

Rail Systems Business Strategy

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Rail Systems Business Strategy

Contents

- 1. Overview**
2. Market Environment
3. Business Performance Trends and Targets
4. Business Policy and Growth Strategy
5. Conclusion

1-1 Revenues by Systems and Products & Services

Transport management & control systems

Signaling/traffic management systems

Signaling/train control systems



Traffic management systems/
power management systems



Power supply systems Platform gates



Rolling stock systems

Rolling stock/Overseas maintenance

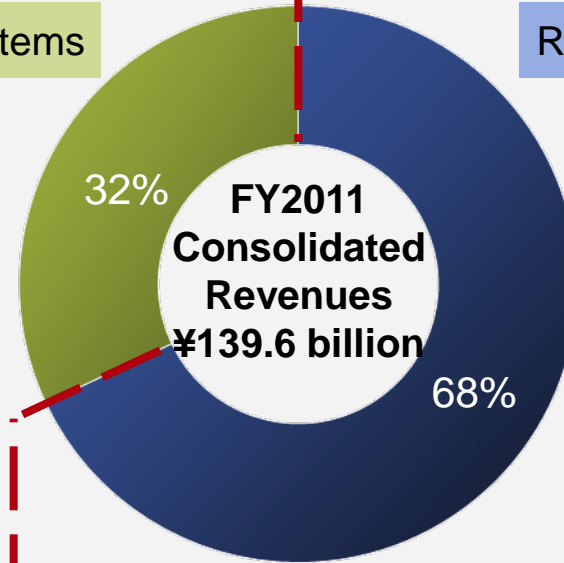
High-speed trains Limited express trains



Commuter trains Monorails



Overseas maintenance



Electrical components

Main circuit/
main motor



Air-conditioning/
air-moving systems



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Global rail business environment and Hitachi's initiatives

Market environment		Solutions
Increased environmental awareness	Demands for transportation systems with low environmental impact	<ul style="list-style-type: none"> n Make lighter n Make more energy efficient n Apply smart grid technologies to rail systems
Growth of emerging countries	Increasingly heavy traffic congestion	<ul style="list-style-type: none"> n Propose comprehensive rail system solutions n Total project integration (E&M*)
Increased awareness of safety and reliability	Increasingly sophisticated demands for safety levels	<ul style="list-style-type: none"> n High reliability <ul style="list-style-type: none"> • Signaling/train control systems • Traffic management systems
Intensifying competition	New players entering the market	<ul style="list-style-type: none"> n Low-cost, low-LCC*2 n Offer high-value-added systems utilizing distinctive technologies
Financial instability	Emergence of protectionism Increased demand for private-sector funds	<ul style="list-style-type: none"> n Promote localization n Cooperate with local partners n Introduce PPP*3, respond to demand for projects requiring finance

