

# Mitsubishi Electric Transportation Systems

— Road to No.1 transportation systems integrator —

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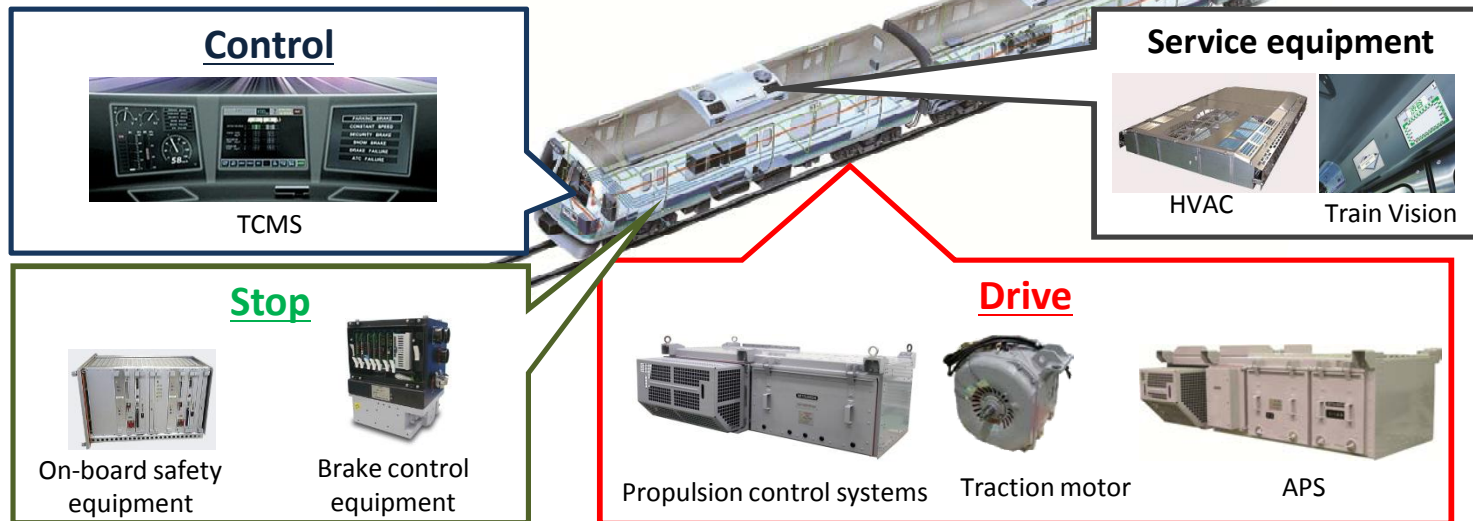
4 December 2014

- 1. Business Overview**
- 2. Business Environment**
- 3. Business Targets**
- 4. Growth Strategy**
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- 6. Sales & Marketing Network**
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# 1. Business Overview

- Strong track record of rolling stock systems since 1922, exports since 1960's
- Only manufacturer in the world who can drive, stop, and control rolling stocks
- Delivery record of ground-based systems, mainly in Japan

## Rolling stock systems



Network between systems



Digital radio communication systems



## Ground-based systems

Transportation system substation



Traffic control system



Station & platform equipment

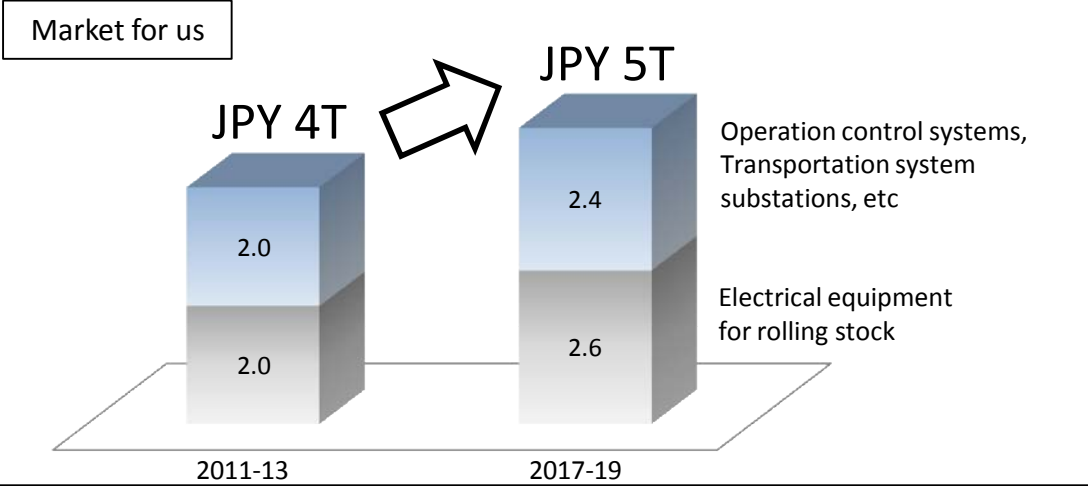
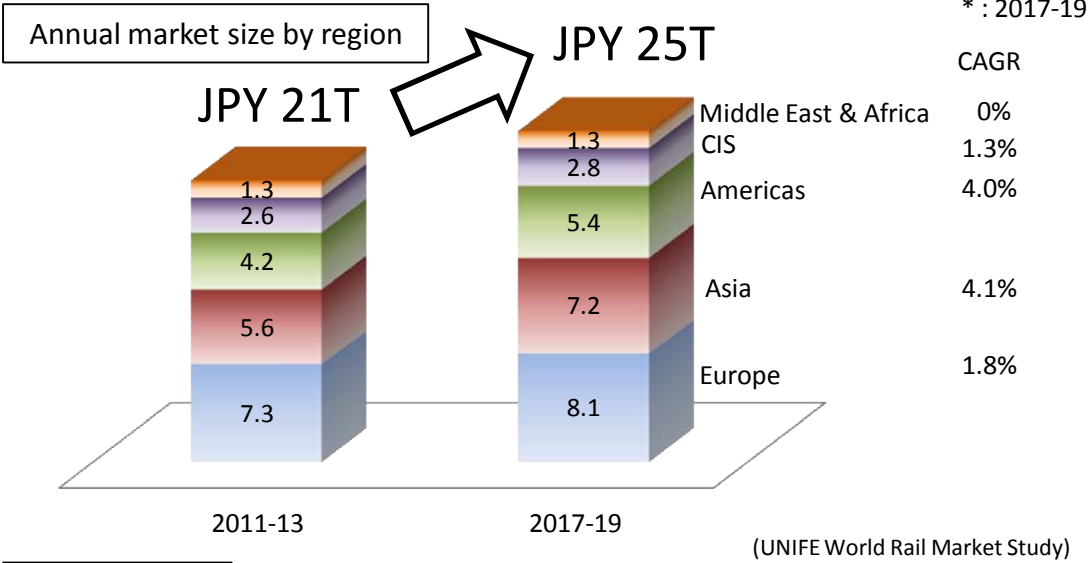


