Session 4: Mr. Noriyoshi Yamagami

Presentation entitled: High Speed Rail: Experiences from Japan

Biographic Data of Speaker

Noriyoshi Yamagami
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JAPAN

Education:

- 1992 MA in Politics, Stanford University, United States
- 1987 BA in Law, University of Tokyo, Japan

Professional Background:

- 2009-present Counsellor, Director, Office of Global Strategy for Railway Development, Railway Bureau, MLIT
- 2007-2010 Director, Accidents Compensation Division, Road Transport Bureau, MLIT
- 2004-2007 Counsellor, Embassy of Japan in United Kingdom
- 2003-2004 Director for General Affairs, Ports and Harbours Bureau, MLIT
- 2001-2003 Group Leader for General Affairs Division, Central Japan International Airport Co. ,Ltd.
- 1987 Joined Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

HIGH SPEED RAIL: EXPERIENCES FROM JAPAN (2)

On this Session, Mr. Yamagami will introduce policy development for High-Speed Rail in Japan, and highlight technologies to ensure safety by demonstrating countermeasures for earthquakes.

Session 4
High-Speed Rail: Experiences from Japan (2)

26 August 2011
Ministry of Land, Infrastructure, Transportation and Tourism,
Japan

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Japan's Current Shinkansen Network

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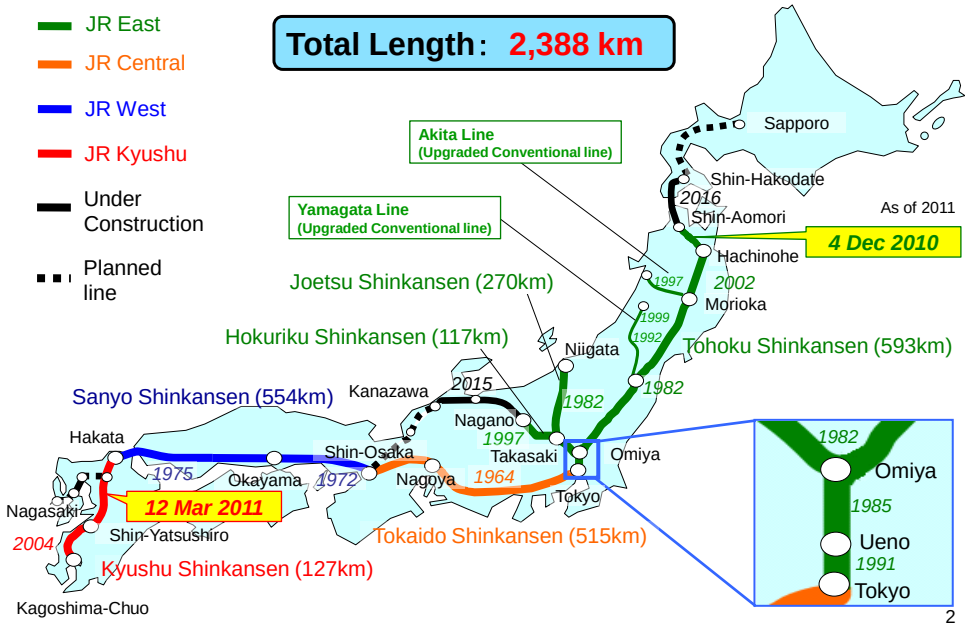