*E&M : Electrical & Mechanical

*2 LCC : Life Cycle Cost

*3 PPP : Public Private Partnership

Japan

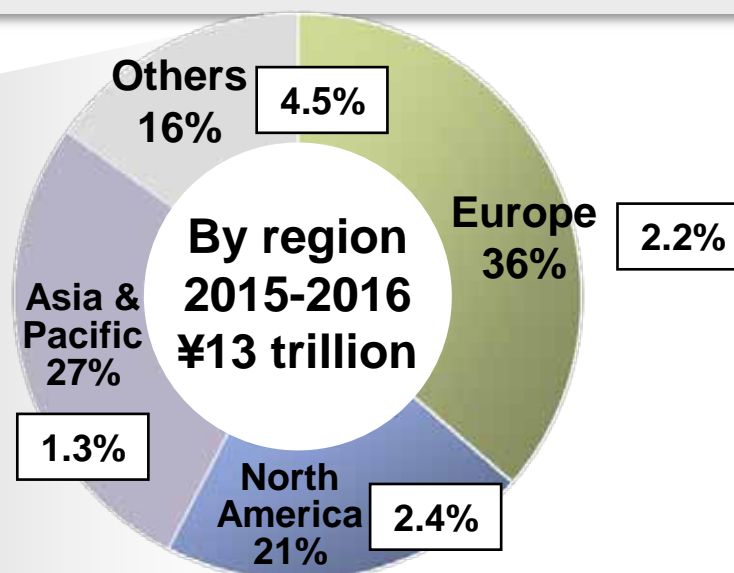
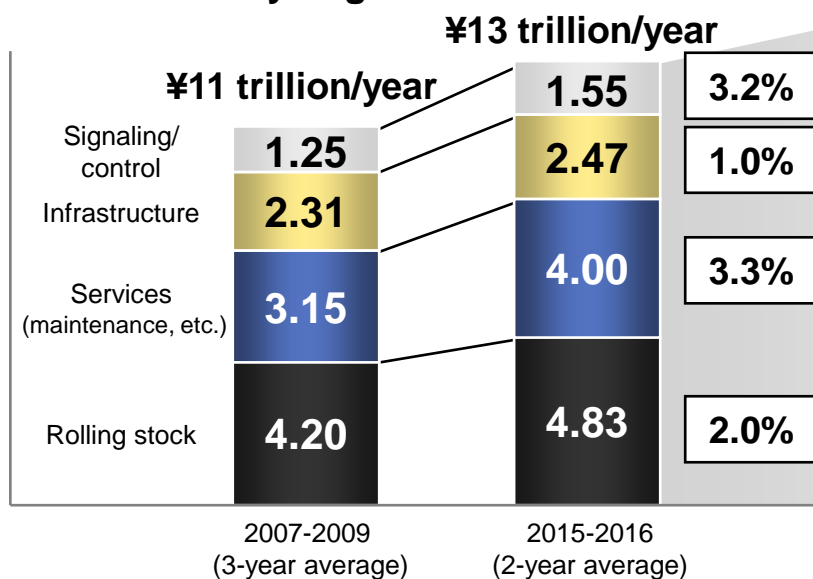
- Increasing investment in services and environment-related areas, but major growth in capital expenditures cannot be expected
- Drop-off in construction of new Shinkansen lines, and increasing demand for replacement/upgrading aging lines, etc.

Overseas

¥11 trillion per year (2007-2009 average) ¥13 trillion per year (2015-2016 average) (CAGR 2.3%)

- High growth in service and signaling/control segments
- Increased investments in railway networks in emerging countries

