

- » JR East is creating customer value and heightening customer satisfaction by introducing and developing applications for leading-edge, multipurpose technologies.
- » JR East is taking steps to enhance its operational functions and efficiency by actively incorporating value engineering into production, service, maintenance, and other areas.

On Track for World No. 1



SUICA

- » *Suica* was an IC card solely for railway services. Now, it is a dream IC card for a wide range of everyday purposes.
- » JR East's strategic project to expand services in and around stations is based on businesses that accept *Suica*. JR East is simultaneously promoting businesses that accept *Suica* and the increased usage of *Suica* for railway services.



TECHNOLOGY DEVELOPMENT

- » JR East aims to create the world's best railway system for safety, convenience, advanced technology, comfort, and efficiency. To that end, the Research & Development Center of JR East Group was established in December 2001. The center works to add value to products and services by making full use of advanced technologies for all railway-related and other operational systems.

View Suica card lineup



A scene at automatic ticket gates



SUICA

SUICA OVERVIEW

In November 2001, JR East launched *Suica* (Super Urban Intelligent Card), a system in which passengers use IC cards as commuter passes or stored-fare railway tickets. Previously, magnetic cards were used for those types of ticket. As a result, passengers can now pass through automatic ticket gates by just briefly touching them with their commuter pass cases containing *Suica*.

In addition to the coverage of *Suica* mainly in the Tokyo metropolitan area, JR East introduced the system at 65 conventional railway stations in the Sendai area in October 2003. With a population of more than one million, Sendai is the largest city in the Tohoku region. Also in October 2003, it became possible to use *Suica* commuter passes at certain Shinkansen stations. Through such efforts, JR East is increasing the coverage area of *Suica*. As of April 1, 2004, *Suica* could be used at a total 548 stations, including other railway companies' stations.

The number of *Suica* holders cleared the one-million mark only 19 days after the system's launch. Since then, their numbers have continued to climb. There were 9.0 million *Suica* holders as of the end of May 2004.

MERITS OF SUICA

Enhanced Convenience

Because *Suica* has a stored-fare function, even when commuter pass holders ride beyond the area covered by their passes, the outstanding

fare is automatically deducted as the passenger touches the pass against the automatic ticket gate. In addition, because the data stored in the IC chip and the printed information on the surface of the card are rewritable, the same card can be used to renew the period of validity of passes. Moreover, data on individual commuter passes is stored in JR East's servers, allowing the prompt reissue if a pass is lost.

Reduced Maintenance Costs

The *Suica* system also realizes dramatic savings on maintenance costs because of the negligible burden placed on the moving parts of the automatic ticket gates compared with magnetic cards.

Demand Creation

In November 2002, one year after the introduction of *Suica*, JR East carried out a questionnaire survey of approximately 4,000 people, the results of which confirmed that *Suica* is creating demand. Of the respondents who used *Suica*, approximately 45% said that JR East's services had become easier to use, 10% replied that they used JR East's services more often than before, and 5% stated that when they had a choice of lines to the same destination they had started using JR East.

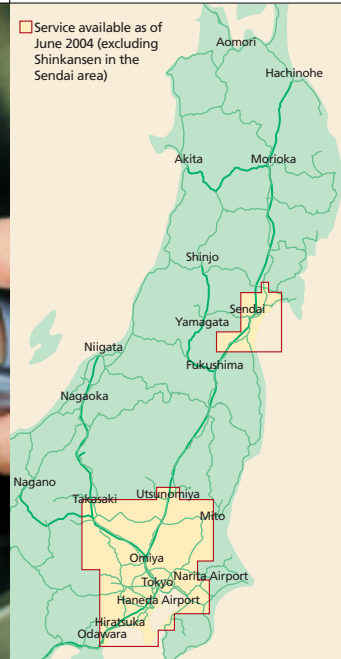
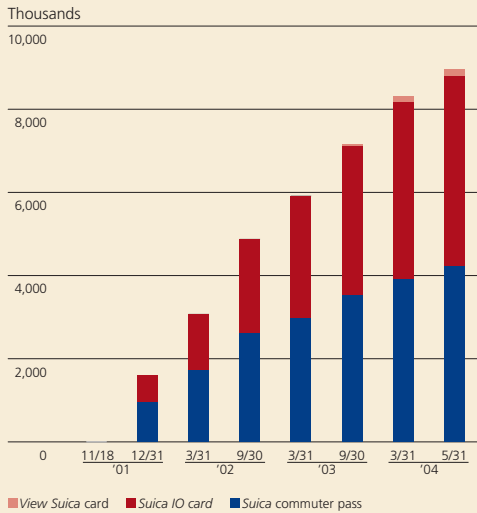
Additional Station Space