TCMS: Train Control and Monitoring System  
HVAC: Heat, Ventilation and Air Conditioning

APS: Auxiliary Power Supply

# Solid growth in global transportation systems market

Annual transportation system market : JPY 25T\*



### Growing markets

- Europe
- Asia
- North America

### Change in customer needs

- Export -> Local production
- System package projects

### Fierce competition

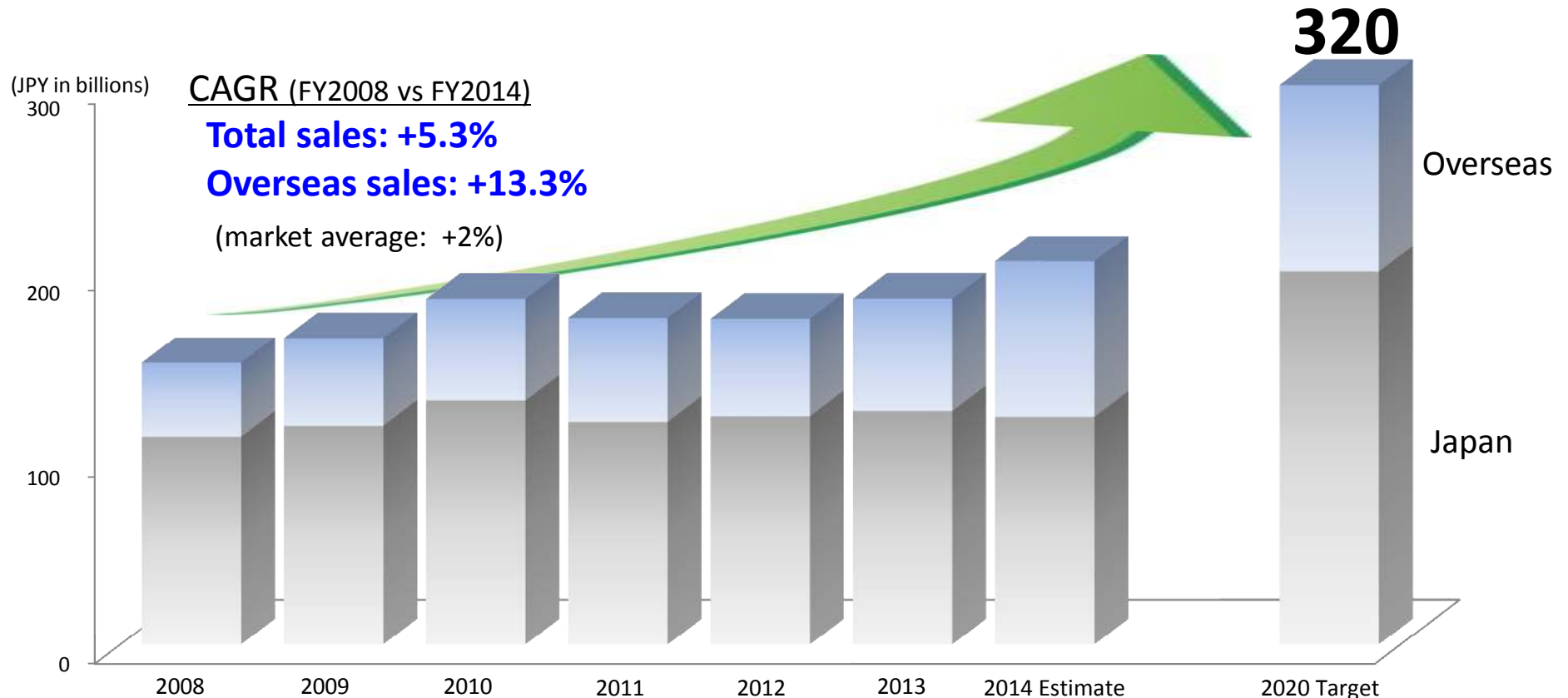
- Industry consolidation
- New entrants

### Higher exchange risks

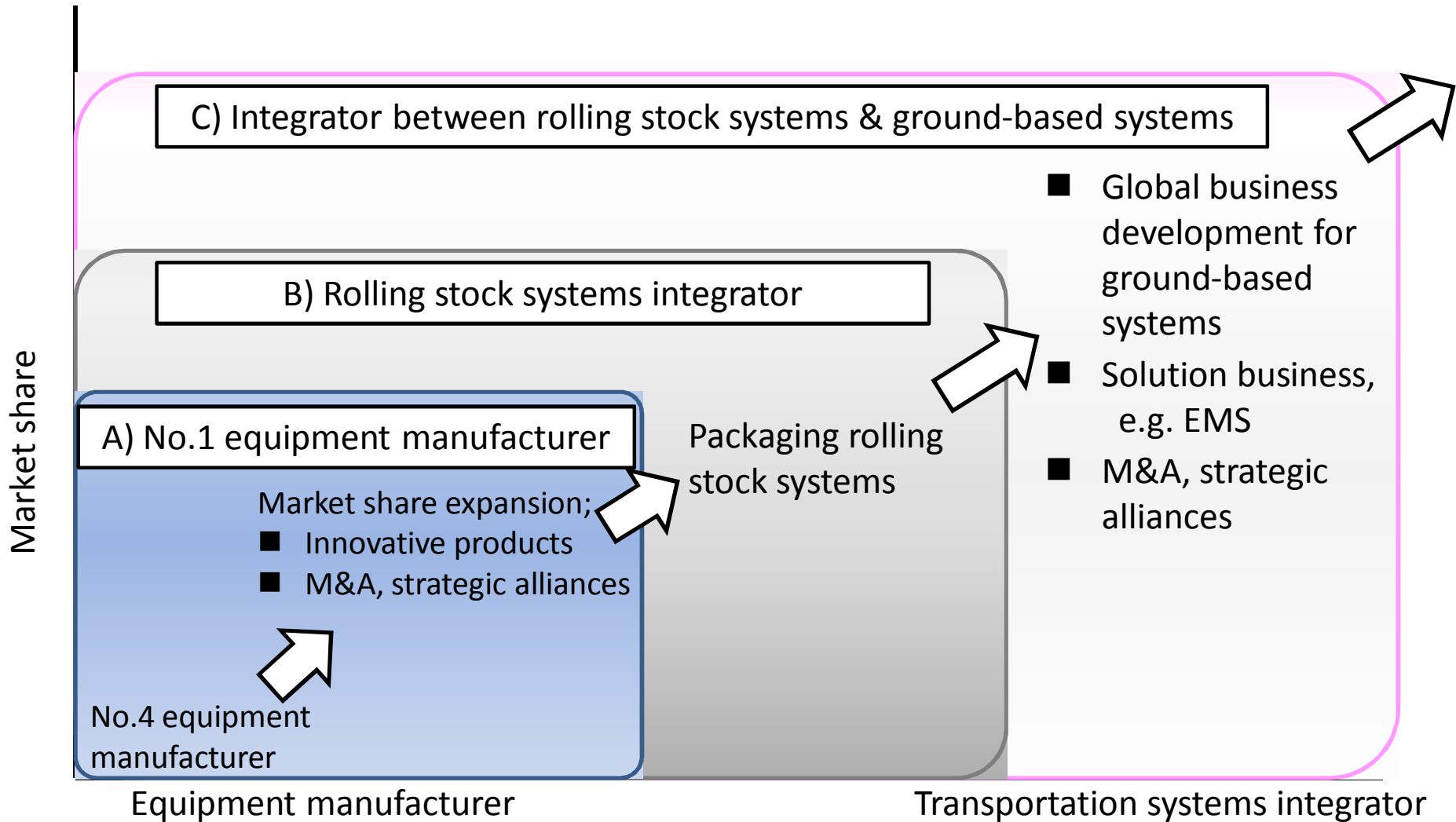
### 3. Business Targets

**JPY 320 billion revenue, more than 5% operating margin in FY2020**

Achievements	Targets
<ul style="list-style-type: none"> <li>Higher growth than market average</li> <li>Share &gt; 50% in Japan</li> <li>Doubled overseas sales (FY2008 vs FY2014)</li> </ul>	<ul style="list-style-type: none"> <li>Japan: Meet customer needs, and expand business scope</li> <li>Overseas: Double revenue</li> </ul>



## Road to No.1 transportation system integrator



Expand market share by launching innovative products

**Inverter with all-SiC\*<sup>1</sup> power module**

- **30% reduced energy consumption\*<sup>2</sup>**  
Enabling efficient use of regenerative energy
- **Less maintenance**  
Less usage of mechanical brakes
- **65% reduced size & weight\*<sup>3</sup>**



\*1: SiC: Silicon Carbide  
\*2: As a main circuit system, compared to our conventional system  
\*3: compared to our conventional system