n Market Size by Segment



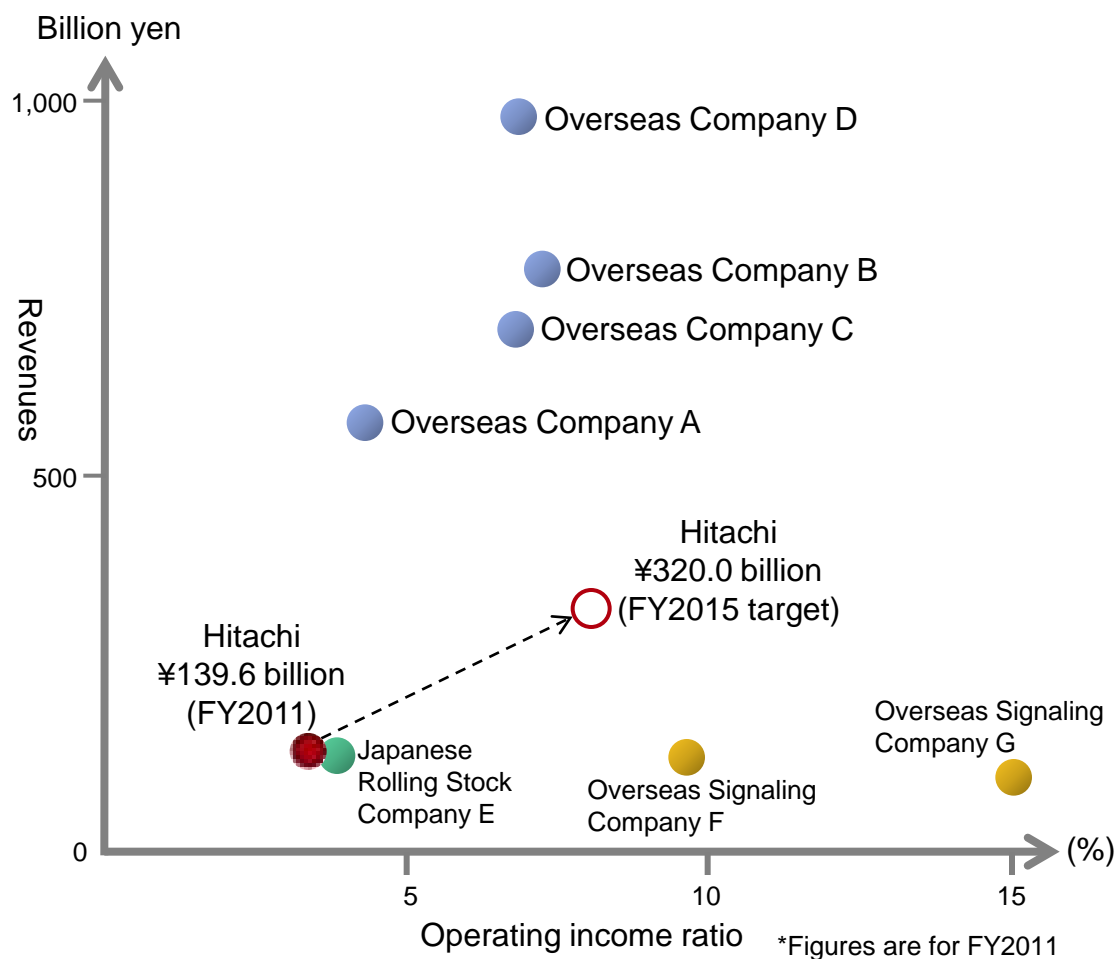
□ Show CAGR from 2009 to 2016

Source: UNIFE World Rail Market Study 2010

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Position as a Total Systems Integrator

Position



Presence

	Rolling stock systems		Transport management & control systems
	Rolling stock	Electrical components	Signaling/traffic management
Hitachi	P	P	P
Overseas Company A	PP	PP	PP
Overseas Company B	PP	PP	PP
Overseas Company C	PP	PP	PP
Overseas Company D	PP	P	P
Japanese Rolling Stock Company E	P	-	-
Overseas Signaling Company F	-	-	PP
Overseas Signaling Company G	-	-	PP

Rolling stock systems

Higher efficiency, lower environmental impact

- **Aluminum train technology**
(High-speed trains, commuter trains)
 - Highly economical next-generation rolling stock (A-train)
- **Inverter technology**
 - Develop small, lightweight, low noise (world-class) products
- **Hybrid technology**
 - World's first to enter service (Ki-Ha E200 series for East Japan Railway Company)

Proven track record in maintenance business
(U.K.)

Transport management & control systems

High reliability

- **Signaling/train control systems technologies**
 - Developing signaling systems compliant with European standards (ETCS*)
 - Wireless train control system (CBTC*2)
- **Traffic management system technologies**
 - Provide high-performance, highly functional systems to support high-density transportation with advanced control technologies (Top share in Japan)

*ETCS: European Train Control System

*2 CBTC: Communication Based Train Control

Total project integration (E&M)

Develop globally with own core systems technologies in traffic management, signaling, power supply and rolling stock

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3-1 FY2011 Results and FY2012 Forecast

(Billion yen)

	FY2010	FY2011		FY2012	
	Actual	Actual	YoY	Forecast	YoY
Revenues	133.1	139.6	105%	133.0	95%
Operating income	2.0	4.7	+2.7	3.6	-1.1



