

Reinforcement of Earning Power by Utilizing Latest Technologies

—Aiming for safer, more convenient, and more comfortable railways—

JR Central is promoting "reform of business operations" to reduce routine costs by 80 billion yen on a non-consolidated basis over 10 to 15 years by establishing an efficient business execution system, and is taking on the challenge of realizing a new concept, "revenue expansion," to reinforce earning power.

In recent years, technologies such as sensing, image recognition, big data transmission and analysis, AI, and robotics have evolved significantly. JR Central is committed to providing safer, more convenient, and more comfortable railway services with greater efficiency by proactively incorporating these technologies to fundamentally transform current transportation services and address future declines in the labor force.

In Highlight 1, we have summarized our future vision of railways and our main initiatives to work toward it. Through these initiatives, we will integrally develop the three generations of railway of the Conventional Lines, Tokaido Shinkansen, and Chuo Shinkansen over the future to vigorously fulfill our mission of "contributing to the development of Japan's main transportation artery and social infrastructure."



Work to improve the environment in stations and Shinkansen trains



Consider enhancing Shinkansen seat categories



Provide new ways to use Shinkansen

More Convenience

- Expand our online reservation and ticketless boarding service to provide customers with a smooth travelling experience.
- Leverage ICT and other latest technologies to enhance means of communication with customers and improve the convenience of transportation services.



Propose new travel styles by using "EX Hotels and Activities," "EX Shinkansen Travel Packages," etc.

More Comfort

- Strive to improve services by understanding the needs of customers and introducing new perspectives and flexible ideas.

Safer Operation

- Improve safety from various angles to continue to provide transportation services that can be used by customers with peace of mind.
- Improve the reliability of transportation services by introducing systems and equipment that use the latest technologies in railway operation and maintenance. Railway personnel will focus on more creative work, such as reflecting local situations and data into planning.



Enable ticketless boarding by expanding the availability of TOICA to all lines and enhancing the online reservation service



Install more ticket machines that can provide guidance through video calls



Driver-only operation will be made possible by installing car-side cameras in certain rolling stock



Install platform doors at all Shinkansen stations



Monitor the condition of tracks and railway line facilities using image recognition and other technologies



Monitor the condition of railcars by using condition monitoring data

Reinforcement of earning power by Utilizing Latest Technologies

1. Safer Operation

Shinkansen

Install platform doors at all Shinkansen stations to increase safety on the platform

Also introduce an automated train operation system (GoA2) to the Tokaido Shinkansen to support the work of train operators

- Assisted by enhanced operations support, the train operator performs a safety check on the platform and opens/closes the door when the train arrives at and leaves each station. In an emergency, the train operator, as the person in charge of the train, supervises conductors and pursers in coping with the situation.
- Conductors focus on supporting customers who are not accustomed to traveling or otherwise need assistance in the train and on patrolling in the train to improve security.



Aiming for the commercial introduction of trains equipped with automated train operation functions* of the automated train operation system (GoA2) around 2028, we are currently conducting running tests.
* Scheduled operation functions, fixed-position stopping functions, etc.

Automated train operation (GoA2)

*GoA:Grade of Automation

- The train operator is stationed in the driver's cab in the first car.
- The train operator starts the train manually.
- Speed control and stopping during operation are automated.

Automation level (As defined by IEC (JIS)*)	Graphic illustration of operation mode (L indicates the operator's main tasks)
GoA2	Operator [Starting the train, bringing the train to an emergency stop, guiding evacuation, etc.]

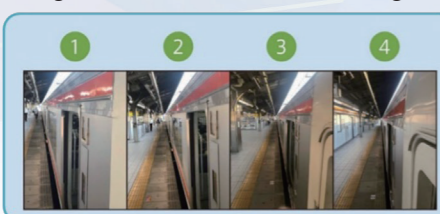
[Reference] Automation levels of railways (edited excerpt from MLIT materials)

