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Presentation of Strategies for Railway Systems Business

# Strategies for Railway Systems Business

## -- Accelerate Globalization with Technologies Developed in Japan --

Gaku Suzuki
President & CEO,
Industrial & Social Infrastructure Systems Company
Vice President and Executive Officer, Hitachi, Ltd.
March 29, 2010

100th ANNIVERSARY
Celebrating 100 years of the Hitachi Group

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# Strategies for Railway Systems Business

## Accelerate Globalization with Technologies Developed in Japan

1. Overview
2. Strategies
3. Domestic Business
4. Overseas Business
5. Conclusion

# Railway Systems Business in Hitachi

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## SEGMENT INFORMATION

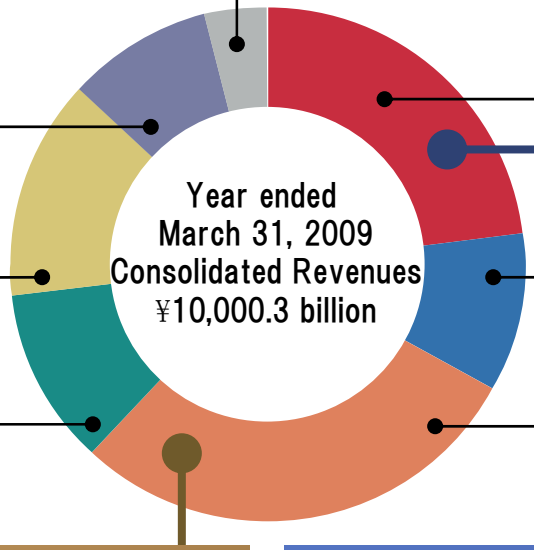
(millions of yen)

**Financial Service**
Revenues ¥412,040
Operating Income ¥10,210

**Logistics, Services & Others**
Revenues ¥1,089,971
Operating Income ¥23,063

**High Functional Materials & Components**
Revenues ¥1,556,886
Operating Income ¥27,777

**Digital Media & Consumer Products**
Revenues ¥1,261,501
Operating Loss ¥(105,563)




**Information & Telecommunication Systems**
Revenues ¥2,594,450
Operating Income ¥176,629

**Electronic Devices**
Revenues ¥1,151,066
Operating Income ¥27,322

**Power & Industrial Systems**
Revenues ¥3,310,544
Operating Income ¥24,245

### Industrial & Social Infrastructure Systems Company (Transportation Systems Div.)

- Rolling Stock Systems: rolling stock, electrical component, overseas rolling stock maintenance services
- Transport Management & Control Systems: Signaling/Train control system, traffic/power management system power supply system

Railway systems: ¥149.0 billion*
*:Unconsolidated: ¥145.9 B

### Information & Control Systems Company (Transportation Information Systems Div.)

- Transport Management & Control Systems:
  Seat reservation system
  Railway operation information system
  IC card ticketing system

Railway systems: ¥27.7 billion

## Total Railway Systems Integrator

Total railway systems revenue: ¥176.7 billion (Year ended March 31, 2009)

# Organization

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## Industrial & Social Infrastructure Systems Company

### Transportation Systems Div.

- Kasado Transportation Systems Product Div.
  〔Rolling Stock〕
- Mito Transportation Systems Product Div.
  〔 Electrical component,
  Signaling/Train control system,
  Traffic management System 〕
- Hitachi Works
  〔Main motor、IGBT module〕
  Kokubu Engineering & Product Div.
  〔Power supply system〕

### Sales Management Div.

- Sales & Marketing Div. 〔Domestic market〕
- Global Sales & Marketing Div. 〔Overseas market〕

## Information & Control Systems Company

### Transportation Information Systems Div.

〔Traffic/power management system,
Business support systems〕

## R&D sites

- Central Research Lab.
- Hitachi Research Lab.
- Mechanical Engineering Research Lab.
- Systems Development Lab.
- Energy & Environmental Systems Lab.
- Design Div.

## Hitachi Group / Associated companies
〔Major railway business products 〕

- Hitachi Cable, Ltd. 〔 Rolling Stocks cable 〕
- Hitachi High-Technologies Corporation〔 Track device〕
- Hitachi Kokusai Electric Inc. 〔Train system (radio/monitor)〕
- Renesas Technology Corp.
  〔microprocessor for signal control〕

# Offices and Factories in Japan

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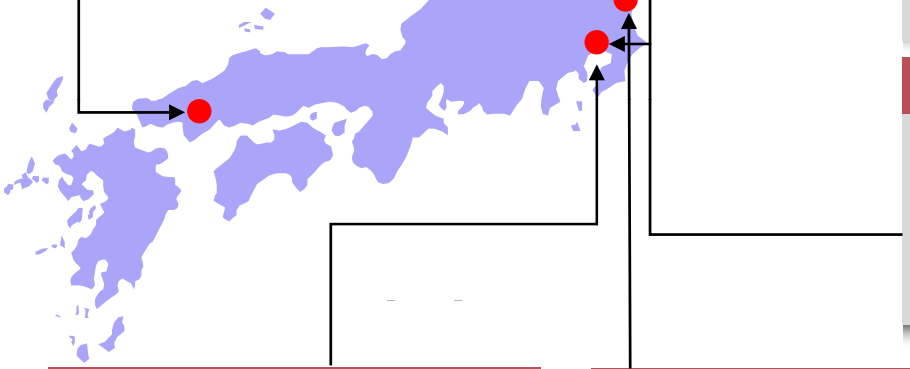
## Kasado Transportation Systems Product Div.




Rolling Stocks

(Kudamatsu-shi, Yamaguchi-ken)



## Hitachi Works


Main motor


IGBT module

## Kokubu Engineering & Product Div.


Power supply systems

## Transportation Information Systems Div.


Traffic/power management systems


Business Support Systems

(Hitachi-shi, Ibaraki-ken  Shinagawa-ku, Tokyo)

## Transportation Systems Div. (HQ) Sales Management Div.

(Chiyoda-ku, Tokyo)

## Mito Transportation Systems Product Div.


Electrical components


Signaling/Train control systems


Traffic management Systems

(Hitachinaka-shi, Ibaraki-ken)

# Overseas Subsidiaries and Partners

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● Hitachi Rail Europe Ltd. / UK
(Sales & Marketing, engineering, and maintenance service)

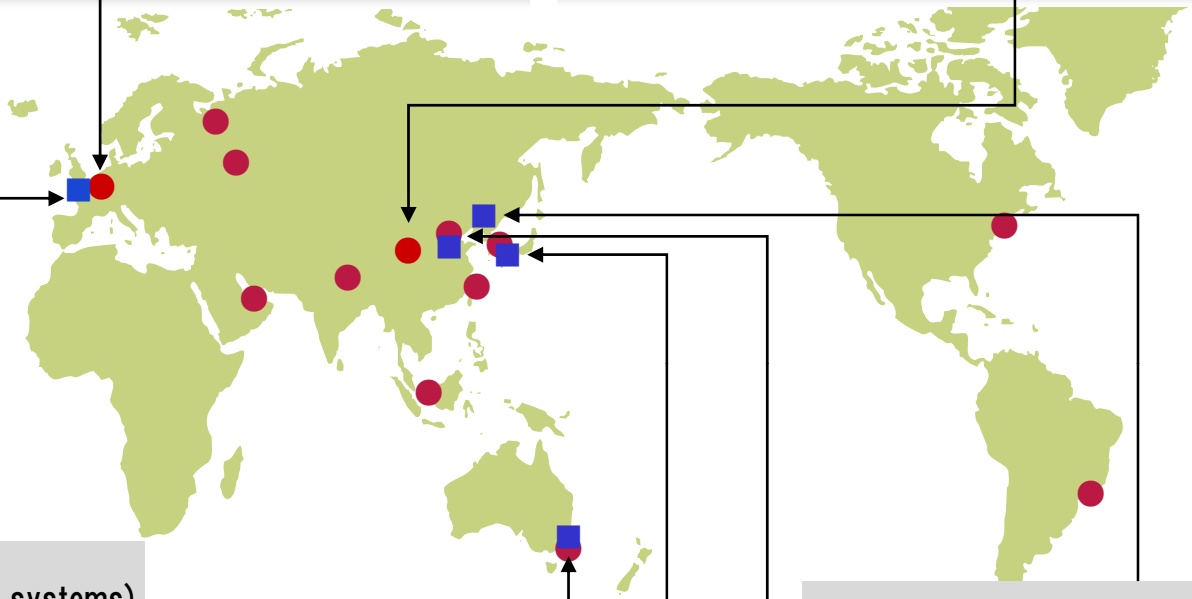
Established in 2005

Ashford Depot

● Hitachi Yonge Electric Equipment (Xi'an) Co., Ltd./China
(Manufacture of electrical component)

