Our fundamental concept of safety

Since the establishment of JR East, safety has been our top management priority, and we have worked relentlessly to heighten our levels of safety. Our earnest efforts to learn from unfortunate accidents in the past have enabled JR East to further the prevention of future accidents with our continued developments in both tangible and intangible aspects.
Pursuit of safety measures can never end. We will continue to work tirelessly to improve safety by pursuing a goal of "zero accidents involving passenger injuries or fatalities and zero accidents involving employee fatalities (including employees of Group companies and partner companies)."

General principles of Safety

JR East revised General principles of Safety for the code of conduct for its safety-related employees in March 2012. Based on lessons learned from the Great East Japan Earthquake and other occasions to date, JR East has added a fifth principle to remain calm and think by ourselves to reflect our fundamental concept of safety, "think and act by ourselves." This also reflects our belief that at the time of an emergency we first need to be calm, list our choices, and take the best action.

① Safety is the most important mission in transportation.
② Ensuring safety is based on exact observance of rules and procedures, and is achieved through constant practice.
③ Enforcement of confirmation and complete contact is most important for ensuring safety.
④ For ensuring safety we should cooperate together and go beyond our official responsibility.
⑤ When we have questions or must choose among several options, we should remain calm, think by ourselves, and take the safest course after thorough consideration.

JR East Group Management Vision V— Ever Onward

JR East formulated its fifth medium-term management plan, the JR East Group Management Vision V— Ever Onward, in 2012. We will continue our ceaseless efforts by setting an eternal mission to pursue "extreme safety levels" and building a railway capable of withstanding natural disasters.

Based on our experience from the Great East Japan Earthquake, we have worked to implement earthquake countermeasures in preparation for events that are conceivable such as an earthquake directly beneath the Tokyo metropolitan area, focusing on both tangible and intangible aspects. In these ways, we are working to build a railway capable of withstanding natural disasters.

We are also further promoting initiatives to prevent train collision, derailment accidents and rail crossing accidents. At the same time, we are taking steps to install automatic platform doors for the Yamanote Line and exploring the possibility of installation for other lines. In these and other ways, we continue to promote the development of railways that passenger can utilize reliably. We will also bolster activities aimed at achieving "extreme safety levels." For example, we will steadily make progress on initiatives based on 2013 Safety Vision, while formulating our next medium-term safety plan. Pursuit of safety measures can never end.