The popularization of *Suica* will reduce the number of automatic ticket

Mobile Suica

Coverage Area of Suica

Number of Suica Holders



vending machines at stations, which will enable JR East to exploit the space created for revenue-generating ventures.

SUICA BEYOND STATIONS

When JR East initially introduced *Suica*, it only had commuter pass and stored-fare railway ticket functions that mainly covered the Tokyo metropolitan area.

In July 2003, JR East issued *View Suica* card, which combines the functions of a *Suica* stored-fare railway ticket and JR East's *View Card* credit card. Holders can use the railway ticket function of *View Suica* card to travel on trains. At the same time, they can use it as a credit card to recharge the stored-fare or to make general purchases. JR East is considering the addition of a function that automatically charges the credit card if the amount of stored-fare is insufficient when a holder passes through an automatic ticket gate. JR East is also looking at combining *View Suica* card with *Suica* commuter passes.

Further, it became possible to use *Suica* as electronic money at 196 stores in 64 stations from March 2004. This new function has significantly increased convenience for *Suica* users. When traveling on trains or shopping at station stores, they no longer have to go through the process of taking money out of their wallets and receiving change. Without taking their *Suica* from its pass case, they can enjoy fast, trouble-free shopping. In addition to stores and shopping centers in stations, JR East will focus on introducing the system into downtown stores. By the end of fiscal 2005, JR East aims to realize a network of 1,000 stores that accept *Suica*.

FURTHER EVOLUTION OF SUICA

JALCARD Suica

Aiming for launch by the end of fiscal 2005, JR East plans to issue

JALCARD Suica as a new card that combines the functions of the JAL (Japan Airlines) Group's credit card and *View Suica* card.

JALCARD Suica will be issued as a comprehensive transportation card encompassing both ground and air transport. Through this new card, JR East aims to enhance customer convenience and generate overall demand for train and flight services.

Further Mutual Use Tie-Ups

From August 2004, it will become possible to use *Suica* in the coverage area of West Japan Railway Company's equivalent IC card and vice versa. JR East is preparing for similar mutual use tie-ups with other transportation companies in the Kansai region, which includes Osaka, with a view to starting services from fiscal 2006. And, plans call for the establishment of separate mutual use tie-ups with 48 transportation companies in the Kanto region, which includes Tokyo, from fiscal 2007.

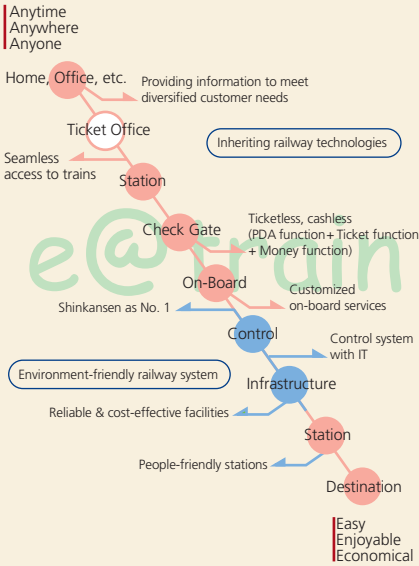
Mobile Suica

In the second half of fiscal 2006, JR East will market a combined *Suica* and cell phone—*Mobile Suica*. As well as the existing *Suica* functions, enabling users to ride on trains and use electronic money, *Mobile Suica* will feature the following new cell phone related functions.