No. of Shinkansen Passengers

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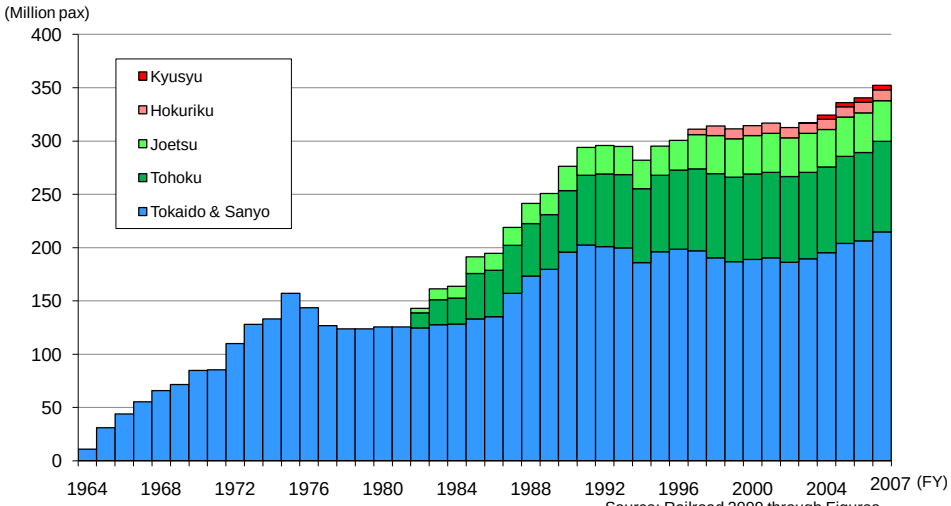
Annual No. of Shinkansen passengers has been steadily growing since its opening in 1964.

○ Annual change in No. of Shinkansen passengers



Source: Railroad 2009 through Figures, Shinkansen (Sankaido)

2. Share of Railway

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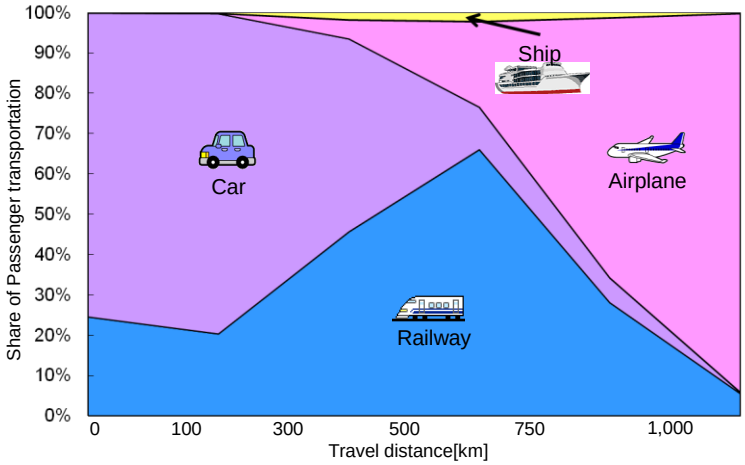
Share of Passenger Transport Modes According to Distance

The distance zone that Shinkansen demonstrates its competitiveness: 300～750km (travel time:2～4hrs.)



Source: Inter-Regional Passenger Mobility Survey FY 2004

Ⅰ. Construction Scheme of Shinkansen

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Development of Shinkansen Construction Scheme

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1959 ~

Tokaido, Sanyo, Tohoku (Tokyo-Morioka), and Joetsu Shinkansen were mainly financed by **loans** with interest.

Privatization and division into six private companies of the Japanese National Railways (JNR) in 1987

~ Today

Other Shinkansens have been constructed in the form of public works projects with **subsides from the national government and local governments involved.**

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Privatization of Japanese National Railways

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Japan National Railways(JNR) (public company)

construction, ownership and operation

1987 JNR Reform

JNR was privatized and divided into 7 companies.

6 passenger railway companies
- Hokkaido Railway Co.
- East Japan Railway Co.
- Central Japan Railway Co.
- West Japan Railway Co.
- Shikoku Railway Co.
- Kyushu Railway Co.

1 freight railway company
- Japan Freight Railway Co.

◆ 3 companies were excluded from the jurisdiction of the JR Law in 2001
◆ Completion of selling the stocks owned by the government
JR East : in 2002
JR Central : in 2006
JR West : in 2004

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Development of Shinkansen Construction Scheme

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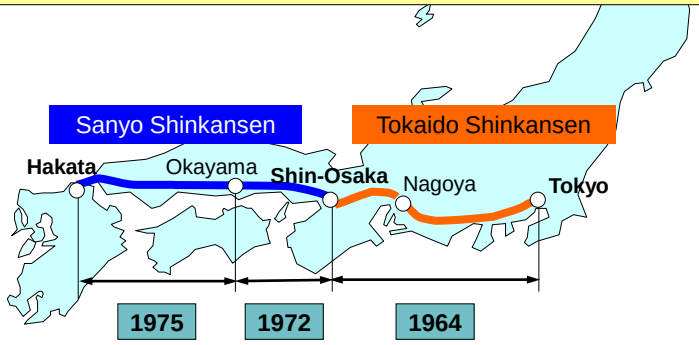
○ Construction schemes of the Tokaido and Sanyo Shinkansen