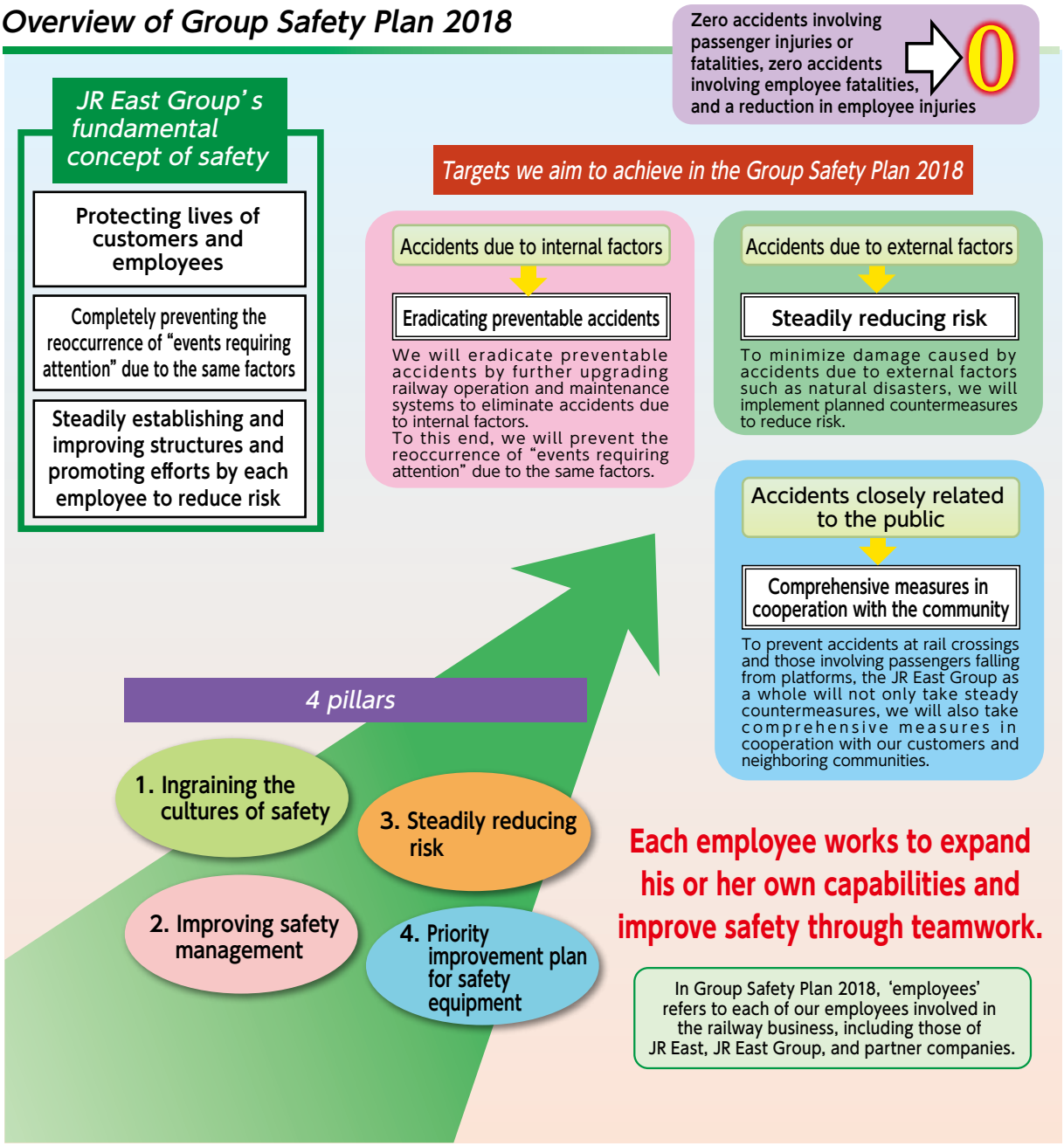
We will continue to tirelessly work to improve safety by pursuing a goal of "zero accidents involving passenger injuries or fatalities and zero accidents involving employee fatalities (including employees of Group companies and partner companies)."

① Responding to major earthquakes
  a) Promotion of seismic reinforcement and other countermeasures for earthquakes
  b) Rescuing customers and saving lives in the event of a disaster
② Responding to natural disasters and extreme weather events
③ Automatic platform doors
④ Promoting measures to prevent train collision and derailment accidents
⑤ Upgrading systems and structures to ensure safety

Group Safety Plan 2018

Since our establishment, upholding safety as our top management priority, JR East has been implementing a series of five-year safety plans. FY2015 marks the beginning of our sixth five-year Safety Plan, Group Safety Plan 2018. With each of us involved in the railway business committed to improving safety, JR East as a whole group will continue its challenge to achieve "extreme safety levels."
In Group Safety Plan 2018, together with redefining the direction we are taking as a company such as preventing accidents resulting from internal factors, we outline specific measures. Additionally, through our ongoing efforts to pass on technologies and promote measures to comprehensively understand the severity of accidents, we aim to further enhance safety management through the fostering of safety-conscious personnel.

Overview of Group Safety Plan 2018



4 pillars 1. Ingraining the cultures of safety

◇ We will steadily foster our culture of safety as the foundation for our safety measures.

Ingraining the JR East Group's 5 cultures of safety

5 cultures

A culture of proper reporting
The prompt and proper reporting of accidents and incidents, and the prevention of the recurrence of accidents.

A culture of noticing
The recognition and sharing of information regarding the potential sources of accidents in order to prevent accidents and incidents.

A culture of direct meeting and discussion
The open and honest discussion and exchange of opinion in investigating the causes of accidents and incidents in order to identify the causes of accidents and to take truly effective countermeasures against their recurrence.

A culture of learning
The continuous awareness of others, learning from accidents and incidents which occur in all places of work, not just in one's own workplace, and the implementation of appropriate countermeasures.