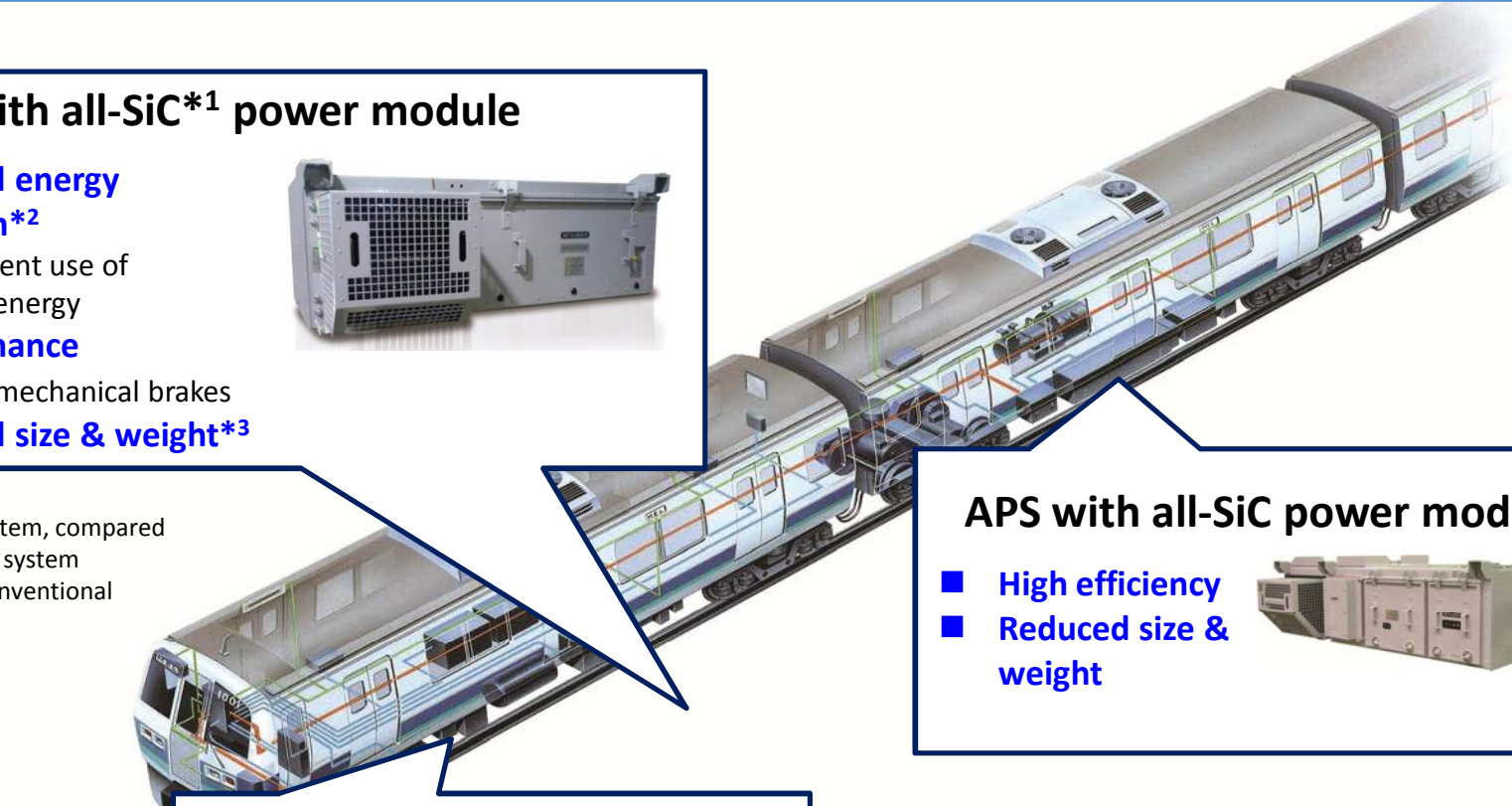
**APS with all-SiC power module**

- **High efficiency**
- **Reduced size & weight**



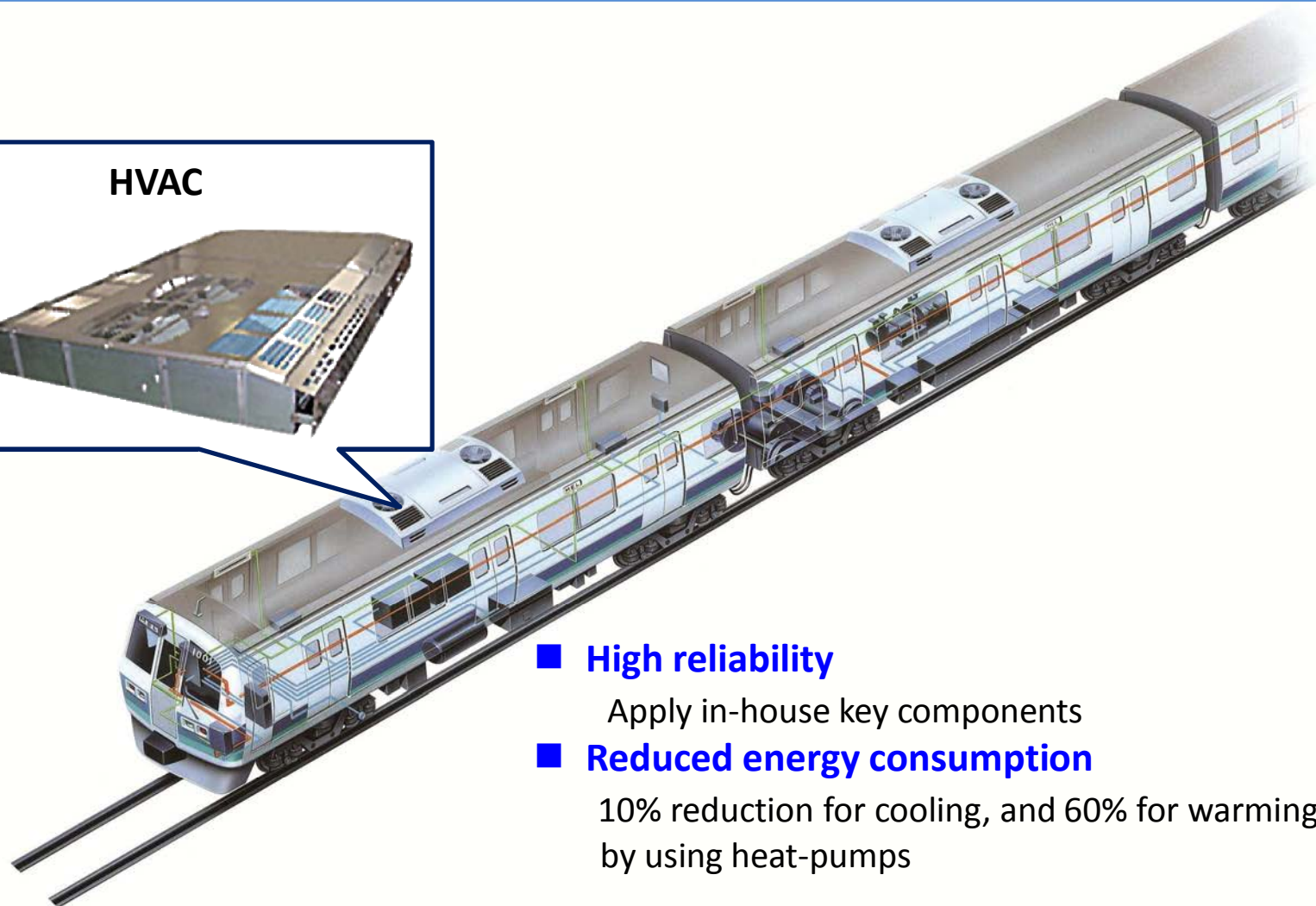
**Highly efficient traction motor**

- **Reduced energy consumption**
- **Less maintenance**
- **Less noise**
- **High reliability**





Expand market share by launching innovative products

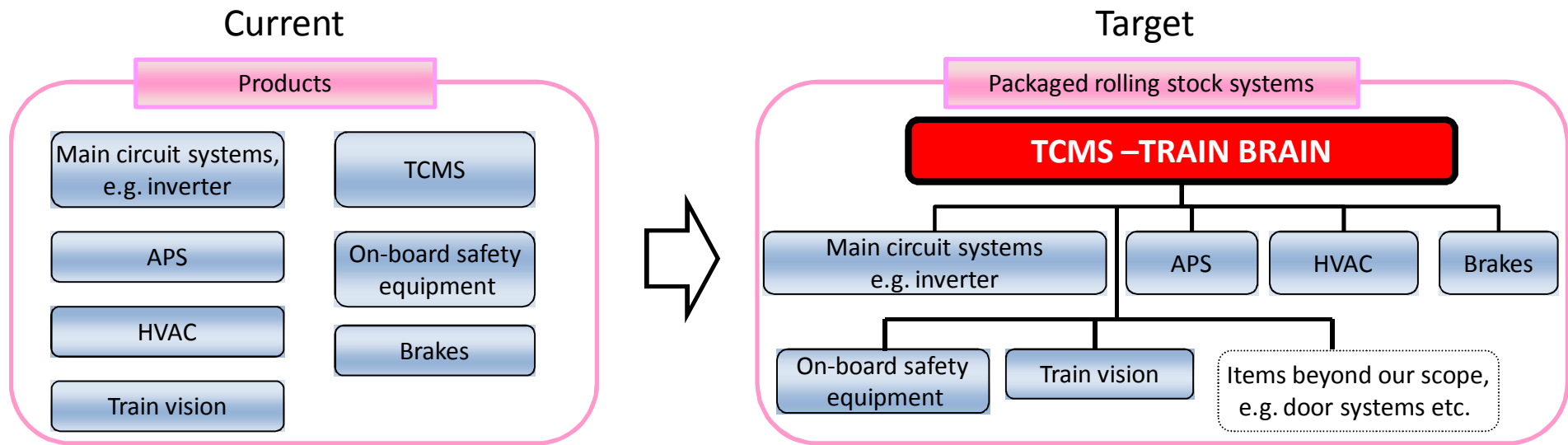


- **High reliability**  
Apply in-house key components
- **Reduced energy consumption**  
10% reduction for cooling, and 60% for warming  
by using heat-pumps



Integrate rolling stock systems with packaged solutions

Create rolling stock system packages by use of **TCMS –TRAIN BRAIN**, backed by our extensive knowledge of electrical equipment for rolling stock