- **No special scheme** existed for Shinkansen construction.
- The construction cost was fully covered by **loans** with interest.
- For the Tokaido Shinkansen, a **World Bank (IBRD) loan** of $320 million was provided, which accounted for 8.6% of the total construction cost of $3.7 billion.



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Development of Shinkansen Construction Scheme

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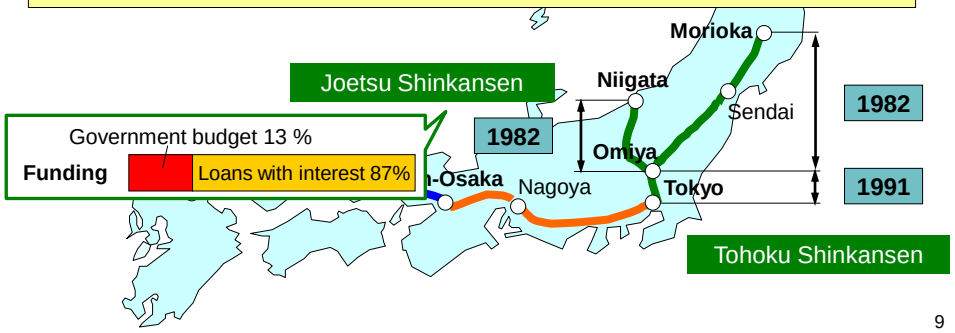
○ Construction scheme of the Tohoku and Joetsu Shinkansen

- Tohoku Shinkansen (Tokyo-Morioka) & Joetsu Shinkansen (Omiya-Niigata) were constructed by **JNR & Japan Railway Construction Public Corporation (JRCC) under the Nationwide Shinkansen Railway Development Law, enforced in 1970**.
- Government funding was partially used for the construction costs, however, a large part of the cost was still covered by **loans with interest**.



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Development of Shinkansen Construction Scheme

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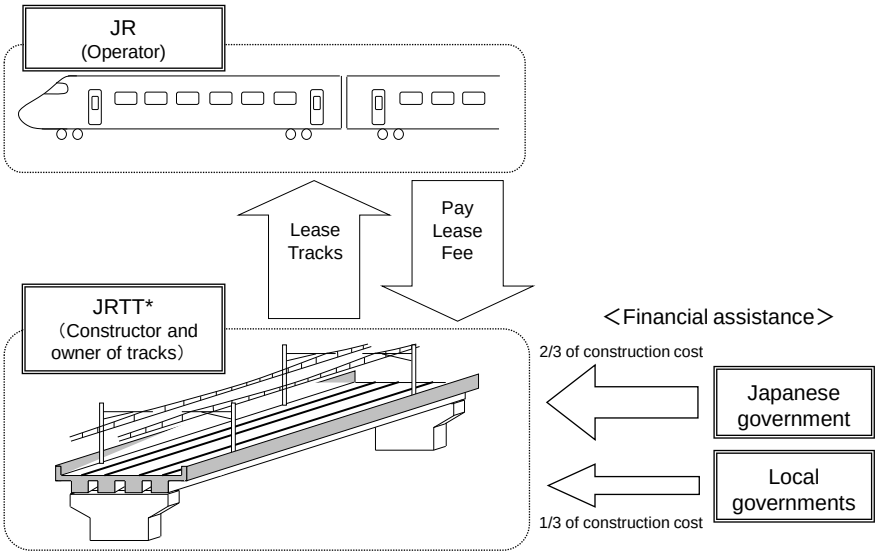
○ Construction-operation separation schemes



*JRTT: The Japan Railway Construction, Transport and Technology Agency

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Ⅱ. Safety of Shinkansen: Earthquake Countermeasures