A culture of action
Safety can be ensured only by taking safe actions. Think and act by yourself. This is at the core of our safety.

Stopping trains when we feel it is not safe.

Safe and stable transport is important for our railways. Safety means protecting lives, while stability means ensuring on-time operations of our trains. However, though stable transport is important for us, safety comes first. Trying too hard to keep to schedule sometimes results in not properly following safety confirmation procedures, which leads to risking the safety of train operations. To secure the safety of our railway operations, the whole JR East Group will always follow our code of conduct to "stop trains" whenever we feel it necessary for safety reasons.


Train protection drill at General Training Center

Sangen Principle: Three Actualities Principle

Accidents and incidents always occur at the Genba.* This means that the sources of accident prevention can also be found at the Genba. JR East continues its search for answers which cannot be found from desktop theories, based on the "Three Actualities Principle" as its standard for action: actual locations, actual objects, and actual people.

*Genba: "Genba" means actual locations, objects, people directly related to the safety of our operations including points of contact with our customers and fields or workplaces of transport or services.

The Three Actualities Principle
Actual locations: visiting actual locations to understand actual conditions
Actual objects: viewing actual objects in order to understand actual conditions
Actual people: meeting face to face with people involved to understand actual situations

Challenge Safety Campaign

Since the company's foundation, we have been continuing our Challenge Safety Campaign with the aim of encouraging our employees to actively take on the challenge of further improving safety levels, rather than just passively maintaining safety. The campaign aims to encourage each one of our employees to actively endeavor to improve safety levels, think and discuss specific measures with each other and act upon them.

4 pillars ② Improving safety management

Fostering safety-oriented personnel

◇ The safety of our operations is supported by our frontline employees. To respond to the rapid changing of generations, we will steadily work on fostering safety-oriented personnel while also working on passing on our safety technologies and knowledge to future generations of workers.

Fostering safety-oriented personnel with a strong mindset in cooperation between Key Safety Leaders, Safety Professionals and General Training Centers

Fostering capabilities to flexibly respond to disasters

From the Great East Japan Earthquake on March 11, 2011, we have relearned the importance of being prepared for disasters on a daily basis and to think and act by ourselves at a time of a disaster.
To respond to an accident or a disaster immediately after its occurrence, we are required to remain calm to review our choices and make prompt decisions to ensure the safety of our operations and take the necessary actions. By discussing the actions required immediately after the occurrence of an accident or a disaster and preparing ourselves through training on a regular basis, JR East helps its employees to foster capabilities to respond flexibly to an accident or a disaster.

Steadily passing on necessary technologies

○ Passing experiences and knowledge to future generations

JR East will steadily pass on valuable experiences and knowledge that veteran employees possess including the circumstances that led to accidents in the past and the processes that led to the creation of current rules and regulations. We will also continue our efforts to increase the volume of these valuable experiences and knowledge of veteran employees to be shared with future generations.

○ Increasing opportunities for employees to learn and challenge themselves

In passing on technologies, we place importance on offering opportunities for each one of our employees to voluntarily learn and challenge themselves and we believe that this will eventually lead them to acquire knowledge of the technologies and improve their capabilities.

○ Passing on experiences through the Chroniclers of Safety (narrators of oral history)

We have organized a group of ex-employees from various departments who possess an abundance of knowledge and applied skills in railway safety to act as our “Chroniclers of Safety.” These Chroniclers of Safety share their safety-related experiences, such as the handling of accidents in the past, in the hope that they will pass their accumulated experiences and skills down to future generations.

Providing easy-to-understand learning materials and information

By utilizing ICT technologies, JR East offers an environment for employees to learn whenever needed from various learning opportunities such as Challenge Safety campaigns, regular trainings and drills, study sessions and individual learning. The necessary materials and information can be easily searched and processed for learning.

○ Development and improvement of the safety portal

JR East utilizes its safety portal site via the intranet as its safety-related information platform. Employees can access the necessary educational materials including videos whenever needed.

○ Development of e-learning

By utilizing devices such as tablets, we offer e-learning so that employees can learn whenever they want.