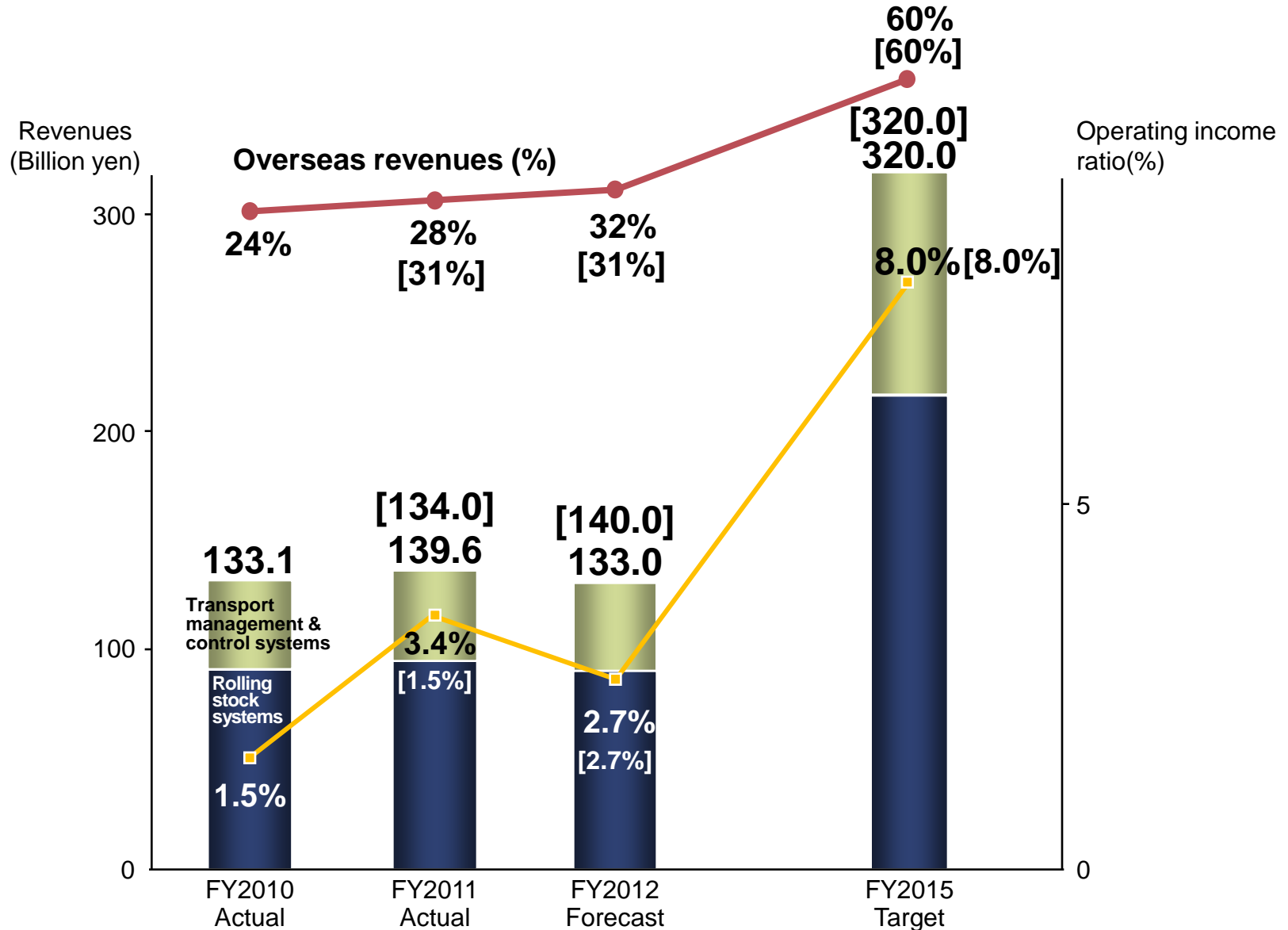
Revenues

- FY2011 revenues were higher year over year due to an increase in overseas and alleviation of the parts shortages caused by the Great East Japan Earthquake.
- Projecting lower revenues in FY2012 year over year because of lower sales of rolling stock systems in Japan and signaling/transport management systems.

Operating income

- FY2011 operating income increased year over year due mainly to the higher revenues and progress cutting costs.
- Projecting lower operating income in FY2012 due mainly to expenses for global business expansion.