- Recharging of stored-fare railway tickets and purchasing of commuter passes anytime, anywhere by using the telecommunication function
- Viewing of *Suica* usage record and stored-fare remaining by using the display function

JR East is also considering the inclusion of a function that will enable Shinkansen boarding and seating reservation.

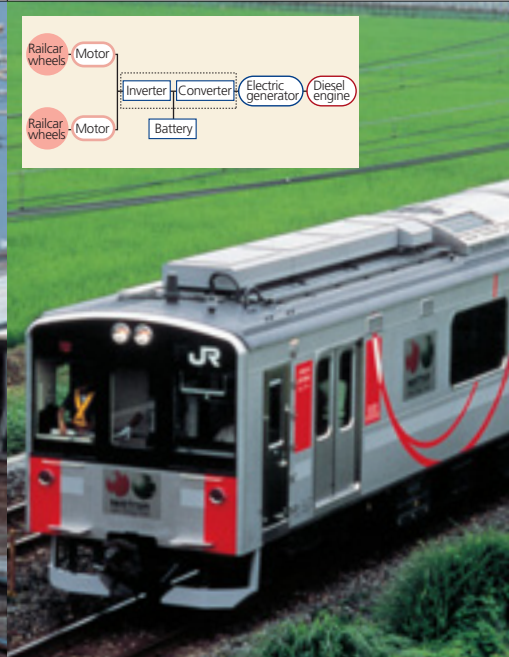
New Railway Concept e@train



East i: Shinkansen line type



NE train (New Energy train)



TECHNOLOGY DEVELOPMENT

CONSTRUCTING THE WORLD'S NO. 1 RAILWAY SYSTEM

Based on the e@train concept, JR East conducts R&D aimed at constructing an unrivaled railway system. The e@train concept represents the newest and best form of “what the railway of the future should be.” Aiming to realize the e@train concept, JR East has established six main development goals. To reach those goals, JR East’s R&D focuses on safety, customer service, cost reduction, and the environment. The goals are as follows.

- Eliminate fatal accidents and injuries involving passengers and fatal accidents involving employees
- Provide accurate information to passengers and restore normal services promptly following service disruptions
- Cater to diversifying customer needs
- Enhance the comfort of Shinkansen travel
- Realize railcars and facilities with superior reliability and cost performance
- Create an environment-friendly railway network

TAKING ON THE CHALLENGE OF CREATING A SHINKANSEN SURPASSING 300KM/H

Between fiscal 1988 and fiscal 2004, annual traffic volumes and revenues of JR East’s Shinkansen services rose around 50%. Since 1987, mindful of the ongoing competition that airline companies pose, JR

East has steadily honed the competitive edge of its Shinkansen high-speed transportation services.

Looking ahead, JR East has slated the extension of two of its Shinkansen line services (see page 20 for details). As JR East extends those lines, competition with airlines is likely to intensify. In order to win out against that competition, JR East must shorten travel times by further enhancing high-speed services—without sacrificing customer comfort or environmental compatibility.

Accordingly, with its sights set on achieving a top operational speed of 360km/h, JR East is preparing to build high-speed Shinkansen test railcars. Plans call for the completion of Shinkansen railcars in summer 2005 and hybrid Shinkansen railcars in spring 2006. Following the completion of those cars, JR East will conduct comprehensive operational trials through fiscal 2008.