Further increasing the levels of safety through the concerted efforts of the whole JR East Group

To steadily and specifically promote our safety efforts, it is important that we share information and our safety values for the whole JR East Group including group and partner companies. We are committed to ensuring that all JR East Group employees share safety values and to continuing our efforts to further improve the levels of safety in our operations across the whole JR East Group.

Simplifying to minimize human errors

Devices and equipment requiring complex rules and numerous operations could result in human errors. JR East promotes the simplification of its operations by unifying the specifications of its devices and narrowing down its safety rules and regulations.
However, since many of the safety rules have been created from lessons from past accidents, as a condition of this simplification we make sure we understand the background to and objectives of each safety rule.

Deeply learning the dreadfulness of accidents

◇ By engraving dreadfulness of accidents in their memory, each one of our employees will take specific actions to prevent them from happening.

○ Further utilization of the Accident History Exhibition Hall

Since FY2015, all JR East employees visit the Accident History Exhibition Hall where actual trains from accidents and disasters are exhibited. We also continue to improve the educational materials available at the Accident History Exhibition Hall.

Exhibited trains at the Accident History Exhibition Hall

○ Development and utilization of simulator tracks with actual trains

By gradually preparing simulator tracks with actual trains, we will offer opportunities to our employees to experience simulations of accidents or incidences with actual trains.

○ Publication of major accident encyclopedia

We will continue the publication of our major accident encyclopedia with notes from those who were involved in the accident response at the time.

4 pillars ③ Steadily reducing risk

◇ By categorizing accidents into those due to internal factors, those due to external factors, and those closely related to the public, we have set directions to guide us in our work on measures to reduce the risk of these accidents.

Totally eradicating accidents due to internal factors

Our goal is to eradicate preventable accidents due to internal factors by further upgrading railway operation and maintenance systems. In addition to our risk reduction measures for personnel and management such as education and training, we will take all possible measures such as the utilization of technological developments in ICT, big data, and GPS. We will also review our safety-related procedures and further strengthen the countermeasures we have been putting in place.
To this end, we will focus primarily on preventing the reoccurrence of "events requiring attention" due to the same factors.

Reducing risk of accidents due to external factors

When the Great East Japan Earthquake occurred, the earthquake countermeasures that had been steadily implemented by JR East up to that time proved effective to a certain extent. On the other hand, we continue to acknowledge the importance of being prepared for unforeseen natural disasters. Additionally, we will steadily reduce the risk of damage being caused by the increasing incidence of natural disasters such as abnormal weather like torrential localized rain and gusts of wind, floods and volcanic eruptions. To minimize damage caused by natural disasters due to external factors immediately after an occurrence, JR East will take planned risk reduction measures.

Reducing risk of accidents closely related to the public

While we steadily take measures against accidents at rail crossings and customers falling onto tracks, we continue our efforts to ask our customers and neighboring communities to understand the risks associated with railways and to prevent the occurrence of such accidents.
We will take comprehensive measures including accident prevention campaigns on platforms, escalators, or railway level crossings, and the elimination of level crossings in cooperation with local municipalities.

○ Measures against major accidents

We will steadily implement countermeasures by learning lessons from major accidents in the past.
(Specific measures)

Measures taken after the Uetsu Main Line train derailment accident (Dec. 25th, 2005)

- Increased installation of anemometers and operation restriction zones for heavy wind
- Research and development to predict local gust
- Reviewing operational restriction methods by utilizing meteorological information
- Increased installation of windbreak fences

Measures taken after the Fukuchiyama Line train derailment accident (April 25th, 2005)

- Speed check by introducing ATS to curves, turnouts, terminals, and descending grades
- Increased introduction of automatic train protection radio transmission devices
- Complete introduction of emergency braking equipment

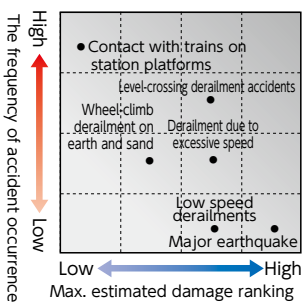
Measures taken after the Joetsu Shinkansen train derailment accident (Oct. 23rd, 2004) for large-scale earthquakes

- L-shaped car guide and rail rollover prevention device
- Strengthening seismic reinforcement for embankment, cutting, elevated bridges, electric poles, ceiling and walls of station buildings and platforms
- Further improvement of systems to promptly decelerate and stop Shinkansen trains immediately after an earthquake

○ Further prediction of possible risk and related countermeasures

Though some risk might not be recognized as risk, with changing circumstances surrounding railways some might evolve into a risk to operations in the future. We will monitor the changing risk on a regular basis so that we can predict the possible risk and implement proper countermeasures beforehand.