3-2 Business Performance Trends and Targets



*[]: Previous forecasts or targets announced on June 16, 2011

Rail Systems Business Strategy

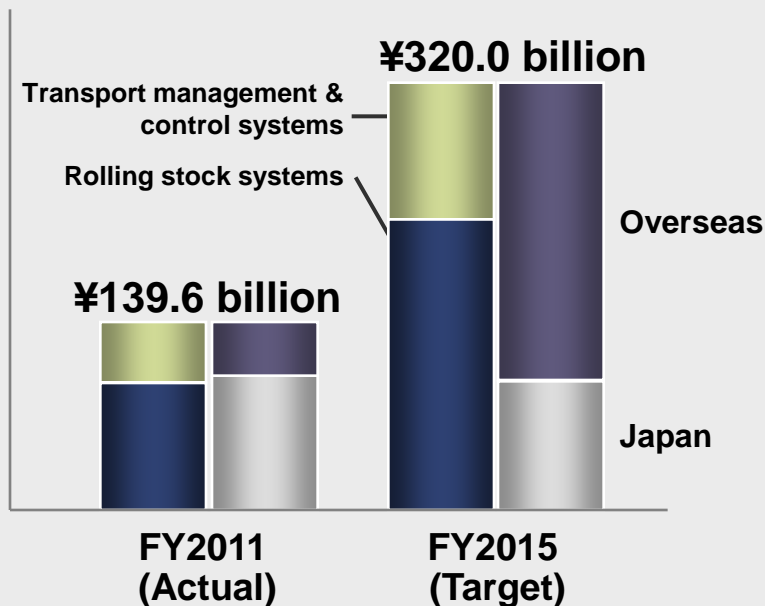
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Accelerate globalization with technologies developed in Japan

Target

- Revenues : ¥320.0 billion
- Overseas revenues ratio : Over 60%
- Operating income ratio : 8%



Strategies

- **Expand sales**
 - Strengthen Japan business base
 - Expand overseas business
- **Achieve highly profitable structure**
 - Realign product and business portfolios
 - Focus on maintenance, E&M, signaling/ traffic management systems
 - Promote environmental and energy-saving businesses
 - Win projects requiring finance
 - Promote standardization
 - Rolling stock (global A-train)
 - Signaling (ETCS and CBTC)
 - Components (standard electrical components)
 - Promote Hitachi Smart Transformation Project

Rolling Stock Systems

- Expand sales of aluminum trains (A-train) to municipal and private railways
- Secure Shinkansen market share [Hokuriku Shinkansen]
- Expand sales of electrical components



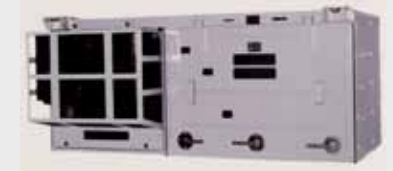
Signaling/Train Control Systems

- Complete Shinkansen signaling system projects (Hokuriku/Hokkaido)
[Hokuriku Shinkansen (Takasaki to Kanazawa), Hokkaido Shinkansen (Shin-Aomori to Shin-Hakodate)]
- Maintain and ensure high share in traffic management systems (81% for JR companies)



Expand Business by Promoting New Businesses

- Build energy-saving systems for optimizing power Demand - Apply smart grid technologies to rail systems and lithium-ion battery technologies
[Hybrid Ki-Ha*, B-CHOP*²]
- Bolster core products by applying new technologies
nDevelop SiC*³ inverters for reducing power loss



*Joint development with East Japan Railway Company

*2 B-CHOP (Energy Storage for Traction Power Supply)

*3 SiC: Silicon carbide

■ Rolling stock systems

Expand maintenance business
Promote standardization
(global A-train and standardized inverters)

■ Signaling/train control systems

Expand sales focusing on products compliant with European standards (ERTMS*/ETCS and CBTC)

■ Total project integration (E&M)

Promote alliance with Mitsubishi Heavy Industries and local partners to strengthen project integration
Shift from selling individual products to becoming a total systems integrator

*ERTMS : European Rail Traffic Management System

Rolling stock systems

Establish highly profitable business model by capturing orders for projects with maintenance contracts and PPP projects