Established in 2003

● : Subsidiaries
■ : Partners



■ Network Rail Ltd./UK
(Signaling/Train control systems)

■ Changchun Railway Vehicles Co., Ltd/China
(Monorail)

■ Beijing Hollysys Co., Ltd./China
(Signaling/Train control systems)
■ China Academy of Railway Science/China
(Signaling/Train control systems)

■ Downer EDI Rail Ltd./Australia
(Electrical components)

■ Woojin Industrial Systems Co., Ltd./Korea
(Monorail, Electrical components)

# Products and Service ①

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## Rolling Stock Systems

### Rolling Stocks/Overseas maintenance

High speed train

Limited express train

Commuter train

Monorail

Overseas maintenance

### Electrical components

Main circuit/Main motor

Air-conditioning /Air-moving system

## Transport Management & Control Systems

### Signaling/Traffic Management Systems

Signaling/Train control system

Traffic management system
Power management system

Power supply system

Platform gate

### Business Support Systems

Seat reservation system

Railway operation information system


IC card ticketing system

# Products and Service ②

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## Efforts as total railway systems integrator

| | | |
|---|---|---|
| High efficiency | High-efficiency rolling stock systems for the acceleration of modal shift | ● Aluminum trains (A-train)<br>● High-speed train |
| Environment friendly | Rolling stock systems to further reduce the environmental burden | ● Small and lightweight inverter<br>● Hybrid traction system |
| High reliability | Highly reliable transport management & control systems supporting safe, stable and high-density transportation | ● Signaling/train control system<br>● Traffic management system<br>● Business support system |

| | | Hitachi | Bombardier | Alstom | Siemens | Rolling Stock | | | Signaling | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Ansaldobreda | Stadler | CAF | Ansaldo STS | Invensys | Thales |
| Rolling Stock Systems | Rolling stocks | ○ | ○ | ○ | ○ | ○ | ○ | ○ | – | – | – |
| | electrical components | ○ | ○ | ○ | ○ | ○ | – | – | – | – | – |
| Transport Management & Control systems | Signaling/ Traffic management | ○ | ○ | ○ | ○ | – | – | – | ○ | ○ | ○ |

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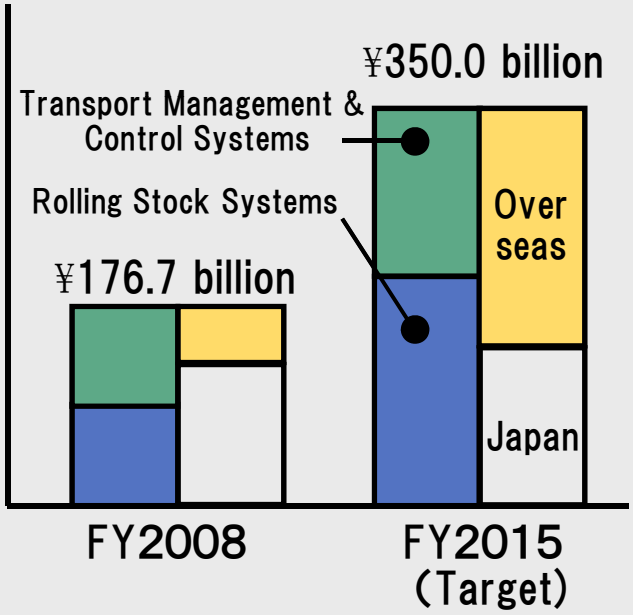
# Accelerate Globalization with Technologies Developed in Japan

## Target

- Revenue: ¥350 billion
- Overseas revenue: over 60%
- Operating income: 8%




## Strategies

- Sustainable growth in Japan
  - Focus on new Shinkansen lines
  - Expand aluminum trains sales to municipal and private railway companies
  - Expand hybrid traction system business
  - Expand business support systems business
  - Create new businesses by collaboration with customers
- Expand overseas businesses
  - Focus on high-speed trains market
  - Expand electrical components business
  - Expand signaling/train control systems business
  - Expand monorail business

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## Share of rolling stocks:23%　Share of electrical components :30%

＊ Share percentages are Hitachi estimates

Conventional lines
Shinkansen


Transportation Bureau of Fukuoka Metropolitan Government
Series 3000 train


Kyusyu Railway Co.
Series 885 tilting train


Kyusyu Railway Co.
Series 800 Shinkansen train


Hankyu Corporation
Series 9300 train


West Japan Railway Co.
Series 683 limited express train


Central Japan Railway Co./
West Japan Railway Co.
Series N700 Shinkansen train


East Japan Railway Co.
Series E257 limited express train


Hokkaido Railway Co.
Series 785 limited express train


East Japan Railway Co.
Series E5 preceding production train


East Japan Railway Co.
Series E2 Shinkansen train


Metropolitan Intercity Railway Co.,Ltd.
Series 2000 train


Seibu Railway Co.,Ltd.
Series 30000 train


Tobu Railway Co.,Ltd.
Series 50000 train


Tokyo Metro Co.,Ltd.
Series 10000 train

# Monorail : Major Delivery Records

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## Straddle-type monorail (No.1 share)

