

# GNSS Utilisation in the East Japan Railway Company



East Japan Railway Company

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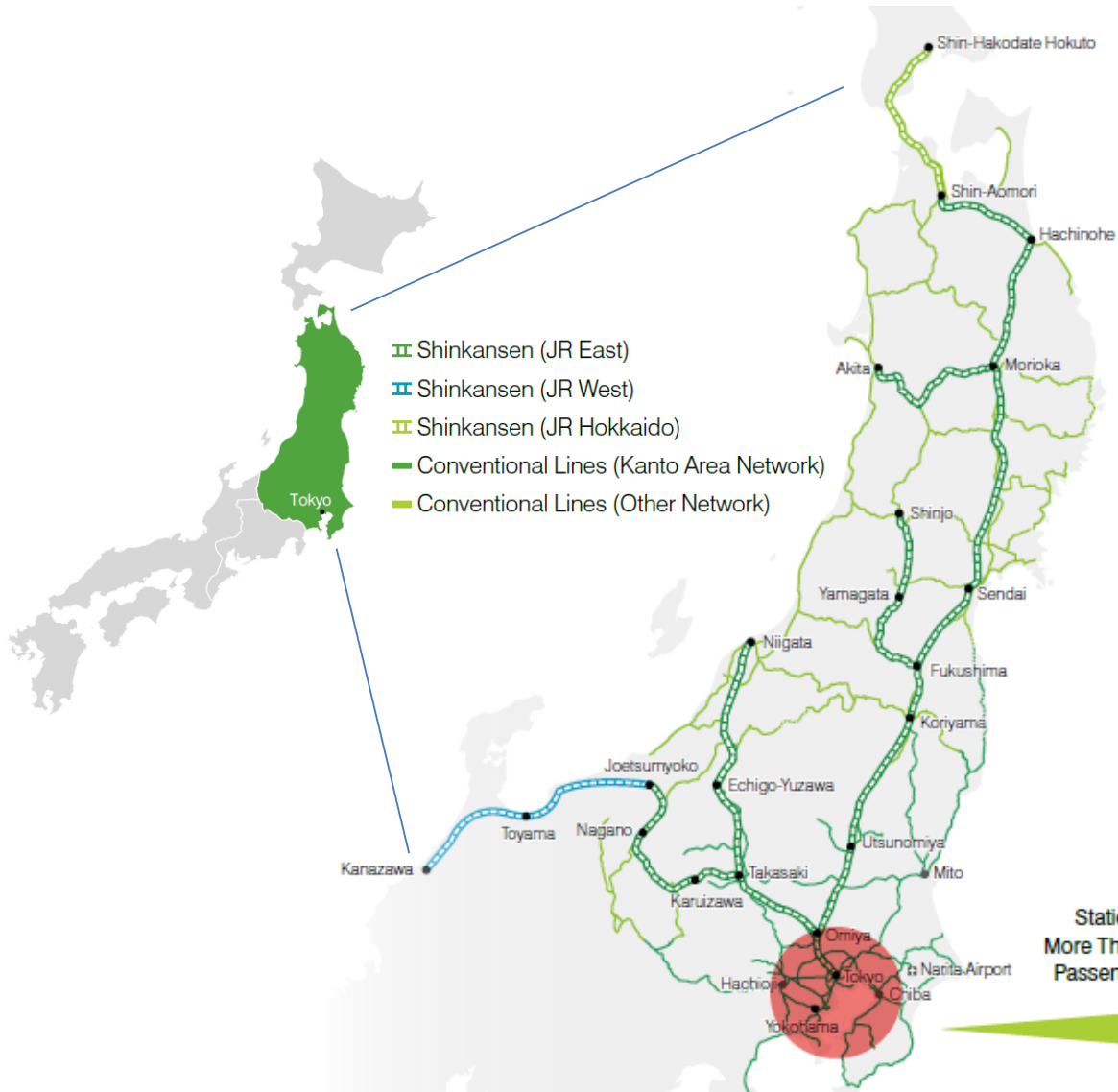
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# Service Areas of the JR East