- **Class 395 maintenance business**
- **Intercity Express Programme (IEP)**
 - n Under negotiation
 - n Project overview
 - High Speed Trains (HST*) replacement package (rolling stock, maintenance)**
 - **No. of vehicles: approx. 500 cars + options**
 - **Maintenance period: 30 years**
(Expand maintenance business throughout the U.K.)
- **Commuter trains and replacement of aging trains**
 - n **U.K.: Rolling stock for suburban lines and subways in London**



Ashford Depot
(Class 395)



IEP rolling stock
(image)

*HST : High Speed Train

Generate earnings by focusing on signaling/train control systems projects

China

■ Medium- to high-speed railways

▫ Expand sales of Chinese train control systems (CTCS*)

- Dedicated high-speed passenger line
Entered revenue service in Guangzhou-Shenzhen Railway (December 2011)
Extension planned from Shenzhen to Hong Kong

▫ Expand sales of computerized-interlocking

- Continuous orders at the level of 100 stations/year

■ Urban transportation

▫ Expand sales of CBTC

- Chongqing Line 3 entered revenue service (September 2011)
Received orders for Southern extension section (revenue service planned in December 2012)

U.K. and Europe

■ Expand sales through joint development with Network Rail

- On-board units complying with European standard (ETCS)
- Plan to start trial running in 2012

India

■ Enter the market with ETCS

- Establish a local engineering base

*CTCS : China Train Control System

Generate earnings by capturing orders for total project integration (E&M)

■ Increasing demand for total project integration

n Target projects

- Urban transportation systems (metro, monorail)

n Target regions

- Southeast Asia, Brazil and India

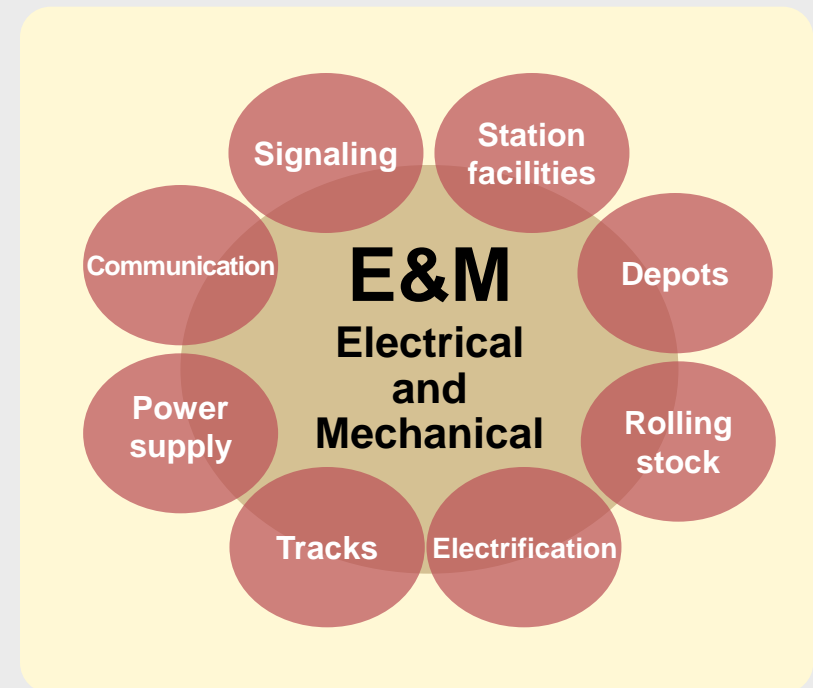
■ Strengthen capabilities for E&M

n Sales and engineering

- Established dedicated organization for E&M
- Strengthen local operations

n Project management

- Strengthen alliance with Mitsubishi Heavy Industries



Generate earnings by standardizing products

Global A-train

■ Optimal product lineup by use

- n AT100 (metro)
- n AT200 (regional)
- n AT300 (high-speed)
- n AT400 (monorail)

ETCS, CBTC

■ Develop products compliant with European standards

- n U.K. : Expand sales through joint development with Network Rail
- n China : Expand sales of Chinese train control systems (CTCS)
- n China : Expand sales of CBTC
- n India : Established a local engineering base