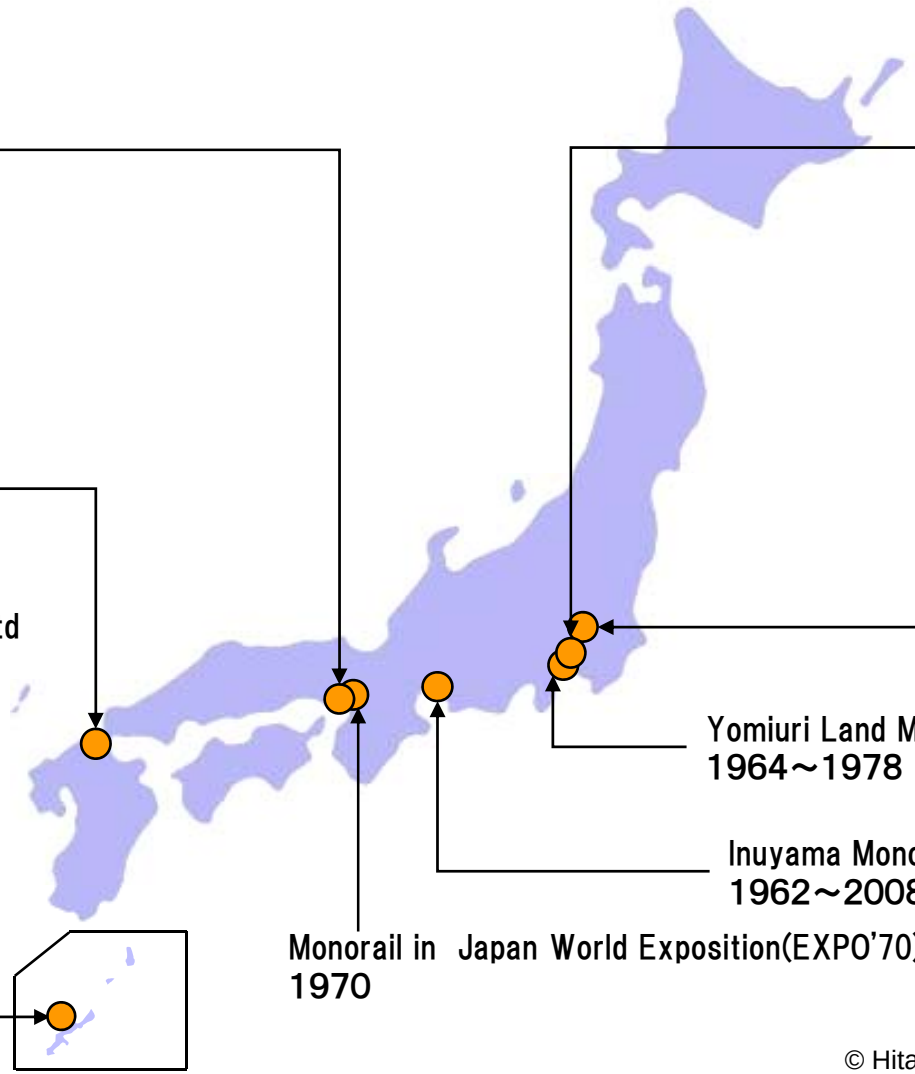
Osaka Monorail Co.,Ltd.
1990～

Kitakyushu Urban Monorail Co.,Ltd
1985～

Okinawa Monorail Co.,Ltd
2003～

Tokyo Monorail Co.,Ltd
1964～

Tokyo Tama Intercity
Monorail Co.,Ltd.
1998～



Yomiuri Land Monorail
1964～1978

Inuyama Monorail
1962～2008

Monorail in Japan World Exposition(EXPO'70)
1970

# Aluminum Train Technology

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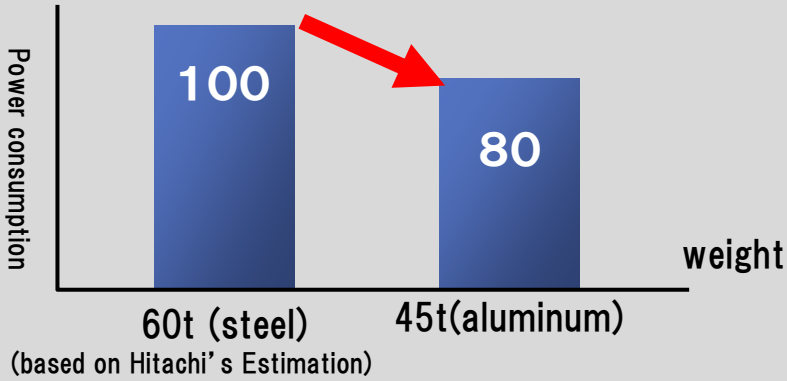
## A-train: A highly economical next-generation train technology

- Delivery: About 1,700 trains
- Lightweight and easy-to-recycle compared with steel

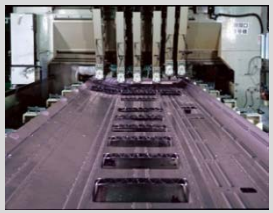



(based on Hitachi's Estimation)

- Digital Manufacturing Technology

3-dimensional machining

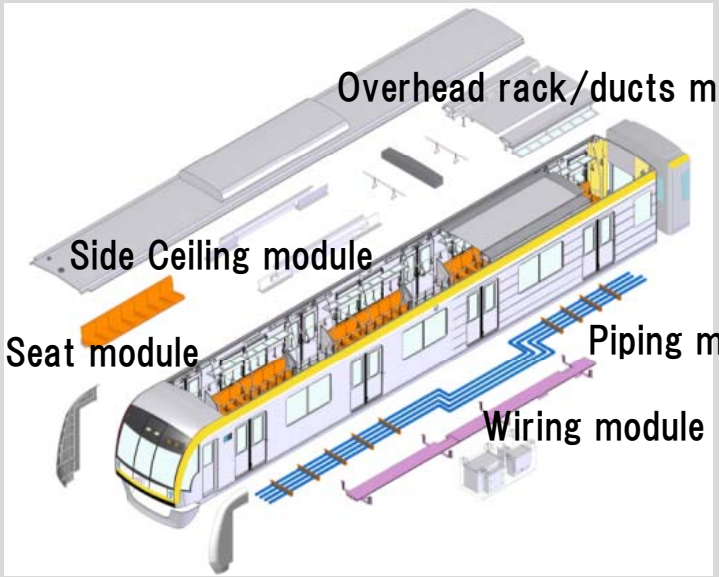
Structural apertures Hollowing-out processing



FSW※

※ FSW : Friction Stir Welding

- Module Assembly




**Capacity of Kasado Transportation Systems Product Div.**

- 60 trains/month (FY2008～)

# Inverter Technology

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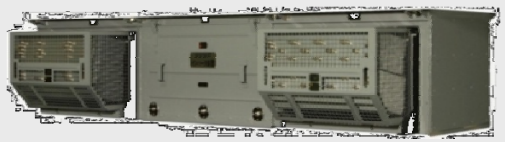
## Small, lightweight and low-noise (world-class) inverters

| | New Product |
|---|---|
| Exterior |  |
| No. of Parts*1 | 60 |
| Weight*1 | 64 |
| Volume*1 | 66 |

### Remarks

- More reliable system with smaller and lighter features reducing the number of parts
- Easier Maintenance with unit-type built-in components
- Smaller, lighter and less noisy with low-noise IGBTs*2 and heat spreading and cooling system
- More precise control with high-performance micro processors and high-response on-board control

### Capacity of Mito Transportation Systems Product Div.

- 64 inverters/month (FY2008～)

*1: Comparison with Hitachi's conventional inverter (=100)
*2: IGBTs: High-voltage insulated gate bipolar transistors, which are core devices of large-capacity inverters

# Hybrid Traction Technology

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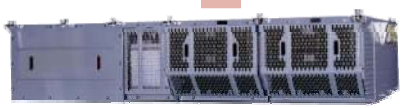
## Hybrid traction system for Ki-Ha E200 Series

- Energy-saving system for railways with lithium-ion secondary batteries (Joint development with East Japan Railway Company)

Lithium-ion secondary battery

Storage battery

Main converter



**Regenerative energy stored in the storage battery during braking**

| Efficient energy control has been achieved | On-board batteries with superior energy density |
|---|---|

East Japan Railway Company
(Ki-Ha E200 series hybrid train)

Reduction achieved*

- 60% reduction of the hazardous substances in engine exhaust
- 30db reduction of noise (when stopped at a station)
- Reduction of fuel consumption

*Compared to the conventional diesel multiple units of East Japan Railway Company

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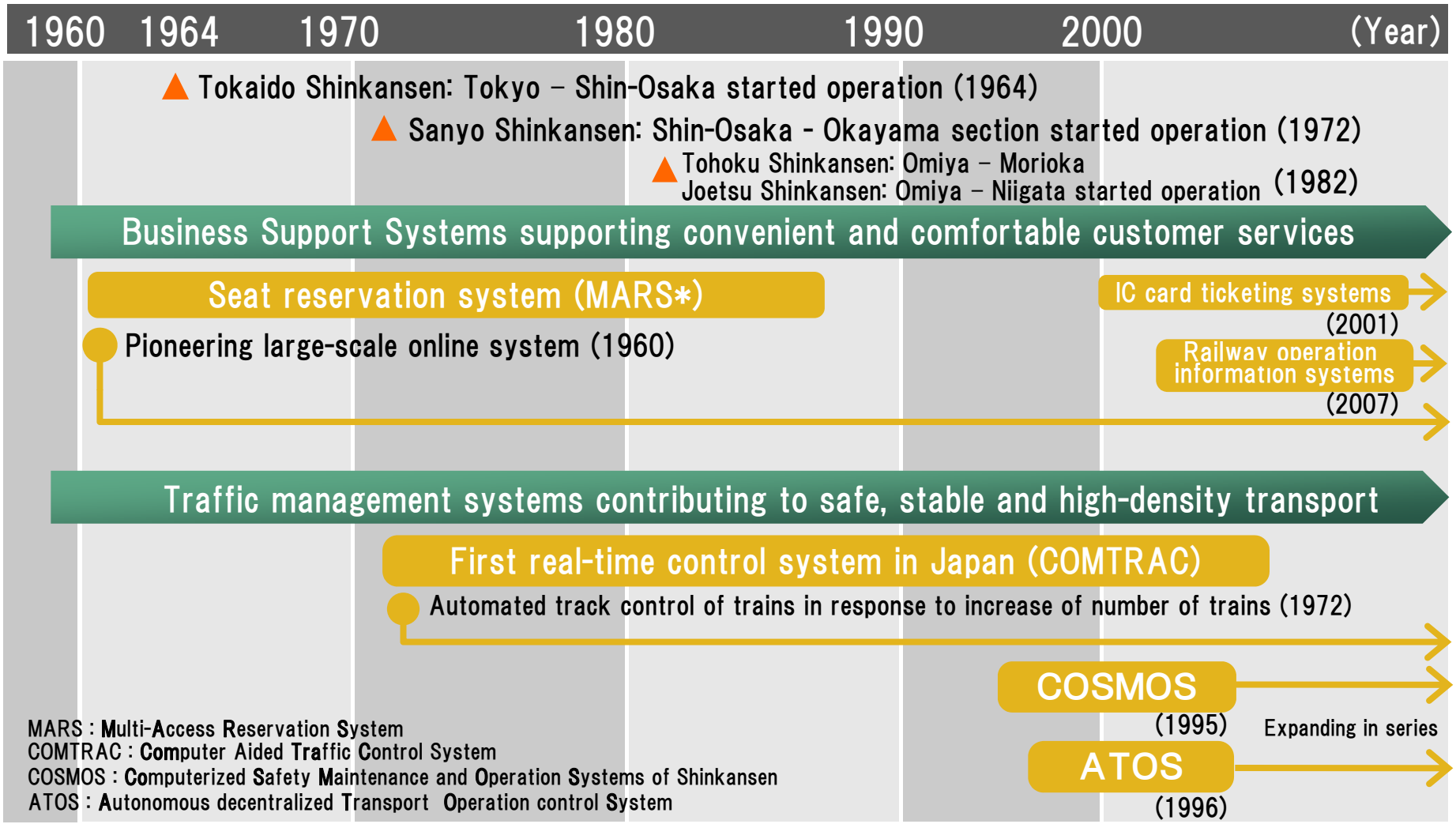
## Contributed to innovations of railway system with information technology