Conventional lines

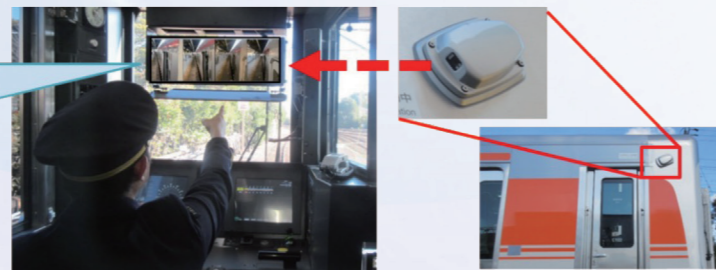
Install cameras to the sides of cars for certain trains of three or more cars to help the train operator ensure safety visually

- The train operator ensures safety by inspecting the images of the cameras installed at each car. In addition, we are considering the use of image recognition technologies to detect passengers who get caught in the train door, fall from the platform, etc.
- Having introduced cars with cameras on their sides to some of the trains of the Kansai Line in June 2023, we are conducting verification tests on regular trains to establish image recognition technologies.
- While considering such measures to increase safety, we will introduce driver-only operation also to trains of three or more cars.

Images of the car-side cameras ① through ④



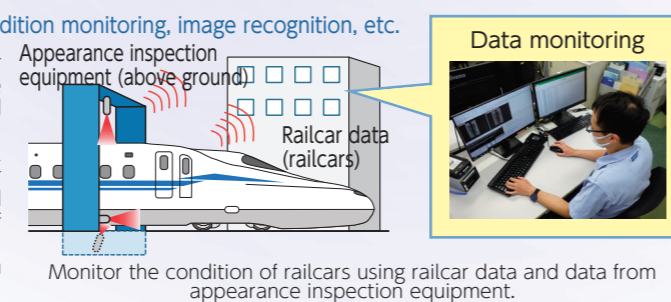
Examples: Detecting any person approaching a train and alerting the train operator with sound



Increase safety and stability by using the latest technologies

Improve the quality of inspection and repair by actively using condition monitoring, image recognition, etc.

- We will improve reliability and efficiency by shifting from manual or visual inspection to diagnosis based on condition monitoring and image recognition and using a system to assist the input of inspection and repair results.
- We will constantly monitor the condition of railcars, railway track facilities, electric equipment, etc., by acquiring data on them in order to make repairs before they break down. As a result, rolling stock and facilities will be maintained in a sound condition, and the occurrence of breakdowns and train delays will be less frequent.
- Our employees will strive to further improve the quality of inspection and repairs through verification based on data analysis.



2. More Convenience

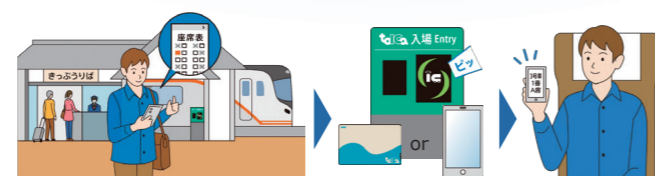
Ticketless services for the smooth use of both Shinkansen and conventional lines

TOICA service will be available on all JR Central lines

We will expand our services in a phased manner to enable passengers to use IC cards issued by railway companies for transportation on all JR Central lines without buying a ticket at a station in advance.

Internet reservation and ticketless services will be expanded

- We will also introduce a service to enable passengers to reserve seats or buy commuter passes using their smartphones anywhere.
- Passengers will be able to use limited express trains on conventional lines without stopping at the ticket office in a station to buy tickets.



Reserve a seat with your smartphone Buy a basic fare ticket with your IC card Buy a limited express ticket with your smartphone

Typical mode of using limited express trains on conventional lines in the future

We will enhance the means of communication with customers at stations

We will expand opportunities for passengers to seek guidance, buy tickets, etc., at stations by using video calls or other means

- We will enhance remote guidance services, such as "reserved seat ticket machines with support functions" and "customer support service," as well as support for ticket purchases.
- There will also be more stations at which passengers can buy tickets early in the morning and late at night.
- The "customer support service," which has already been introduced to the Taketoyo Line, the Tokaido Line (from Obu Station to Toyohashi Station), the Kansai Line (from Nagoya Station to Kuwana Station), and the Iida Line (Ushikubo Station) will also be introduced to the Tokaido Line (from Nagoya Station to Maibara Station) and the Chuo Line (Kachigawa Station) around February 2024.