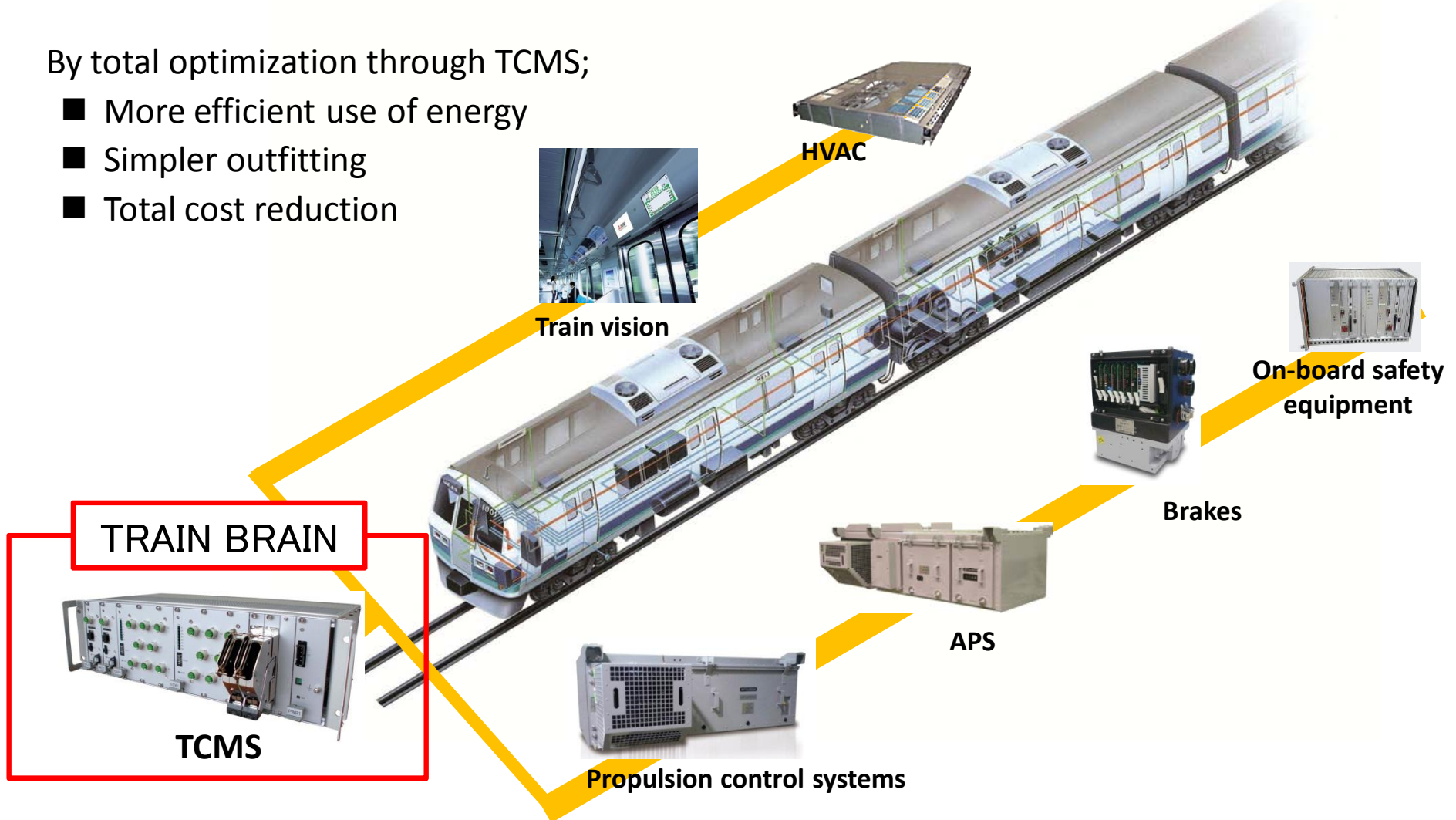
■ Optimization for individual products

■ Total optimization as system

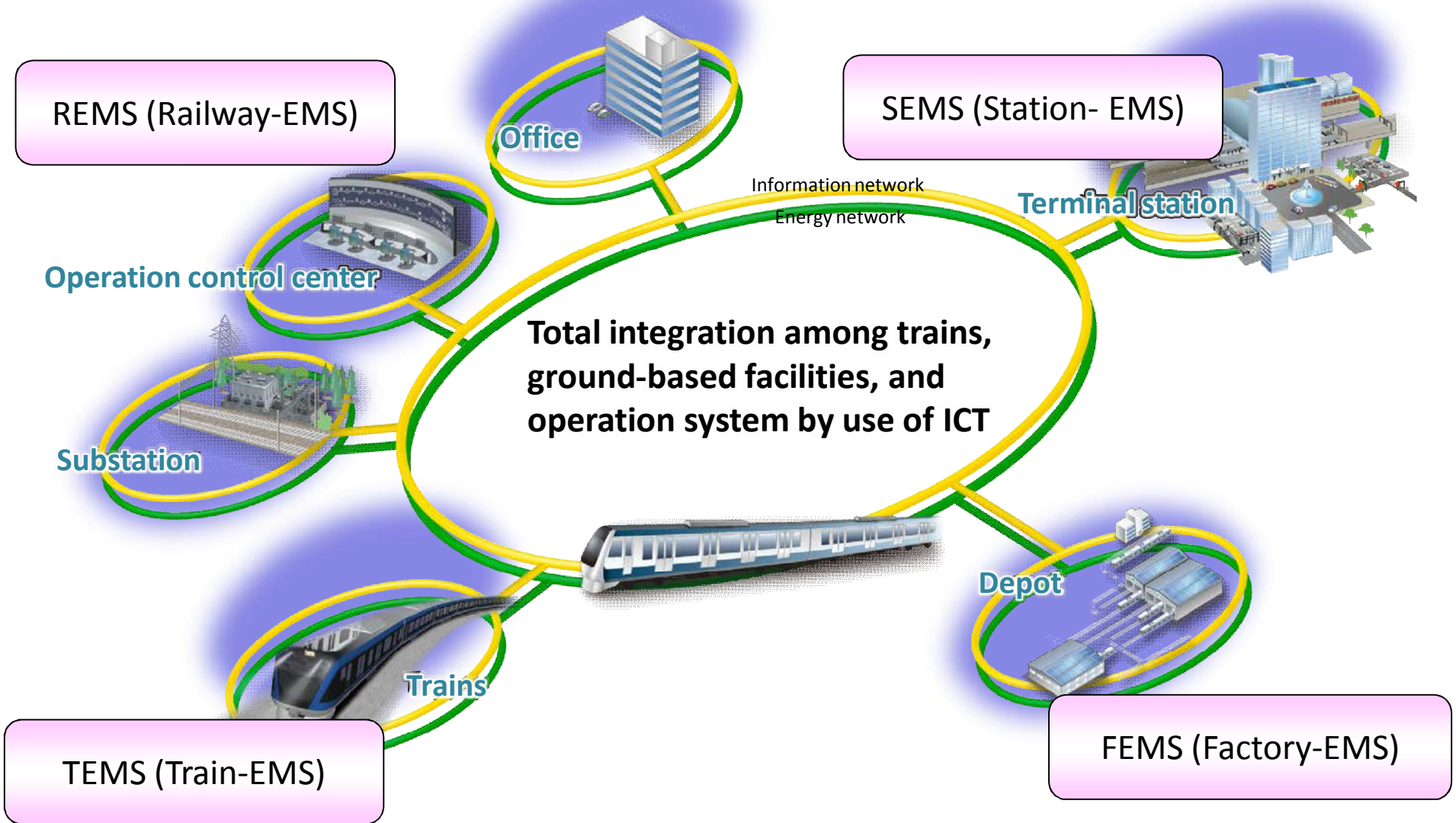
## Integrate rolling stock systems with packaged solutions

By total optimization through TCMS;