# Business Support Systems: Delivery Record

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## Seat Reservation System (MARS)

Railway Information System Co., Ltd. provides Multi-Access Reservation System with high reliability, and high response supporting various customer needs

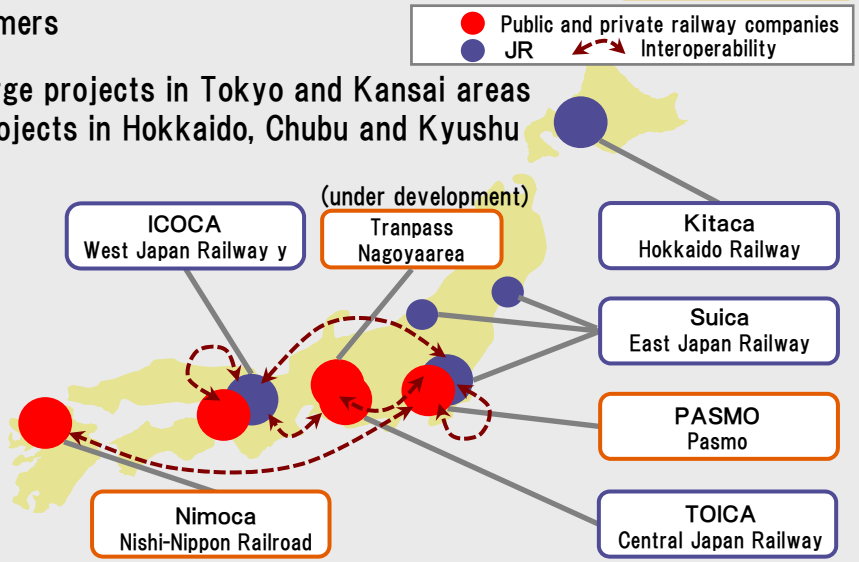
- Delivery Records
  - AP8000×2 units
  - UNIX Server 50 units

## IC Card Ticketing System

share 80%

The center system of IC card ticketing system supports the high reliability under expansion of customers

- 3 large projects in Tokyo and Kansai areas
- 4 projects in Hokkaido, Chubu and Kyushu

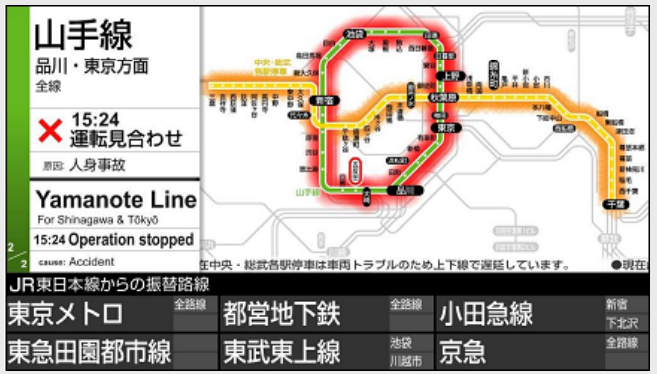



## Railway Operation Information System

share 50%

Information systems enable customers to see railway operations information at a glance

- Good Design Award 2007
  (together with East Japan Railway)
- Systems installed for East Japan Railway, West Japan railway and Tokyo Metro Fukutoshin lines



# Signaling/Traffic Management Systems: Delivery Record ①

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## JR railway companies

### Digital ATC (Signaling)

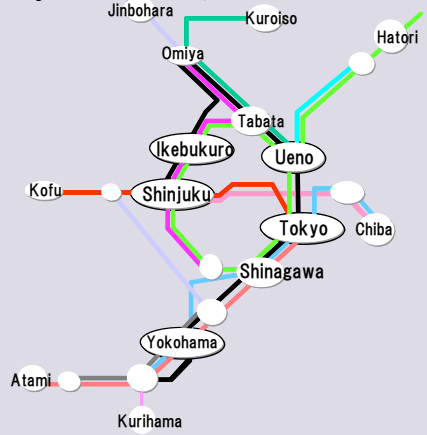
Share 60%

- Shinkansen lines
  Tohoku/Joetsu Shinkansen
- Conventional lines


### Traffic Management Systems

Share 81%

- Tokyo Area Traffic Management System (ATOS)







Conventional lines
Shinkansen
(Being extended)
(Plan to extend)

JACROS : JR Kyushu Advanced and Concentrated Railway Operating Systems
SIRIUS : Super Intelligent Resource and Innovated Utility for Shinkansen Management
ATC : Automatic Train Control

*Share percentages are Hitachi estimates

# Signaling/Traffic Management Systems: Delivery Record ②

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## Municipal and private railway companies

### Municipal Railway Companies

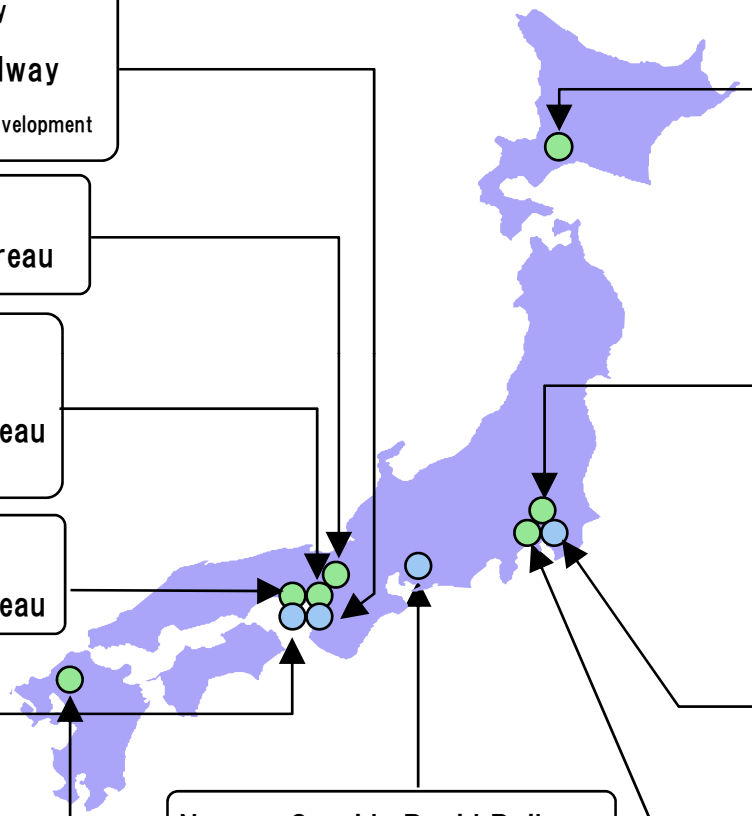
Share 62%

- Main line — Nankai Electric Railway
- Main line, other — Keihan Electric Railway
- Semboku Rapid Railway — Osaka Prefectural Urban Development
- Karasuma line, Tozai line — Kyoto City Transportation Bureau
- Nanko Port Town line, Tanimachi line, Midousuji line — Osaka City Transportation Bureau
- Kaigan line, Seishin-Yamate line — Kobe City Transportation Bureau
- Port Liner, Rokko Liner — Kobe New Transit
- Nanakuma line, Airport line, Hakozaki line — Fukuoka City Transportation Bureau

