

## Safety Research and Development

### Disaster risk evaluation system (EADaS) to prepare for natural disasters

We are currently developing a disaster risk evaluation system (EADaS: Environment, Agent, Disaster, and Structure), which will quantitatively evaluate the vulnerability to natural disasters of random locations across Japan by assessing relationships between natural environment features such as topography, geology, and climate and natural disasters due to topography, based on our experiences and experiments. We are now working on the systemization of the EADaS method, aiming for a system which will enable our staff on the front line of our field organizations to easily evaluate the vulnerability of locations to natural disasters.

### An automatic train protection signal transmission system for enhanced safety levels

At JR East, we continue to improve our levels of safety through our research and development. In the case of an accident such as a derailment, we have introduced a train protection radio for the transmission of emergency signals to stop other trains. We have also developed a system to automatically transmit emergency stop signals with our train protection radio to further ensure prevention of the occurrence of a secondary accident. Even when train crews are unable to transmit signals manually or promptly, as can happen if there is a major accident such as a train collision, derailment, or overturned train, the system is able to transmit the emergency signals automatically. Since December 2008, the system has been in use on E233 Series Keihin Tohoku Line trains and we plan to introduce it sequentially to conventional lines in the Tokyo metropolitan area.



Operation image of the automatic train protection signal transmission system

### Safety web portal site

To allow our employees to deepen their understanding of the human factors involved in accidents and share information and know-how on human error prevention, JR East developed and runs a web portal site on safety. On this site, useful safety information is regularly provided and available to our employees. The information is stored on the site in a database so that employees can search for necessary information whenever needed. Major content areas of the site include: human factor news, the 4M4E analysis room, a calendar of past accidents with lessons to be learned, and the Challenge Safety blue signal.



Safety web portal site

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**Training tools for train drivers and conductors**

JR East has developed training tools for personal computers, which can be used both for the education and training of our drivers and conductors. The accident prevention training tool presents situations that drivers and conductors may face and that have major effects on train operations, using these as training materials. This training tool acts to heighten the visual imagery of drivers and conductors with regard to dangers, helping them to envision how errors happen and what they need to do to prevent them from occurring in their daily work. The emergency broadcast training tool for conductors aims to improve emergency broadcasting skills from 5 perspectives: understanding service basics, customer psychology, local areas, traffic operation arrangements, and recovery procedures from troubles.



An example of a training tool for drivers and conductors