- More efficient use of energy
- Simpler outfitting
- Total cost reduction



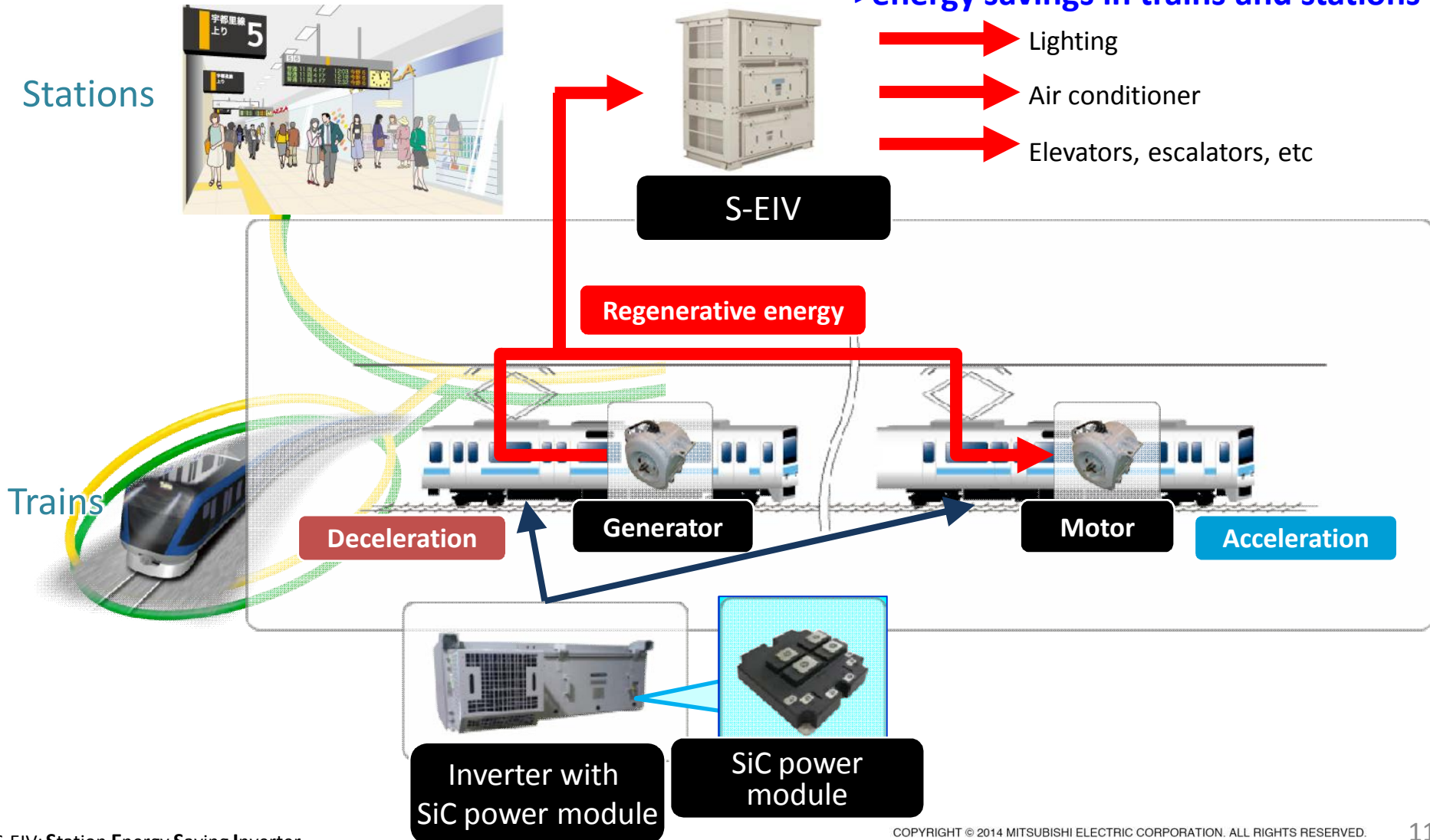
## Proposed solution business: Energy Management System



Introduction to EMS solutions:

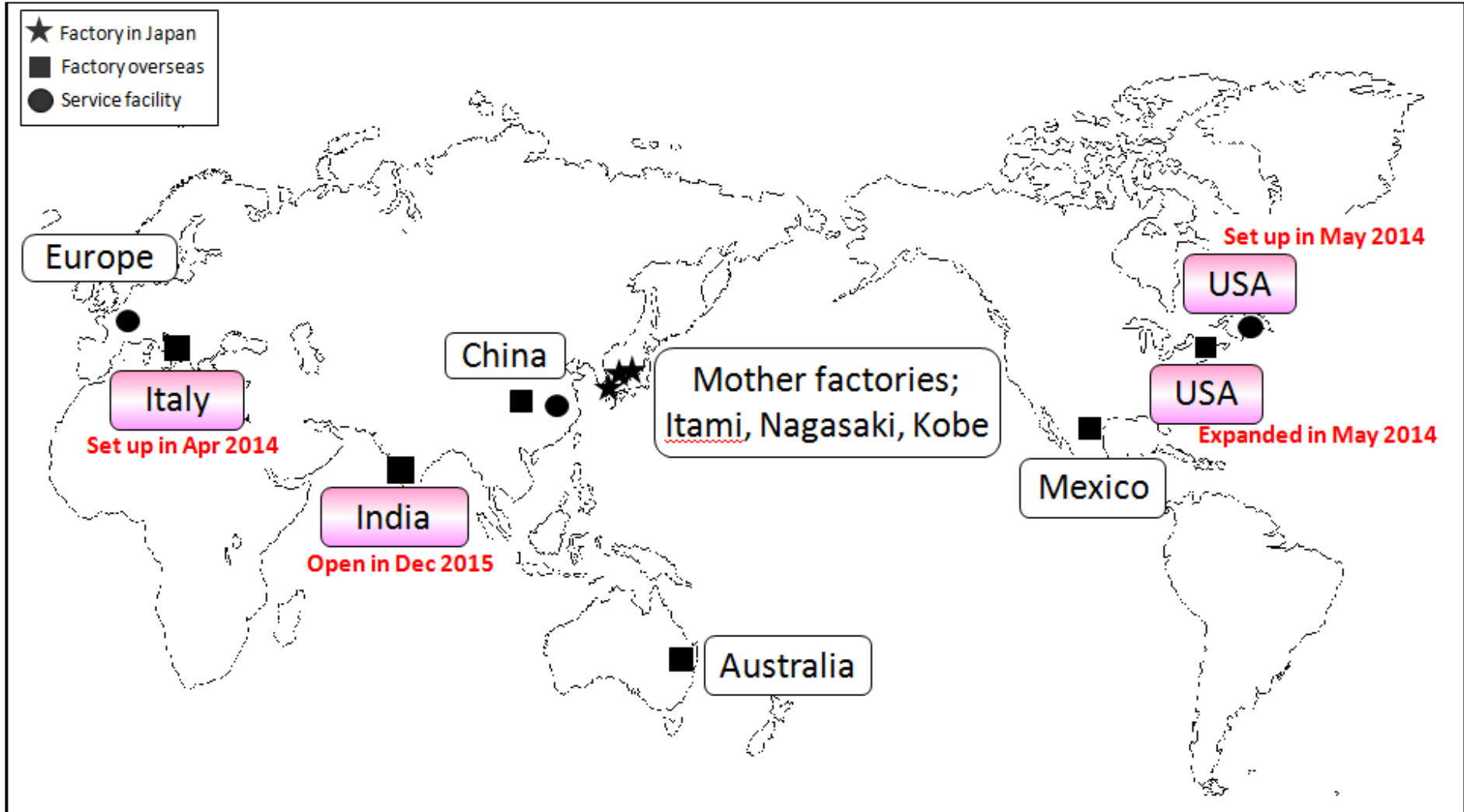
**Increase regenerative energy by applying products with all-SiC power module**