### Private Railway Companies

Share 28%

- Sapporo City Transportation Bureau — Toho line, Tozai line, Namboku line
- Tokyo Metropolitan Government — Ginza line, Fukutoshin line, Hibiya line, Yurakucho line, Tozai line, Chiyoda line, Namboku line, Hanzomon line, Marunouchi line
- Saitama Railway Corp. — Saitama Railway line
- Toyo Rapid Railway — Toyo Rapid Railway line
- Metropolitan Intercity Railway — Tsukuba Express
- Tokyo Waterfront Area Rapid Transit — Rinkai line
- Yokohama City Transportation Bureau — Green line, Blue line
- Nagoya Seaside Rapid Railway — West Nagoya Port line



# Digital ATC Technology

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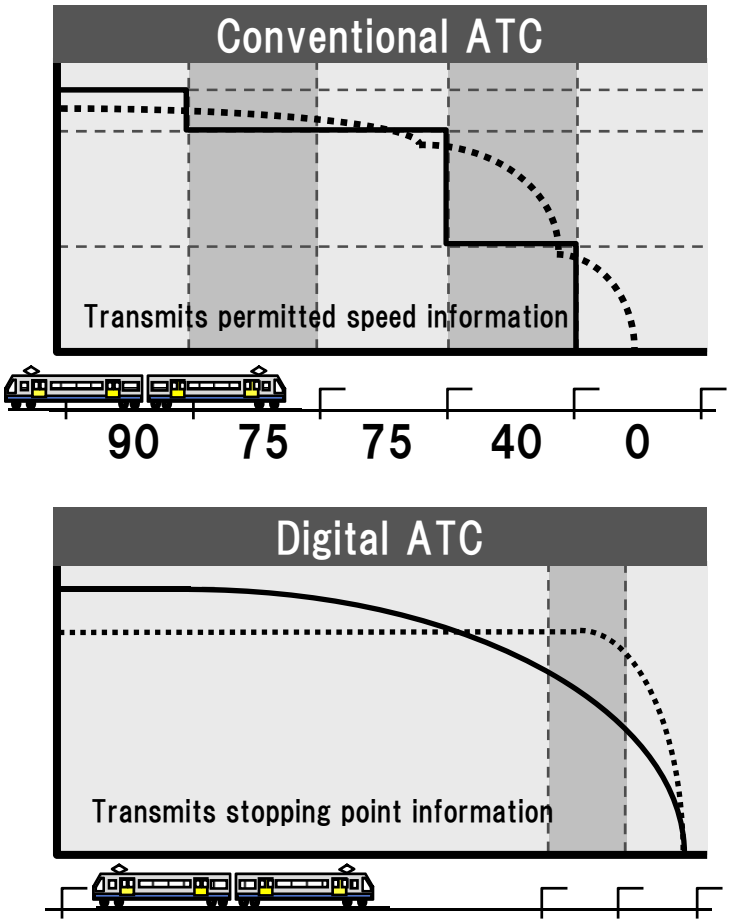
## Digital ATC system supporting safe and stable transport




* In Japan, ATC stands for ATP (Automatic Train Protection) in general

- Headway reduction by single-step braking control and optimum braking control matched to train specification characteristics
- Single-step braking profile enables smoother deceleration and breaking, thereby providing better riding comfort
- Saves space by simplifying the wayside units

### Remarkable Technologies in Hitachi signaling system

- Fail-safe technology using general-purpose computers:
  High functionality and extensionability by software technology
- Data communication using general-purpose digital signal processor:
  Simultaneous processing of 10 communication channels
  Size reduction of equipment and easy improvement of functions

# Traffic Management Systems Technology

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## Autonomous decentralized system technology

### Autonomous decentralized systems architecture

- Enables hierarchical system architecture
- Partial failure does not impact on entire system
- A complex control and the business of a large station can be systematized (allotment with business at station and center)

### General-purpose computers provide real time control systems

- Better reliability and productivity of signaling system
- Systematization of operations needed for safety such as track maintenance

### Autonomous decentralized Transport Operation control System (ATOS)

- World's Largest Real-time Control System


### Computerized Safety Maintenance and Operation Systems of Shinkansen (COSMOS)

- System Management of All Operations of Shinkansen

# Strategies ①

## Focus on new Shinkansen line (Rolling stocks/Signaling/Train control system)

【Opening Schedule】

| | | |
|---|---|---|
| Hokkaido Shinkansen | Shin-Aomori～Shin-Hakodate | 2015 |
| Tohoku Shinkansen | Hachinohe～Shin-Aomori | 2010 |
| Hokuriku Shinkansen | Nagano～Kanazawa | 2014 |
| Kyushu Shinkansen | Shin-Yatsushiro～Hakata | 2011 |

## Expand aluminum trains sales for municipal and private railway companies

- Deeply involve existing customers' plan for new trains
- Develop new customers

## Expand hybrid traction system sales

- Develop needs to retrofit existing diesel multiple-units

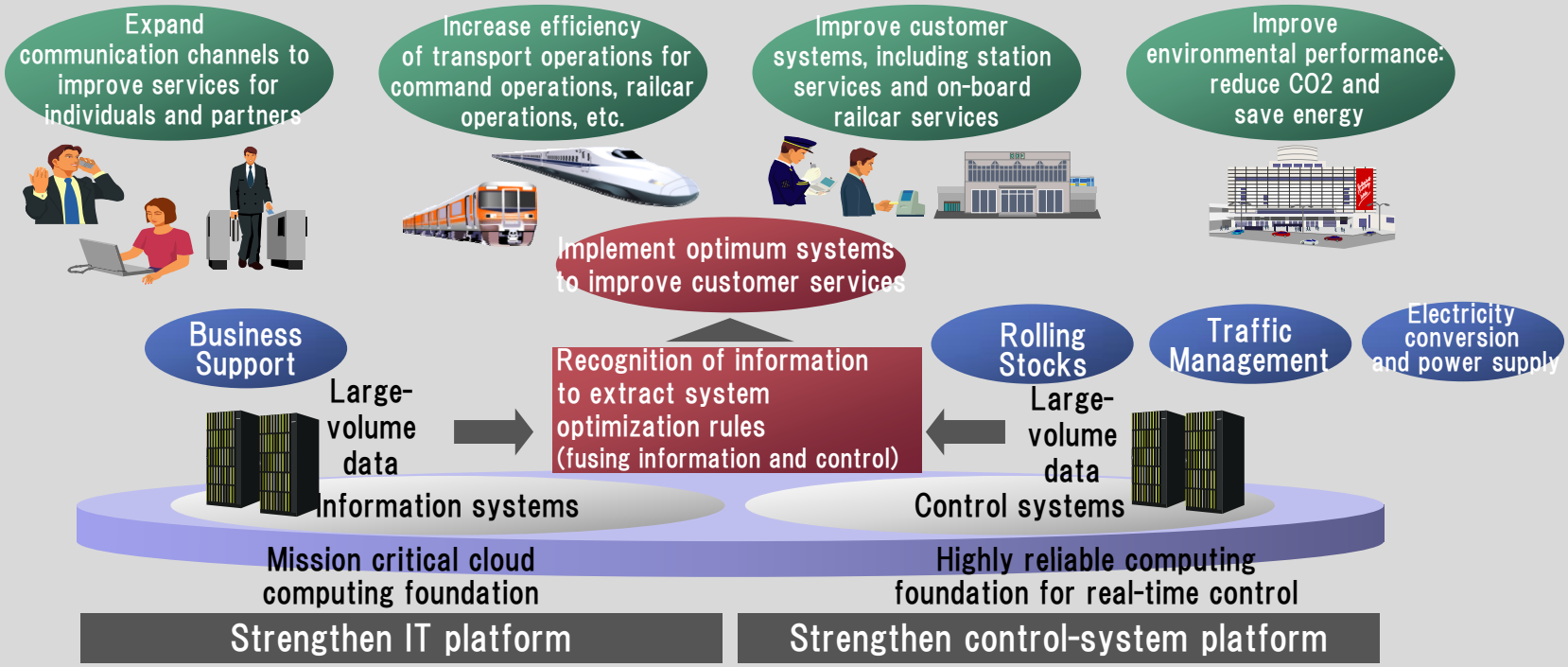
# Strategies ②

## Business Support Systems: Keep current position and further expansion

■Keep share of seat reservation systems
■Increase share of IC Card Ticketing Systems and Railway Operation Information Systems
■Firmly extend and update transport planning and operations planning systems

