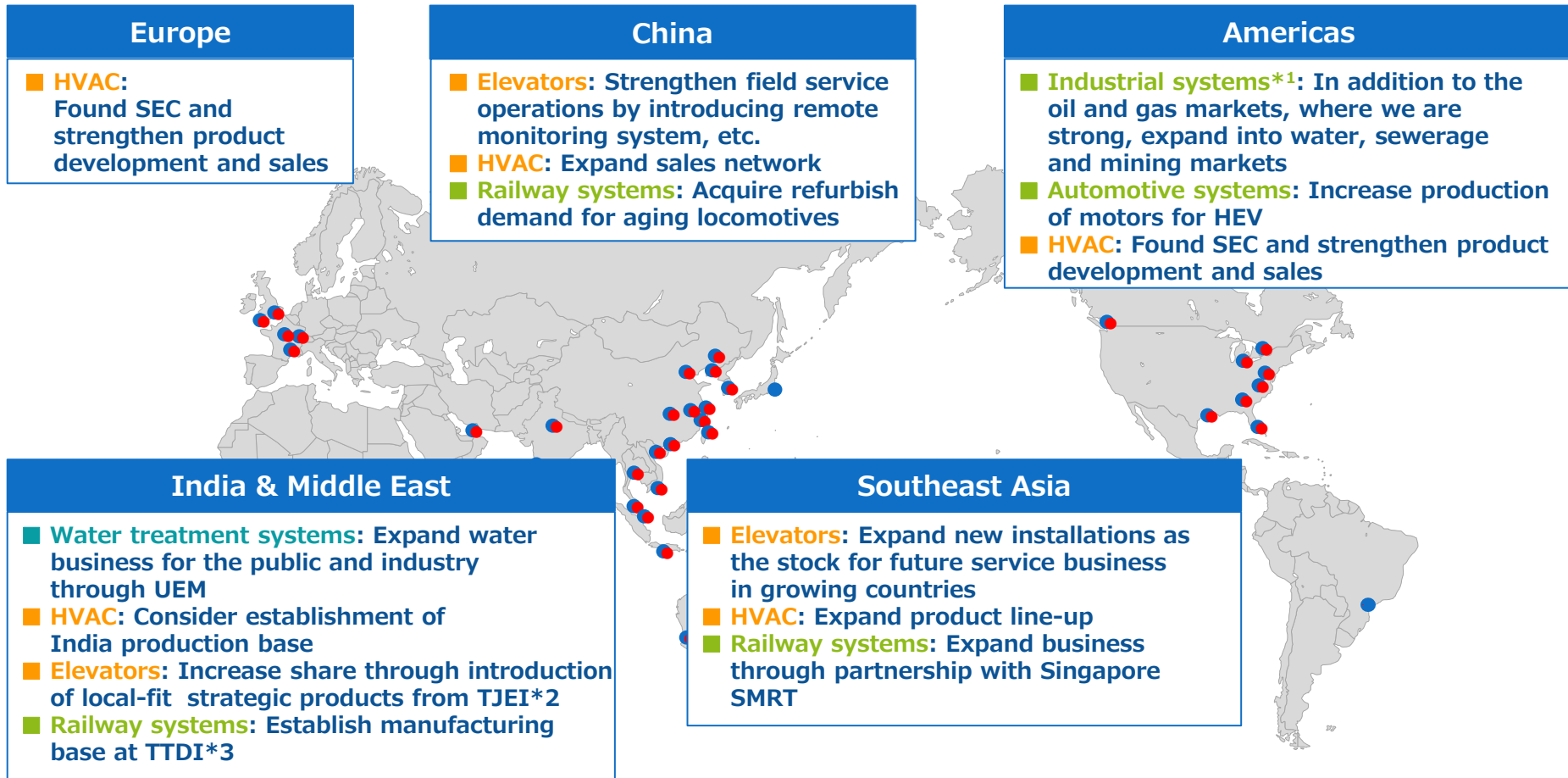
Regenerative power storage  
Railway hybrid system

## Increase Production capacity for SCiB Rechargeable Batteries

Invest in mass production line at Kashiwazaki Operations

# Global Growth Strategy and Key Businesses

Generate steady profit in the US, China and Southeast Asia  
where we have business foundations;  
Expand business in the growth markets of India and Middle East



Overseas sales ratio 27% (FY15 result) → 36% (FY18 plan)



# Forward-looking Statements

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- This presentation contains forward-looking statements concerning future plans, strategies and performance of Toshiba Group.
- These forward-looking statements are not historical facts, rather they are based on management's assumptions and beliefs in light of the economic, financial and other data currently available.
- Since Toshiba Group promotes business in various market environments in many countries and regions, its activities are subject to a number of risks and uncertainties that, without limitation, relate to economic conditions, worldwide mega-competition in the electronics business, customer demand, foreign currency exchange rates, tax rules, regulations and other factors. Toshiba therefore wishes to caution readers that actual results might differ materially from our expectations.
- Toshiba's fiscal year (FY) runs from April 1 to March 31. All figures are consolidated totals for the 12 months , unless otherwise indicated

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