We will install more ticket machines that can provide guidance through video calls



Station attendants will focus on services that require in-person interactions

For more convenient business trips and leisure travel

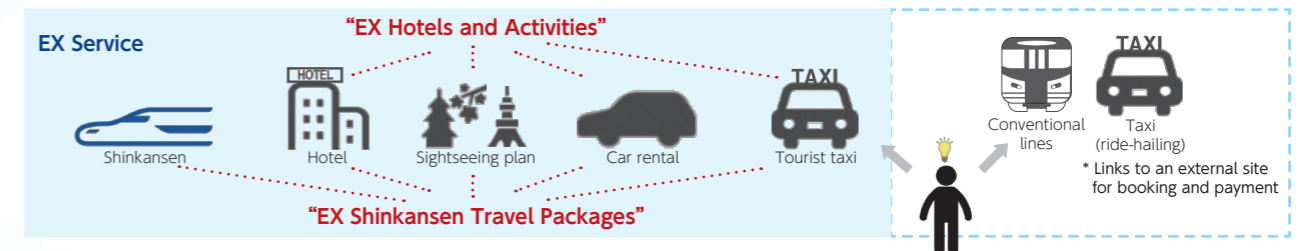
We revised the prices of certain services together with the service enhancement of EX Service and Japan Rail Pass

We have made Tokaido Shinkansen seats available for reservation up to one year in advance since October 2023, in addition to the introduction of "EX Hotels and Activities," a service to enable customers to seamlessly make reservations and payments not only for Shinkansen, but also for lodging facilities, sightseeing plans, car rentals (excluding some car rentals), tourist taxis, etc., within the EX Service website, and "EX Shinkansen Travel Packages," the first travel product in Japan that combines reservations for Shinkansen seats, lodging facilities, etc., which can be changed until immediately before boarding.

We have also enhanced Japan Rail Pass, a product for foreign travelers visiting Japan, to allow them to use the pass also for Nozomi trains provided that they purchase "Nozomi/Mizuho tickets effective only for Japan Rail Pass users" before boarding. In addition, tourist facilities throughout Japan have started discounts and other services for customers who have a Japan Rail Pass.

In conjunction with the enhancement of existing services and products, we have revised the prices of "Express Reservation" and "Japan Rail Pass."

Booking and payment **Can be completed within the "EX Service" website** for accommodation, sightseeing plans, car rentals (excluding some car rentals), etc., in addition to Shinkansen tickets!



"EX Hotels and Activities" / "EX Shinkansen Travel Packages"

3. More Comfort

Provision of high value-added services to meet diverse needs

We will consider enhancing seat categories by promoting development of workspaces inside stations and Shinkansen cars

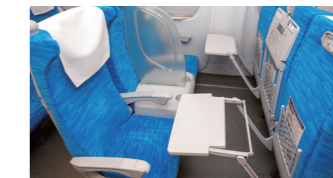
We have been operating "EXPRESS WORK" at stations and other locations since 2021. In order to accommodate different workstyles of customers, we provide the following three types of services: "EXPRESS WORK-Booth," "EXPRESS WORK-Lounge," and "EXPRESS WORK-Office" as paid workspaces. In view of the steady increase in use of EXPRESS WORK-Booth, a private booth-type workspace, we have installed them at all Nozomi stations as well as at some Hikari stations in 2022 and have installed more booths at some Nozomi stations with higher use rates in 2023.

We are also installing private-type "business booths" inside cars, which can be used for short meetings, web conferencing, telephone calls, etc. In addition, we have installed a partition on some B seats in Car No. 7, which is designated as "S Work Car," to increase the separation between the seats on both sides. These seats are sold as S Work P Seats for the price of a

reserved seat in a regular car (using EX Service) plus a surcharge.

As explained above, by further enhancing the environment to enable passengers to work seamlessly before and after getting on the train, we are working to increase added value.

We are also considering providing a superior class to Green Cars to make travel even more comfortable.



S Work P Seat



Business booth

We provide new ways to use Shinkansen

For Chartered Car Package, a service to allow customers to charter a whole car of the Tokaido Shinkansen to, for example, hold an event of their own, we have received more than 80 orders by the end of September 2023 since the launch of the service, drawing the attention of many customers. For example, chartered cars have been used for the promotion of new products, sporting events, etc., which benefited from full special staging effects by using specially designed head covers, carpets, etc.



Promotion of new products



Sporting events