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Safety of Shinkansen

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Safety

■A safety record of no passenger fatalities in 46 years of operations

ZERO

1964
▼
Present Time

12

Earthquake Countermeasures for Shinkansen

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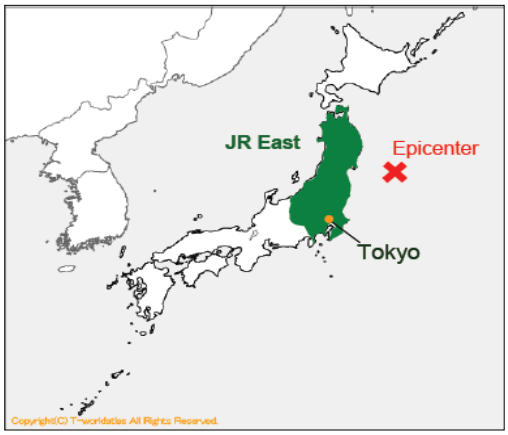
Great East Japan Earthquake



<Date and time of occurrence>
March 11, 2011

<Strength of the earthquake>
Magnitude 9.0 on the Richter scale
(The strongest in the history of Japan)

<Number of casualties>
22,943 (As of June 20, 2011)

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Earthquake Countermeasures for Shinkansen

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＜Damage to the Tohoku Shinkansen Line＞

Broken, leaning, or cracked electrification masts

Severed power lines

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Earthquake Countermeasures for Shinkansen

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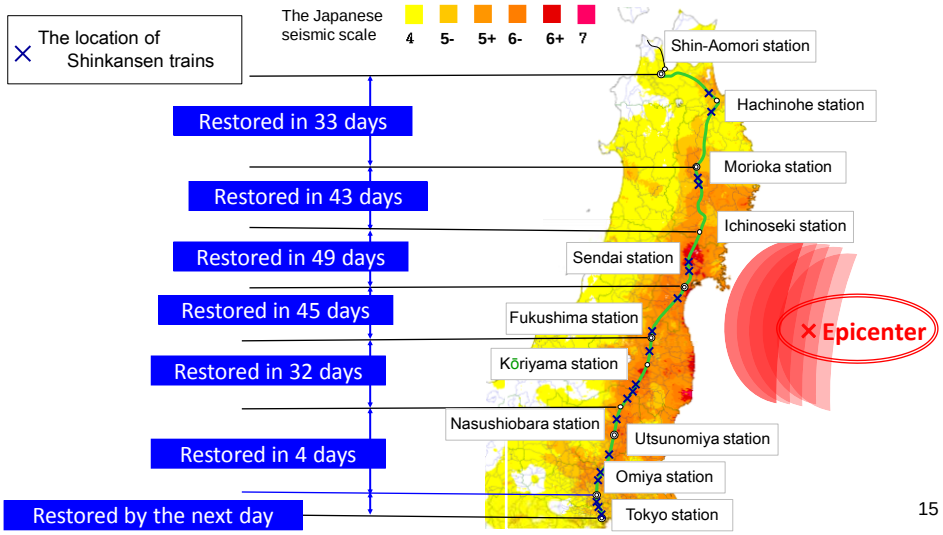
Shinkansen services were completely restored 49 days after the earthquake occurred.



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Earthquake Countermeasures for Shinkansen

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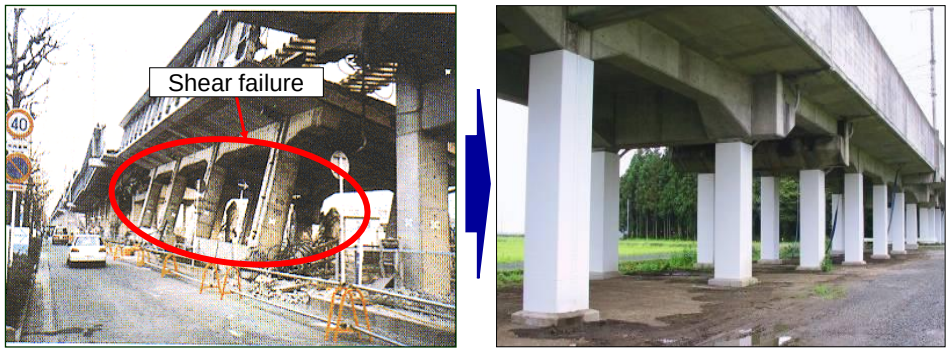
○Anti-seismic reinforcement