**Shinkansen**  
1,194.2 km

**Conventional Lines  
(Around Tokyo Area Network)**  
2,535.9 km

**Conventional Lines  
(Other Network)**  
3,628.2 km

**BRT ( Bus Rapid Transit) Line**  
116.5 km

**Stations with  
More Than 500,000  
Passengers Daily**



# Basic Information of the JR East

## Number of Employees

58,550

## Number of Stations

1,665

## Number of Train

12,416 / day

## Passenger Line Network

7,474.8 km

## Number of Passengers Served Daily

About 17 million

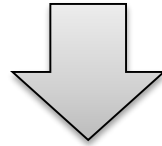


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# The social background

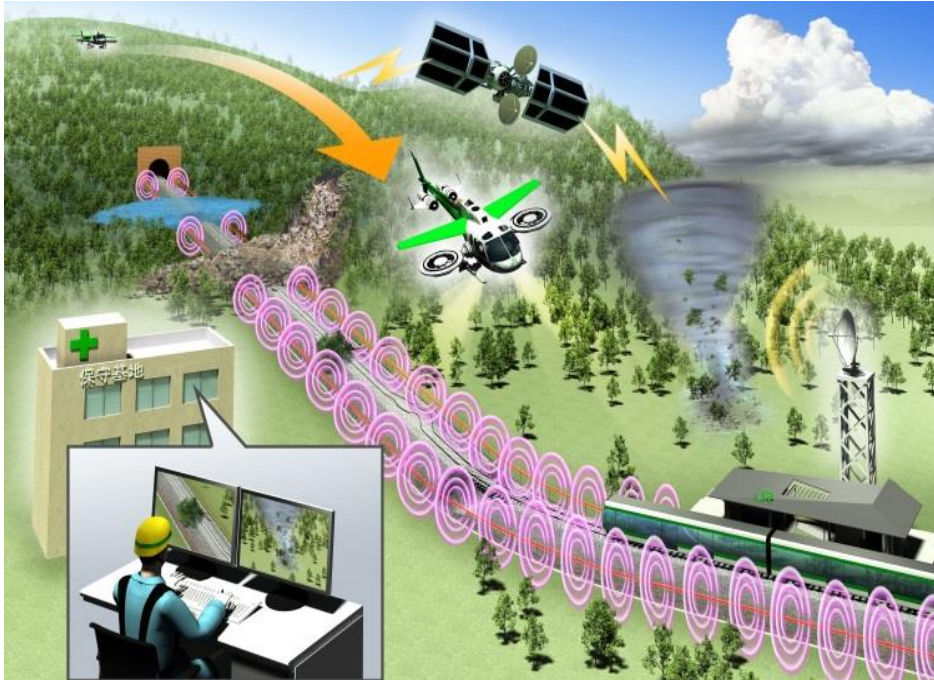
Slowly shrinking population  
Advances in IoT, Big Data and AI



## **Mid-to-Long term Vision for Technological Innovation**

- 1 Safety - Security
- 2 Service and Marketing
- 3 Operation & Maintenance
- 4 Energy and Environment

# Revolution in Mobility

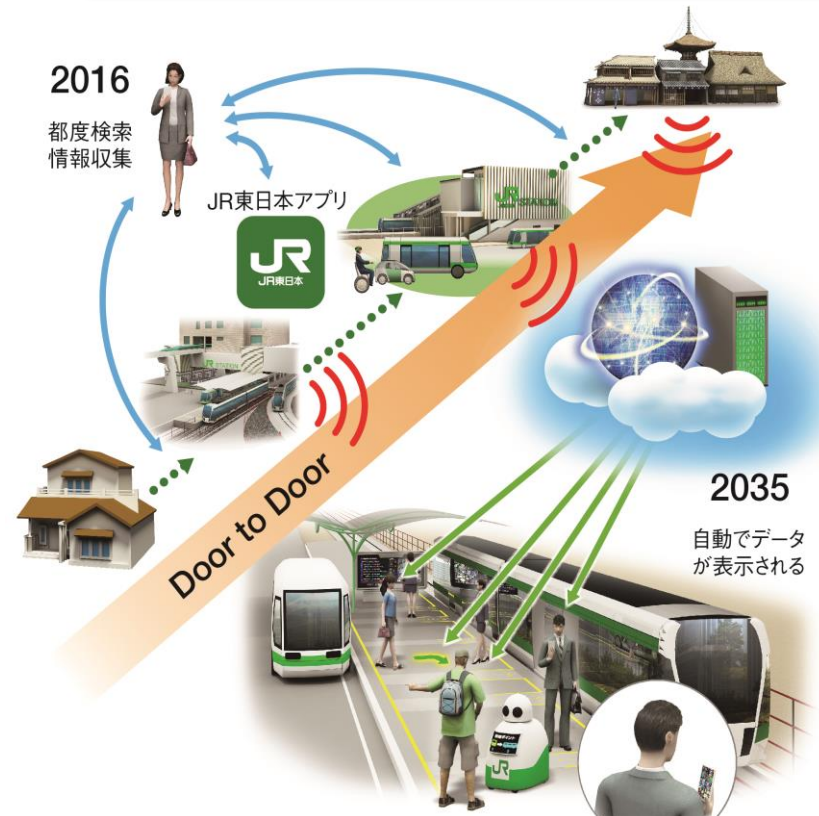


## 1. Safety・Security

“Predict and Minimize Risk”