**->energy savings in trains and stations**





Improve competitiveness through local production & services



### 1) Europe

#### a. **MEKT** (Mitsubishi Electric Klimat Transportation Systems S.p.A)

- Established in Apr 2014
- Engineering, assembly, and service of HVAC



### 2) North America

#### a. **MEPPI** (Mitsubishi Electric Power Products, Inc)

- Expanded in May 2014
- Local production of propulsion control systems and HVAC

#### b. **MRS** (MEPPI Rail Service Center)

- Established in May 2014
- Target to expand service business





## 3) India

### a. New factory

- Start operation in Dec 2015
- Local production of electrical equipment for metro projects, etc
- Target to expand service business in India

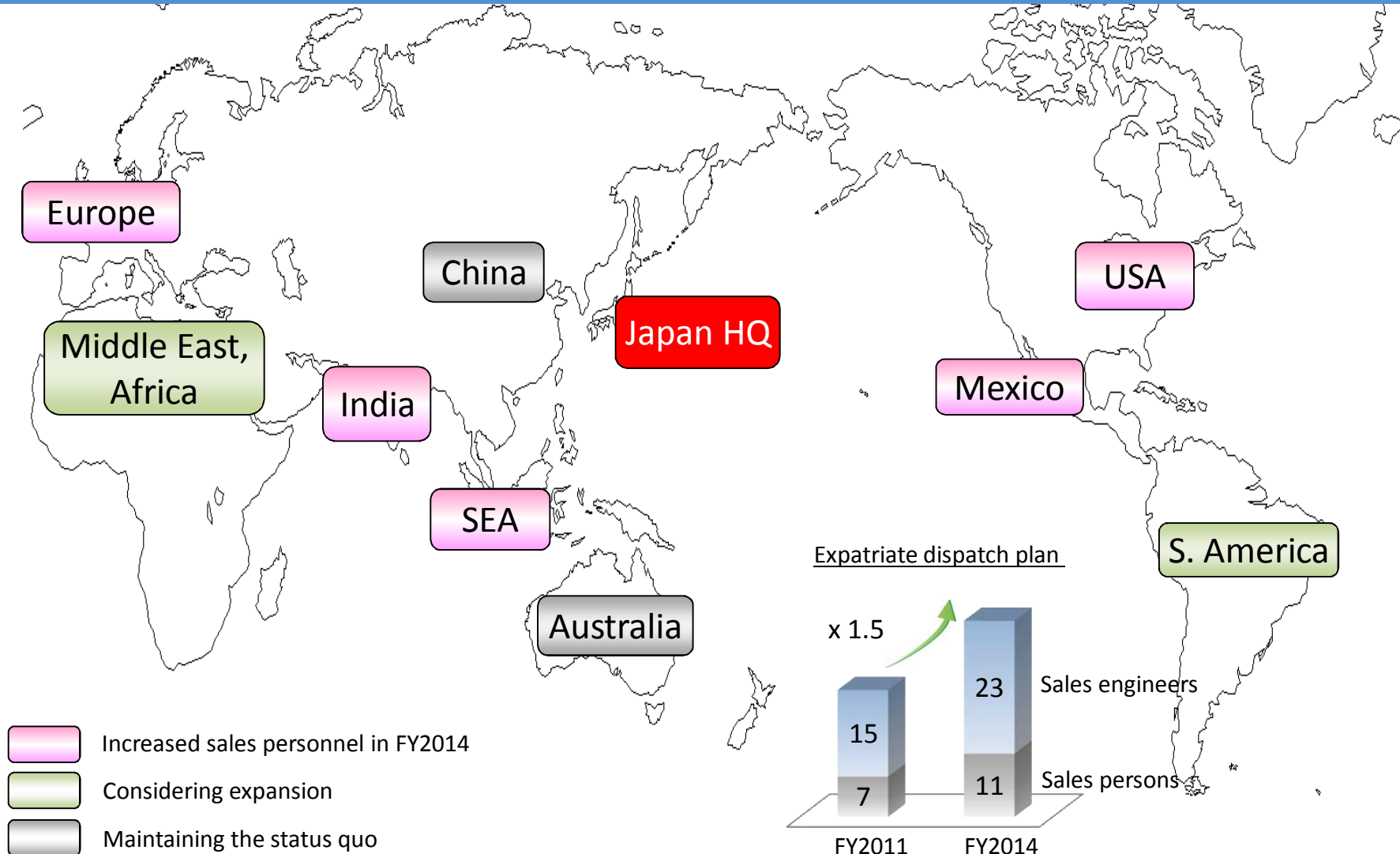
#### New factory outline

Location	Bengaluru, State of Karnataka
Dimension	4,605m <sup>2</sup>
Business	Assembly, testing, & maintenance of propulsion control systems, APS, and traction motors
Schedule	Finish construction : Sep 2015 Start operation: Dec 2015



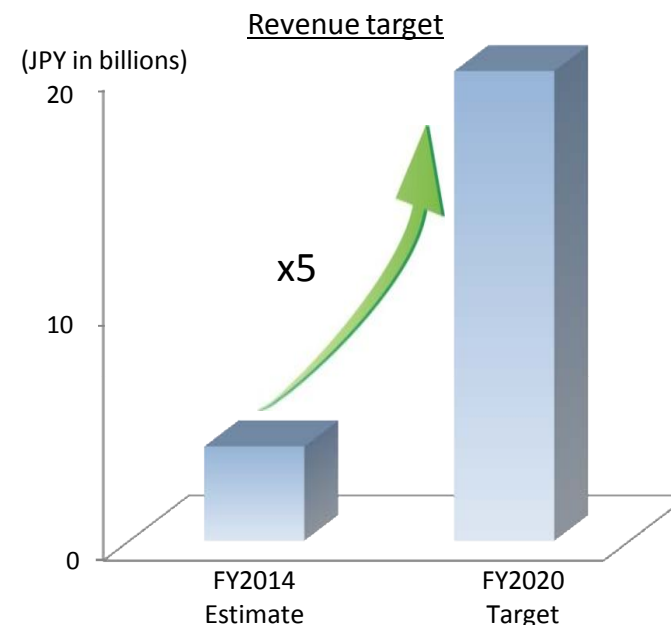
Rendition of envisioned factory

## Develop global business with more personnel outside Japan



**Europe**

- Set up transportation business division in EU sales office (April, 2014)
- Collaborate with railcar manufacturers
- Work closely with rail operators and railcar manufacturers