By reviewing the changing risk of possible accidents on a regular basis by using risk evaluation methods, we can determine the priority of the necessary countermeasures.



An example of our risk evaluation methods

4 pillars ④ Priority improvement plan for safety equipment

◇ Regarding our prioritized improvements to safety equipment, JR East has invested more than three trillion yen over the 28 years since the company's establishment in 1987.
◇ We will continue our priority improvement to safety equipment in FY2016.
◇ For five years from 2014, JR East is estimated to invest approximately one trillion yen in its safety equipment.

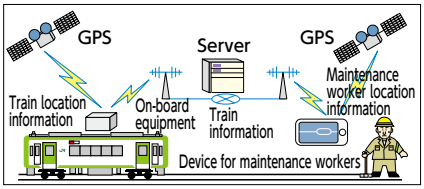
Eradicating accidents due to internal factors

○ **Those related to railway operations**
- Increased introduction of ATS-P and ATS-Ps to prevent violation of signals and excessive speeding by trains
- Introduction of systems to transmit information such as temporary speed restrictions to train drivers in strong wind or heavy rain.

○ **Those related to rolling stock and equipment**
- Introduction of new type railcars with carbody structures for improved safety levels
- Increased introduction of backup equipment to further ensure the secure operation of level crossings when trains are passing
- Safety measures for aging facilities (extension of their life through planned renewals and repairs)
- Commercialization of technologies to monitor on-board equipment and ground facilities by commercial trains with inspection equipment.

○ **Those related to maintenance and construction**
- Commercialization of warning equipment to alert staffs about approaching trains by utilizing GPS
- Systemization of procedures to prevent trains from entering sections under construction
- Measures to prevent collisions between commercial trains and maintenance vehicles involved in construction work.

○ **Safety measures for the speed increase of Shinkansen and for the expansion of the high-speed rail network**



Train approach alarm equipment utilizing GPS (image)

Reducing risk of accidents due to external factors


Measures against large-scale earthquakes (seismic reinforcement of embankment)

○ **Measures against large-scale earthquakes**
- Increased seismic reinforcement for embankments, cuttings, elevated bridges, electric poles, and facilities such as the ceiling and walls of station buildings and platforms
- Improvement of systems to more promptly decelerate and stop Shinkansen trains immediately after an earthquake.

○ **Disaster prevention measures against rainfall**
- Improving durability of civil engineering facilities such as embankments and cuttings

○ **Measures against rock falls and mud slides**
- Improvement of rock fall protection work, slope protection work, and guard fences against landslides
- Development of systems to predict risk of large-scale landslides based on topographic and geographic conditions

○ **Measures against localized gusts of wind**
- Development of technologies to improve accuracy of predicting localized gusts by utilizing meteorological information such as the Japan Meteorological Agency's Nowcasts for tornados

○ **Measures against strong wind**
- Increased installation of windbreak fences
- Introduction of criteria for making judgments in operation control due to strong wind taking into consideration carbody shapes and topological conditions

○ **Disaster prevention measures for Yamagata and Akita Shinkansen lines in mountainous areas**

Reducing risk of accidents closely related to the public

○ **Safety measures for station platforms**
- Increased introduction of automatic platform doors
- Increased introduction of dot-Braille blocks that indicate which direction is away from the edge of the platform.


Automatic platform doors

○ **Safety measures for level crossings**
- Increased installation of level crossing warning systems to inform train drivers of incidents at level crossings.
- Upgrade of Class 4 level crossings (without alarms and crossing gates) to Class 1 level crossings (with alarms and crossing gates)


(Emergency button)
(Obstruction warning signal)
Level crossing warning system