## Create new businesses by collaborations with customers

■Develop service-oriented railway information control systems (fusing information and control technologies)



# 4. Overseas Business

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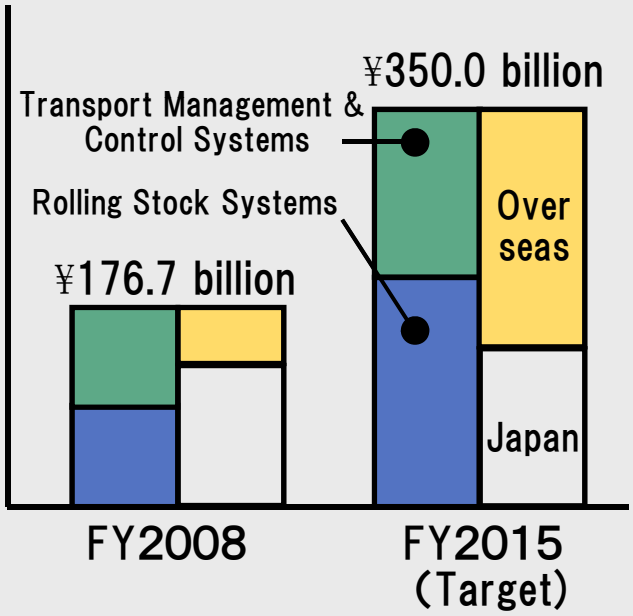
## Accelerate Globalization with Technologies Developed in Japan

### Target

- Revenue: ¥350 billion
- Overseas revenue: over 60%
- Operating income: 8%




### Strategies

- **Expand overseas business**
  Strengthen partnerships in Japan and overseas
- **Focus on high-speed trains market**
  (China, UK, Brazil, U.S. and others)
- **Expand electrical components business**
  (Strengthen partnerships with rolling stock manufacturers)
- **Expand signaling/train control systems business**
  (China, UK and others by complying with European standards)
- **Expand monorail business**
  (Mainly in emerging market)

# Global Market

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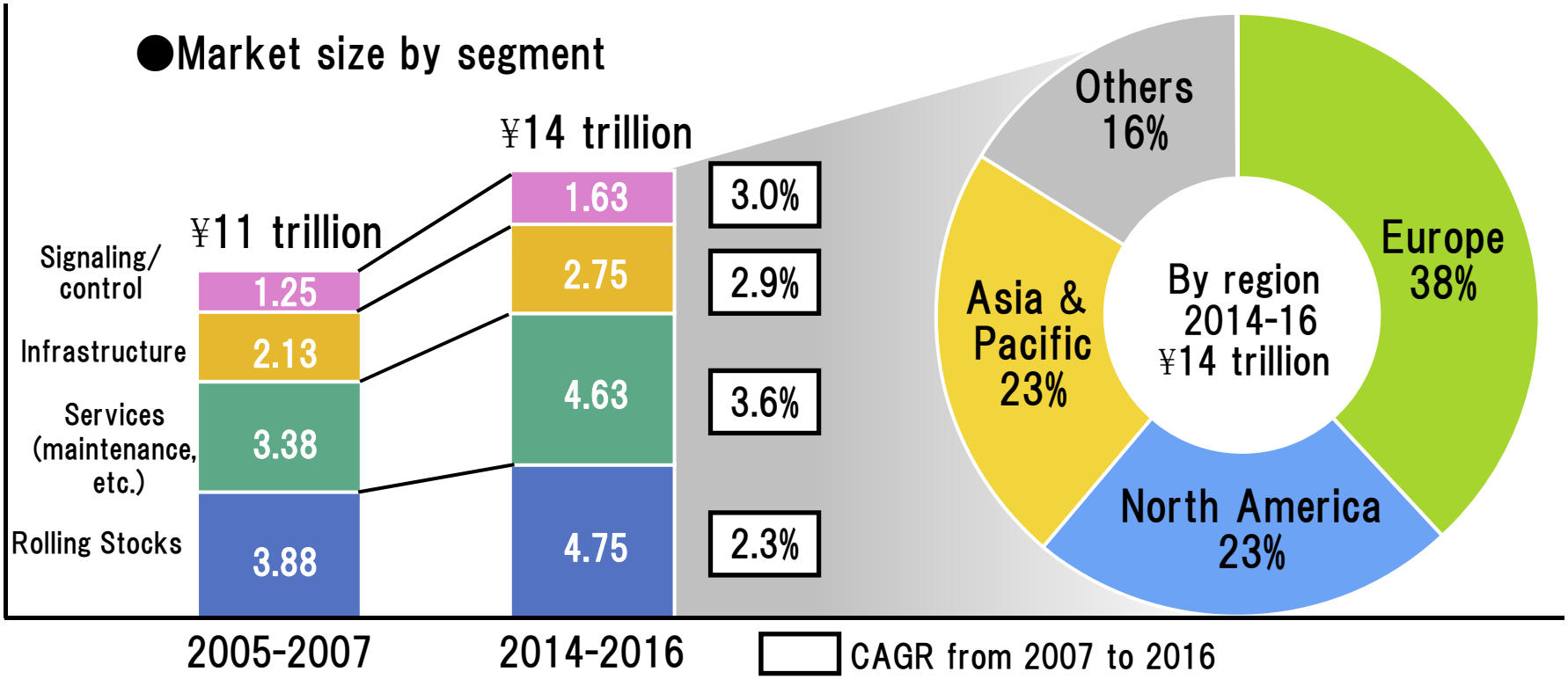
## 2005-07 ¥11 trillion -> 2014-16 ¥14 trillion (CAGR: 2.6%)

- High growth in service and signaling/control
- Huge market in Europe
- Increase investments in emerging countries




Resource: Based on UNIFE 2008 Report

# Major Delivery Record

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UK
Class 395
high speed train

UK
Electrical components for
Class 465 commuter train

Bulgaria
Electrical components for
Sofia metro train

China
Electrical components for
high speed train

China
Electrical components
for Beijing metro

UAE
Palm Jumeirah Monorail

China
Electrical components
for Beijing metro

Singapore
Sentosa
Monorail

China
Chongqing Monorail

Australia
Electrical components for
Sydney commuter train
(Operations to start in 2010)

Australia
Electrical components for
tilting train

South Korea
Daegu Monorail
(Operations to start in 2014)

South Korea
Express train named
"NOORIRO"

# Strategies by Region

## Focus on UK, China, High-speed Railways and Monorail Projects

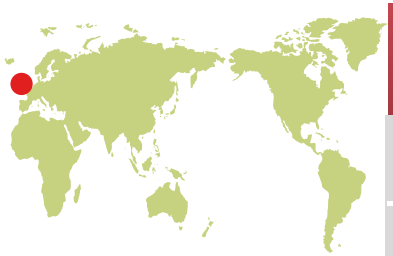
(1) UK
High-speed railways with maintenance services business
Signaling/train control systems business

(2) China
Electrical components for high-speed railways
Signaling/train control systems

(3) New markets
The Americas, India and Southeast Asia

(4) Existing markets
Australia and South Korea

# (1) UK: History



## Took 10 years for market entry with acquiring certificate

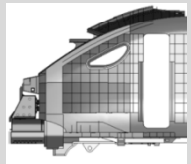
- **1999** Railway systems manager stationed in London
- **2000** First tender participation
- **2003** Started trial operations of V-Train with Hitachi's electrical components
  Trial completed with no accidents or failures
  (March 2005 as scheduled)