The damage to viaducts in Great Hanshin-Awaji Earthquake (occurred on 17 June 1997)	No damage to reinforced viaducts in Great East Japan Earthquake (occurred on 11 March 2011)



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Earthquake Countermeasures for Shinkansen

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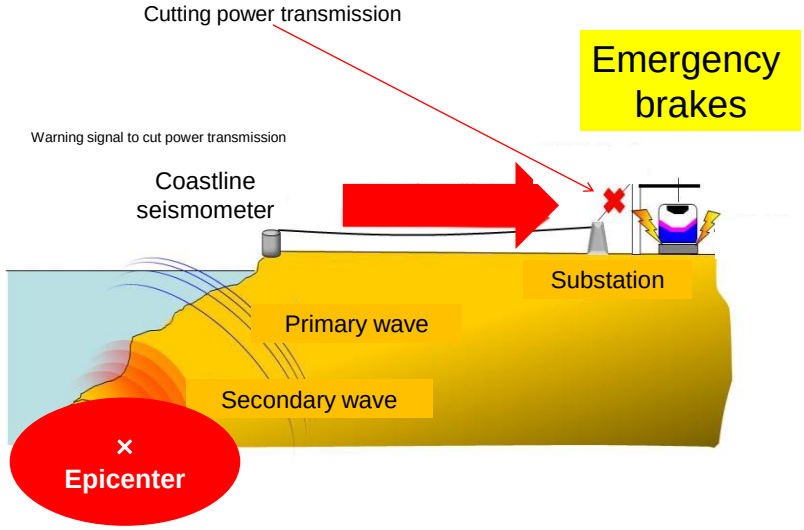
○Early Earthquake Detection System



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Earthquake Countermeasures for Shinkansen

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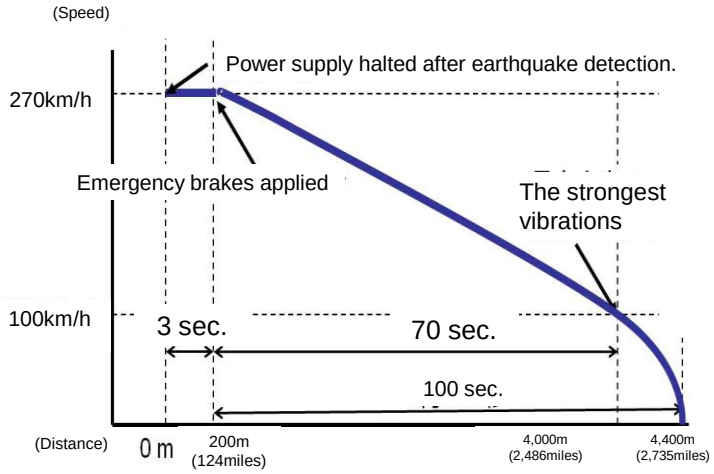
○Early Earthquake Detection System

＜A Tohoku Shinkansen train running through the Sendai Area＞



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Earthquake Countermeasures for Shinkansen

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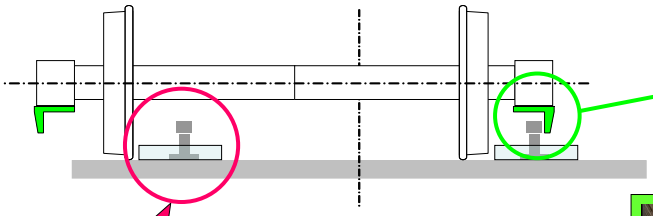
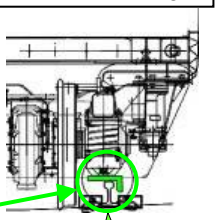
○Deviation/Derailment Preventive Measures

L-shaped car guide

Measures for preventing a derailed train from widely running off the tracks, using a L-shaped car guide installed with the bogie, which gets stuck onto the rail.



Shinkansen Car Bogie



Device for preventing rail falling

L-shaped car guide

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