### Modernization of Deutsche Bahn ICE-2 Train Equipment

- Our first delivery of train equipment to Deutsche Bahn

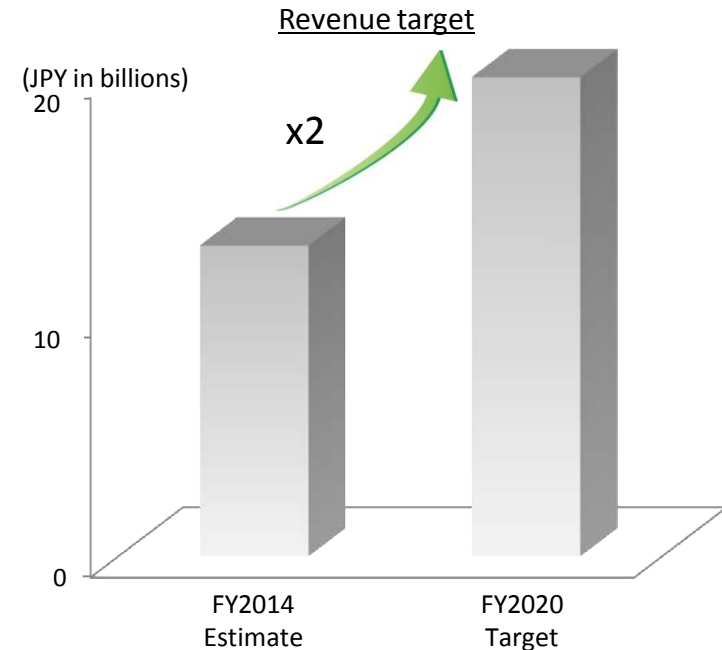
Customer	Deutsche Bahn AG
Order	Modernize propulsion control systems in 46 Intercity Express 2 (ICE-2) High-Speed trains
Sales	Approximately JPY 3.0billion (expected)
Delivery	FY2016 – FY2018



© Deutsche Bahn AG

**North America**

- Strong delivery record of electrical equipment for 6,500 railcars, mainly in NYC area
- Expand service business and strengthen relationship with rail operators by setting up MRS
- Penetrate into ground-based systems business



**Supply electrical equipment for NYC suburban M-9 train**

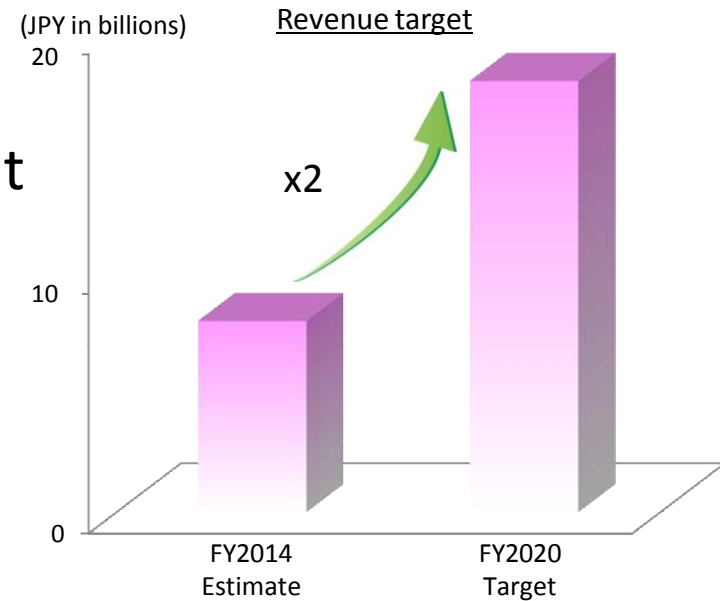
Customer	Kawasaki Rail Car, Inc.
Order	Supply propulsion control systems and TCMS for 92 trains for Long Island Rail Road M-9
Sales	Approximately JPY 3.2billion (expected)
Delivery	FY2015 -



(Picture: NYC Long Island Rail Road M-7)

India

- 70% market share in electrical equipment for rolling stock in Indian metro market
- Strengthen relationship with local railcar manufacturer
- Targets include projects financed with yen loans



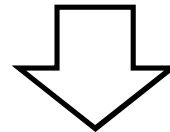
### Supply electrical equipment for Delhi Metro RS-10

Customer	Rotem / Delhi Metro Rail.co
Order	Supply propulsion control systems, APS, and TCMS for 486 metro trains
Sales	Approximately JPY 11.1billiion (expected)
Delivery	FY2014 – FY2016



(Picture: Delhi metro RS3)

- Thoroughly execute the growth strategy
- Develop global production & service
- Reinforcing global salesforce



**Target:**  
**No.1 transportation systems integrator**



# *Changes for the Better*

## Cautionary Statements

The expectation of operating results herein and any associated statement to be made orally with respect to the Company's current plans, estimates, strategies and beliefs, and any other statements that are not historical facts are forward-looking statements. Words such as "expects," "anticipates," "plans," "believes," "scheduled," "estimated," "targeted," along with any variations of these words and similar expressions are intended to identify forward-looking statements that include but are not limited to projections of revenues, earnings, performance and production. While the statements herein are based on certain assumptions and premises that the Company trusts and considers to be reasonable under the circumstances to the date of announcement, you are requested to kindly take note that actual operating results are subject to change due to any of the factors as contemplated hereunder and/or any additional factor unforeseeable as of the date of this announcement. Such factors materially affecting the expectations expressed herein shall include but are not limited to the following. As such, additional factors may arise at any given time.

1. Any change in worldwide economic and social conditions, as well as laws, regulations, taxation and other legislation
2. Changes in foreign currency exchange rates, especially yen/dollar rates
3. Changes in stock markets, especially in Japan
4. Changes in balance of supply and demand of products that may affect prices and volume, as well as material procurement conditions
5. Changes in the ability to fund raising, especially in Japan
6. Uncertainties relating to patents, licenses and other intellectual property, including disputes involving patent infringement
7. New environmental regulations or the arising of environmental issues
8. Defects in products or services
9. Litigation and legal proceedings brought or contemplated against the Company or its subsidiaries and affiliates that may adversely affect operations or finances
10. Technological changes, the development of products using new technology, manufacturing and time-to-market
11. Business restructuring
12. Incidents related to information security
13. Occurrence of large-scale disasters including earthquakes, typhoons, tsunamis, fires and others
14. Social or political upheaval caused by terrorism, war, pandemics by new strains of influenza and other diseases, or other factors