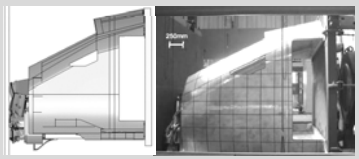

V-Train

- **2005** Awarded contract for Class 395 trains with maintenance
  Established Hitachi Rail Maintenance (UK)
  (Currently, Hitachi Rail Europe)

  Achieved compliance with UK/European standards
  ■Crashworthiness structure
  Verified by supercomputer simulation

*Acquired safety certification*





Crashwithiness structure simulation

- **2009** Started Class 395 passenger service

# Delivery Record

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## Delivery of Class 395 trains and launch maintenance service

- Contract:
  174 cars (29 trains: 6 cars per trains) of Class 395 trains : ¥50.0 billion
  7 years Train maintenance (maximum 35 years): ¥20.0 billion
  (maximum ¥100.0 billion)

- Railcar delivery : Completed on schedule
  June 29, 2009: Preview service started (6 months ahead of schedule)
  December 13, 2009 :Official service started

- Launch maintenance services: Established Ashford Depot


Opening ceremony of
St. Pancras International
station (November 6, 2007)

Ceremony of Class 395 train
official service commencement
(December 14, 2009)


Ashford Depot

# Strategies ①

## Rolling stock with maintenance service business

- In February 2009, Selected as preferred bidder for Intercity Express Programme (IEP)

■Project Overview

High speed trains (HST) replacement package
(Rolling Stocks, maintenance and finance)

- No. of cars to be delivered：Up to 1,400
- Period of trains delivery：2013 – 2018

Existing HST train

New-type train (image)

【 Future Projects】

- Crossrail (About 600 commuter cars, scheduled delivery 2015 - 2017)
- HS2 (UK high-speed railway, from London to Midlands, scheduled delivery after 2020)

HS2: High Speed Two

## Establishment of local manufacturing site

- Under examination for IEP and future projects

# Strategies ②

## Electrical component

- Retrofit electrical components for Class 465 trains
  - Contract in 2007: To complete delivery in April 2010
  - Contract details: 196 sets (94 trains), maintenance services (for 10 years)
  - Without accident for 2.8 million miles in operation (March, 2010)
- Expand business to retrofit electrical components
  - Respond to increasing future demand to retrofit ageing trains

Class 465 trains

## Signaling/Train control System

- In 2007, signed trial project with Network Rail
  - Compliant with European standards
  - Start trial running in 2012
  - On-board units to be installed in IEP trains

# (2) China: Market

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## World biggest railway systems market

### High-speed railways

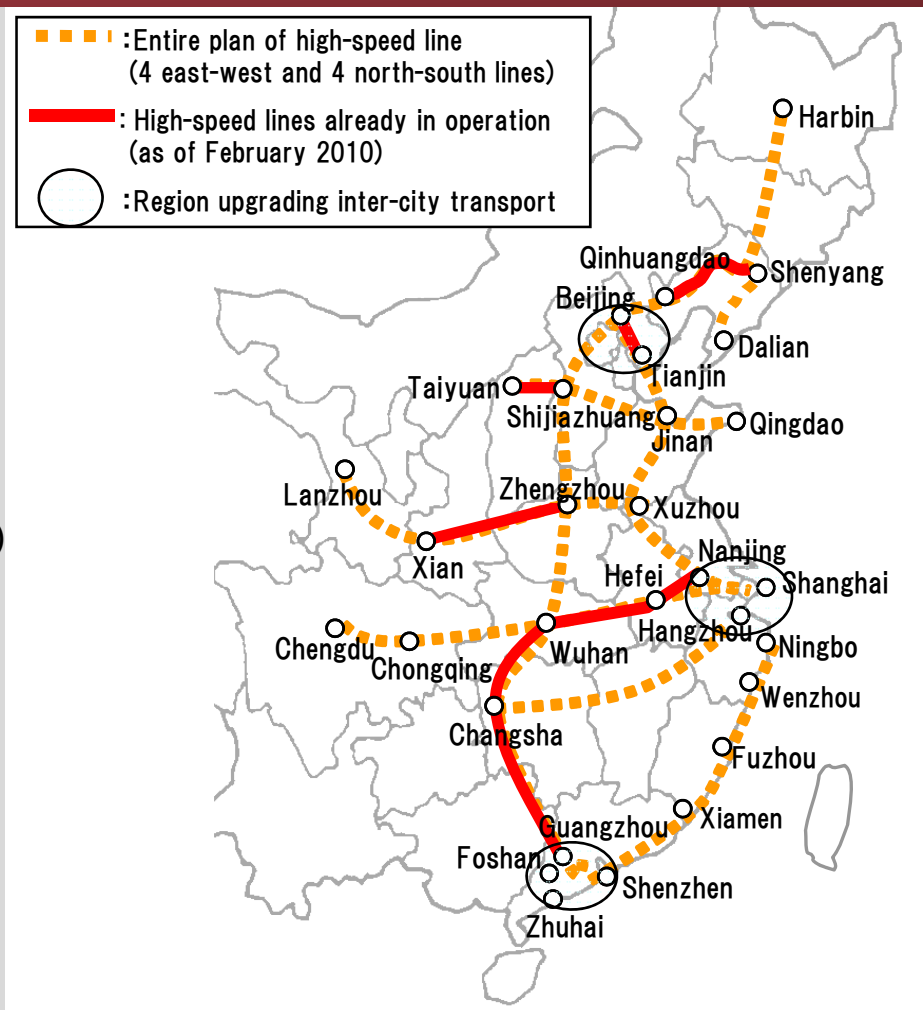
- Plan to construct 18,000 km of high-speed lines (Plan called "4 east-west and 4 north-south lines", ~2020)
- Expect to be placed orders for 3,000 high-speed (over 350 km/h) cars per year (for next 4-5 years)

### Urban Transport

- Scheduled to construct 158 lines (10,000 cars through to 2015)
- Expect 15 tenders per year

### Inter-city Transport

- Increasing demand in the future
- 20 train lines (6,000 cars through to 2050)



# Delivery Record

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## Electrical component

### High-speed railways

■CRH2 rolling stocks and electrical components for Ministry of Railways (Awarded contract in 2004)
Delivered by China South Locomotive & Rolling Stock and Japanese consortium
Hitachi's delivery: 24 cars and electrical components*
* 68 Main traction converter (for 17 trains)
752 air-conditioning equipments

■For China South Locomotive & Rolling Stock's CRH2 (Continuous delivery since 2005):

【Cumulative Delivery】
220 Main traction converters
(for 35 trains)
1,520 air-conditioning equipments

CRH2

### Urban transport

■ For Metros:
【Cumulative Delivery 】
About 700 cars (for Beijing, Shanghai, Xian and others)
■ For Monorails:
【Cumulative Delivery 】
Chongqing No. 2/No. 3 lines (222 cars)

Beijing metro No. 13 line

CRH: China Railway High-speed

## Signaling/Train control system

### High-speed railways

■Chinese Train control systems (CTCS2) for Ministry of Railways
On-board units for high speed trains
[In collaboration with Beijing HollySys Co., Ltd.]
(Continuous delivery since 2005)

【Cumulative Delivery】
170 trains (share: 70%)

On-board units

■Computerized-interlocking for Ministry of Railways
[In collaboration with the China Academy of Railway Science]
(Continuous delivery since 2007)

【Cumulative Delivery】
In operation at over130 stations

Computerized-interlocking

CTCS2: Chinese Train Control System Level2
(for 250 km/h railway operation complying with European standard)

# Strategies ①

## Electrical component

### High-speed railways

■ Awarded contract:
CRH3 (380km/h, for 400 cars) from China North Locomotive & Rolling Stocks
(FY 2010 – start of delivery)

■ Target:
CRH2 (380km/h) from China South Locomotive & Rolling Stock

【Future Targets】
High-speed rolling stocks (CRH2, CRH3)
Estimated demands: 3,000 cars/year


CRH3

### Urban transport

■ Respond aggressively to vigorous demand
■ Expand sales for Monorail

## Signaling/Train control system

### High-speed railways

■ Chinese Train control systems (CTCS3) for Ministry of Railways
Awarded contract:
High-speed line between Guanzhou and Shenzhen (113km)
Wayside units: 3 sets On-board units: 40 trains
[In collaboration with Beijing HollySys Co., Ltd.]
(Scheduled to start operation in 2010)