Standard inverters

- n China : Enhance manufacturing bases
- n U.K. : Capture replacement orders for electrical components
- n India : Enter market via collaboration with partners



Global A-train (1)

AT100 (metro)



AT200 (regional)



Specifications

- Maximum service speed
160 Km/h
- Line length 20 to 26 m/car

Global A-train (2)

AT300 (high-speed)



n Specifications

- Maximum service speed
200 ~ 240Km/h
- Line length
20 ~ 26 m/car

AT400 (monorail)



n Specifications

	Large	Medium	Small
Train formation (4 cars)	61m	57m	38m
Train width	3.0m	3.0m	2.8m
Train height	5.3m	5.3m	4.8m
Voltage	DC 1,500V		DC 750V

Shift from management focused on the Japanese market to truly global management

Strategy

Rigorously promote localization



Globalization of the total value chain

Production costs

- n **Establish overseas manufacturing bases and operation centers outside of Japan, China and the U.K.**
- n **Reduce costs by selecting optimal manufacturing bases**

Direct Materials costs

- n **Build global supply chain (Establish global procurement network)**
- n **Strengthen engineered sourcing**

Indirect costs

- n **Reduce indirect costs by centralizing and standardizing administrative and overlapping operations**
- n **Actively utilize global human resources**

4-11 Global Supply Chain

U.K.

- Expand maintenance business throughout the U.K.
- Establish manufacturing bases for rolling stock
- Enter signaling/train control systems market
- Expand and enhance procurement bases



China

- Expand manufacturing bases for electrical components
- Further develop signaling/train control systems businesses
- Strengthen alliances with local companies



Southeast Asia

- Establish new engineering centers
- Establish new procurement bases

India

- Establish new engineering centers
- Establish new procurement bases
- Strengthen alliances with local companies
- Establish manufacturing bases for rolling stock and signaling/control systems

Brazil

- Establish a manufacturing base for rolling stock by JV
- Strengthen alliances with local companies

Europe

- Consider establishing a manufacturing base for electrical components

- Expand and enhance existing bases
- ▲ Develop new bases

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FY2015 Targets

- **Revenues : ¥320 billion**
- **Overseas revenues ratio : Over 60%**
- **Operating income ratio : 8%**

Accelerate globalization with technologies developed in Japan

Cautionary Statement

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- nexchange rate fluctuations of the yen against other currencies in which Hitachi makes significant sales or in which Hitachi’s assets and liabilities are denominated, particularly against the U.S. dollar and the euro;
- nuncertainty as to Hitachi’s ability to access, or access on favorable terms, liquidity or long-term financing;
- nuncertainty as to general market price levels for equity securities, declines in which may require Hitachi to write down equity securities that it holds;
- nthe potential for significant losses on Hitachi’s investments in equity method affiliates;
- nincreased commoditization of information technology products and digital media-related products and intensifying price competition for such products, particularly in the Digital Media & Consumer Products segments;
- nuncertainty as to Hitachi’s ability to continue to develop and market products that incorporate new technologies on a timely and cost-effective basis and to achieve market acceptance for such products;
- nrapid technological innovation;
- nthe possibility of cost fluctuations during the lifetime of, or cancellation of, long-term contracts for which Hitachi uses the percentage-of-completion method to recognize revenue from sales;
- nfluctuations in the price of raw materials including, without limitation, petroleum and other materials, such as copper, steel, aluminum, synthetic resins, rare metals and rare-earth minerals, or shortages of materials, parts and components;
- nfluctuations in product demand and industry capacity;
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- nuncertainty as to the success of restructuring efforts to improve management efficiency by divesting or otherwise exiting underperforming businesses and to strengthen competitiveness and other cost reduction measures;
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- nuncertainty as to the success of alliances upon which Hitachi depends, some of which Hitachi may not control, with other corporations in the design and development of certain key products;
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- nuncertainty as to the accuracy of key assumptions Hitachi uses to evaluate its significant employee benefit-related costs; and
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