## 2. Service and Marketing

“Service Now, Service Here, Service for Me”





# Revolution in Mobility



## 3. Operation & Maintenance

“Devising a work style for a smaller productive population”

## 4. Energy and Environment

“Establishing a Railway-style Energy Grid”



# Revolution in Mobility

## 1. Safety・Security

“Predict and Minimize Risk”



## 2. Service and Marketing

“Service Now, Service Here, Service for Me”



## 3. Operation & Maintenance

“Devising a work style for a smaller productive population”

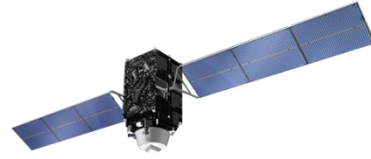


## 4. Energy and Environment

“Establishing a Railway-style Energy Grid”



# Revolution in Mobility



# Positioning



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# History of Geospatial Service Expansion at the JR East

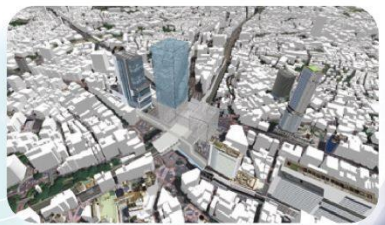
Our company is working on improving the safety of railways and increasing efficiency through utilization of ICT, and is proposing and delivering the creation of the optimal spaces focusing on railways as a pioneer that is improving customer service.

- 1<sup>st</sup> Railway GIS; 7,500km Aerial Survey
- 2<sup>nd</sup> G-Spatial Information; GNSS and ICT
- 3<sup>rd</sup> Mobile Solutions; Cloud and APPs

In 2000, we started building the "Railway GIS" which manages railway maintenance and operation information, and in 2004 we completed an operations assistance system that covers all of the approximately 7,500km of railway lines. We have been improving the efficiency of railway infrastructure.

In addition, we have been providing information through utilization of ICT, such as opening the "Crew Tablets" regarding operation of "Crew Tablets" on all trains, and development and operation of the "JR-EAST Train-Info".

In the future, we will continue to implement the optimal environment and highest convenience for railway spaces and G-spatial using ICT and propose ICT solutions for creating the optimal spaces focusing on railways looking towards the 2020 Tokyo Olympics and Paralympics, and also for delivering the high precision positioning society as striven for by the Ministry of Land, Infrastructure, Transport and Tourism.



● Created "JR-EAST Train Info" (has reached approximately 1,000,000 downloads)

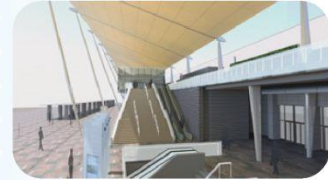


● Established "JRC Cloud Center" inside ICT Division  
 ● Began operation of "Crew Tablets" on all trains  
 ● Created "Tokyo Station GranChannel"

● Started "BRT Location Service" (began operating Kesenumma BRT)

2020

2015



2010



2005

● Expanded business to ICT business (changed name to ICT Division)  
 ● Began G-spatial solutions business

● Began "Train Location System"

● Installed JR Kyushu version of Railway GIS

● Completed JR East Railway GIS (covering all of the approximately 7,500 km of lines)

● Established IT Division

● Launched Railway GIS (Geographical Information System)

2000



# **Railway GIS Solutions**

Supports a wide variety of work with centralized management of the massive amount of railway infrastructure data and visual management and analysis of railway information.

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# Conclusion

GNSS technology is one of the important tools for realizing revolution in mobility, and we will continue to utilize location information from GNSS.

- Preparation of seamless position environment with GNSS insensitive area such as station premises and tunnels.
- Collaboration with High-Precision Positioning Social Project, Ministry of Land, Infrastructure and Transport.

We seek to create new values gleaned from data gathered and synthesized of various data represented by positioning data of railway systems.

For realizing revolution in mobility, we will promote greater 'open innovation' to make creative use of the newest technologies from around the world.