■ Continuous expansion of computerized-interlocking
(Target: 100 stations per year)

【Future Targets】
Wayside units: 30% share from 18,000km in total
On-board units: 30% share from estimated 540 trains

### Urban transport

■ Awarded contract for Chongqing No. 3 line
Train control system using 2.4 GHz radio frequency
(Scheduled to start operation in 2011)
■ Respond aggressively to vigorous demand

CTCS3: Chinese Train Control System Level3
(for 350 km/h railway operation complying with European standard)

# Strategies ②

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## Expansion of local production and capacity of electrical component

## Increase capacity to 130 sets per month (after 2011)

### Hitachi Yonge Electric Equipment (Xi'an) Co., Ltd.

- Established : August 2003
- Location : Xian, China
- Capital : 85 million yuan
  Hitachi, Ltd.: 40%
  Hitachi (China), Ltd.: 10%
  Yongji Xinshisu Electric Equipment Co., Ltd.: 50%
- Roles :
  Manufacture of electrical component for rolling stock
- Employees : 230
- Production capacity : 50 sets per month

# (3) New Markets: The Americas

## Sao Paulo monorail

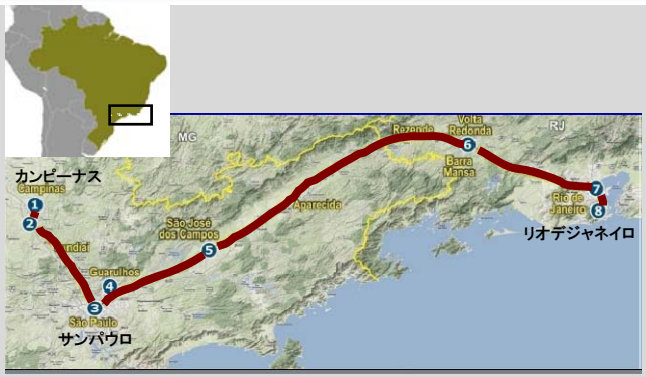
- Bidding process in conjunction with local construction companies
- Number of cars: 324 (Tiradentes line) ; 84 (Congonhas line)

*There are some monorail projects in other cities (Manaus, Rio de Janeiro)

## Brazil high-speed railway

(Rio de Janeiro – Sao Paulo – Campinas: about 510 km)

- Participate as member of Japanese consortium
- Roles: Design & manufacture of rolling stocks (and cooperate for traffic management/train control system)
- Targeted to start operation after 2015




Source: Brazil Ministry of Transportation

## U.S. high-speed railway

(11 lines planned)

- Intend to participate as member of Japanese consortium
- Gathering relevant information


Source: US Department of Transportation

# Emerging Market

## Entry to Indian markets

■ Train control systems

- Dedicated Freight West Corridor
  (Project to be financed by yen loan; bidding scheduled in 2011)
  - Distance for yen loan: 1,468 km
  - Size of yen loan: ¥450 billion

■ Electrical components

- Enter for Indian Railways and urban transport projects

## Entry to Southeast Asian markets

■ Target: Urban transport projects that integrated railway system supply is required (to be financed by stepped yen loans)

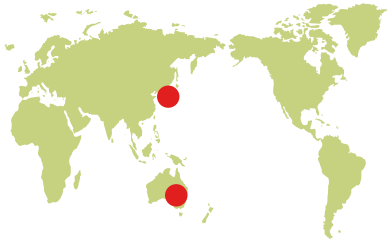
- Vietnam (Ho Chi Minh and Hanoi)
- Indonesia (Jakarta)

■ Aggressive participation in projects to upgrade railway infrastructures in emerging countries

- Partnerships in Japan and overseas

# (4) Continuing Market





## Australia

■ Awarded contract for electrical components for "double-decker" commuter trains in suburbs of Sydney (in 2006, scheduled to start operation in late 2010)

- Contract details: 312 sets (78 trains)
  In collaboration with Downer EDI Rail

■ Target continuous contracts for electrical components by strengthening partnership with Downer EDI Rail

## South Korea

■ Awarded contract for No. 3 line of Daegu Monorail (in 2009; scheduled to start operation in 2014)

- 24 km track length (Double track)
- 30 stations
- 2 depots
- 84 cars (28 sets)

Local production by Woojin Industrial Systems (Korea) for mass-production cars

■ Work toward next projects in association with Woojin Industrial Systems

# 5. Summary

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## Target in FY2015

- Revenue : ¥350 billion
- Overseas revenue : over 60%
- Operating income : 8%

**Accelerate Globalization with Technologies Developed in Japan**

# Cautionary Statement

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Certain statements found in this document may constitute "forward-looking statements" as defined in the U.S. Private Securities Litigation Reform Act of 1995. Such "forward-looking statements" reflect management's current views with respect to certain future events and financial performance and include any statement that does not directly relate to any historical or current fact. Words such as "anticipate," "believe," "expect," "estimate," "forecast," "intend," "plan," "project" and similar expressions which indicate future events and trends may identify "forward-looking statements." Such statements are based on currently available information and are subject to various risks and uncertainties that could cause actual results to differ materially from those projected or implied in the "forward-looking statements" and from historical trends. Certain "forward-looking statements" are based upon current assumptions of future events which may not prove to be accurate. Undue reliance should not be placed on "forward-looking statements," as such statements speak only as of the date of this document.

Factors that could cause actual results to differ materially from those projected or implied in any "forward-looking statement" and from historical trends include, but are not limited to
economic conditions, including consumer spending and plant and equipment investments in Hitachi's major markets, particularly Japan, Asia, the United States and Europe, as well as levels of demand in the major industrial sectors which Hitachi serves, including, without limitation, the information, electronics, automotive, construction and financial sectors;
exchange rate fluctuations for the yen and 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;
uncertainty as to Hitachi's ability to access, or access on favorable terms, liquidity or long-term financing;
uncertainty as to general market price levels for equity securities in Japan, declines in which may require Hitachi to write down equity securities that it holds;
the potential for significant losses on Hitachi's investments in equity method affiliates;
legislative and regulatory changes enacted by the new Japanese government;
increased commoditization of information technology products and digital media-related products and intensifying price competition for such products, particularly in the Information & Telecommunication Systems, the Electronic Devices and the Digital Media & Consumer Products segments;
uncertainty as to Hitachi's ability to continue to develop and market products that incorporate new technology on a timely and cost-effective basis and to achieve market acceptance for such products;
rapid technological innovation;
the 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;
fluctuations in the price of raw materials including, without limitation, petroleum and other materials, such as copper, steel, aluminum and synthetic resins;
fluctuations in product demand and industry capacity;
uncertainty as to Hitachi's ability to implement measures to reduce the potential negative impact of fluctuations in product demand, exchange rates and/or price of raw materials;
uncertainty as to Hitachi's ability to achieve the anticipated benefits of its strategy to strengthen its Social Innovation Business;
uncertainty 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;
general socio-economic and political conditions and the regulatory and trade environment of Hitachi's major markets, particularly Japan, Asia, the United States and Europe, including, without limitation, direct or indirect restrictions by other nations on imports, or differences in commercial and business customs including, without limitation, contract terms and conditions and labor relations;
uncertainty 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;
uncertainty as to Hitachi's access to, or ability to protect, certain intellectual property rights, particularly those related to electronics and data processing technologies;
uncertainty as to the outcome of litigation, regulatory investigations and other legal proceedings of which the Company, its subsidiaries or its equity method affiliates have become or may become parties;
the possibility of incurring expenses resulting from any defects in products or services of Hitachi;
the possibility of disruption of Hitachi's operations in Japan by earthquakes or other natural disasters;
uncertainty as to Hitachi's ability to maintain the integrity of its information systems, as well as Hitachi's ability to protect its confidential information and that of its customers;
uncertainty as to the accuracy of key assumptions Hitachi uses to valuate its significant employee benefit related costs; and
uncertainty as to Hitachi's ability to attract and retain skilled personnel.

The factors listed above are not all-inclusive and are in addition to other factors contained in Hitachi's periodic filings with the U.S. Securities and Exchange Commission and in other materials published by Hitachi.


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