DEVELOPING HYBRID NE TRAIN (NEW ENERGY TRAIN) RAILCARS

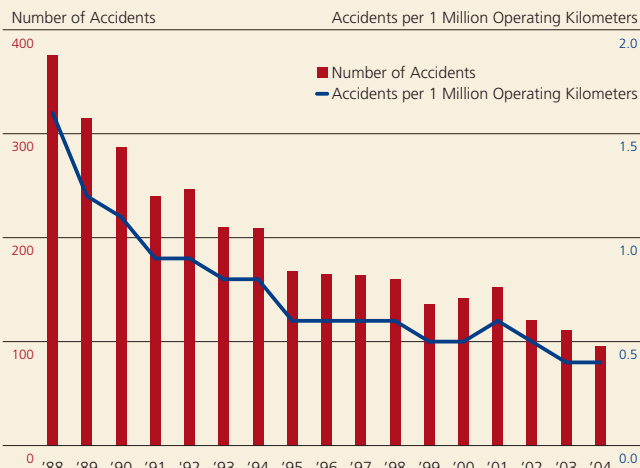
Aiming to reduce the burden that its operations place on the environment, JR East began trials of its NE train (New Energy train) in May 2003. The train’s engine drives an electric generator. Electricity produced by the generator or electricity stored in a battery is used to drive the motor, which, in turn, moves the train. The NE train also has a regenerative braking system. When the train brakes, the motor—

Image of high-speed Shinkansen test railcars



Operational Railway Accidents*

Years ended March 31



* Train derailments and fatal accidents and injuries at such locations as level crossings and platforms.

acting as a generator—converts the kinetic energy created into electricity, which is stored in the battery.

Through its *NE* initiative, JR East aims to develop trains that use roughly 20% less energy than existing diesel trains. Moreover, the diesel engine used to drive the *NE train's* electric generator will halve emissions of NOx and particulate matter (PM) when used in tandem with the hybrid system. JR East has minimized maintenance and realized performance levels equivalent to those of existing electric trains by using standard equipment for the railcar body, motor, control systems, and instruments in the driver's cabin.

ENHANCING MEASUREMENT TECHNOLOGY

In October 2002, JR East launched operations of *East i*, a train used to monitor Shinkansen line rail tracks and electric systems. Running at a maximum speed of 275km/h, the same speed as operational Shinkansen trains, *East i* records data related to malfunction and maintenance checks. JR East uses the results of those measurements for a variety of purposes, including time-series management and analysis.

JR East launched operations of a new monitoring train in April 2003, with a view to automating and increasing the efficiency of such evaluation activities for conventional railway lines.

AIMING TO BE THE WORLD'S SAFEST RAILWAY

JR East undertakes ongoing investment in equipment and employee training aimed at enhancing the overall safety levels of its railway system. In addition, JR East conducts R&D focused on preventing derailments and human errors and on measures for natural disasters.

In fiscal 2004, there were 96 operational railway accidents* in the JR East network. This represents JR East's lowest ever number of accidents—

down roughly 75% from fiscal 1988, when JR East was established. JR East is committed to continuing rigorous efforts to eliminate accidents.

* Train derailments and fatal accidents and injuries at such locations as level crossings and platforms.

INCREASING DEVELOPMENT POSSIBILITIES UNDER ELEVATED RAILWAY TRACKS

JR East has successfully created quiet environments underneath its elevated railway tracks by using new technology that it has developed jointly with Takenaka Corporation. The patent is pending for this new technology, which dramatically reduces noise and vibration when trains pass overhead. In February 2004, the opening of *Hotel Dream Gate Maihama* marked the first practical application of the new technology in Japan (see page 47 for details).

In the past, noise and vibration restricted the development of hotels or offices under elevated railway tracks. However, this new technology has opened up possibilities for the development of JR East's non-transportation businesses.

MANAGING INTELLECTUAL PROPERTY

JR East is working to further leverage its accumulated technologies through educational programs that are primarily focused on business model patenting. As of March 2004, JR East had a total of 2,137 patent applications, with 380 registered, and 604 trademark registration applications, with 589 registered.