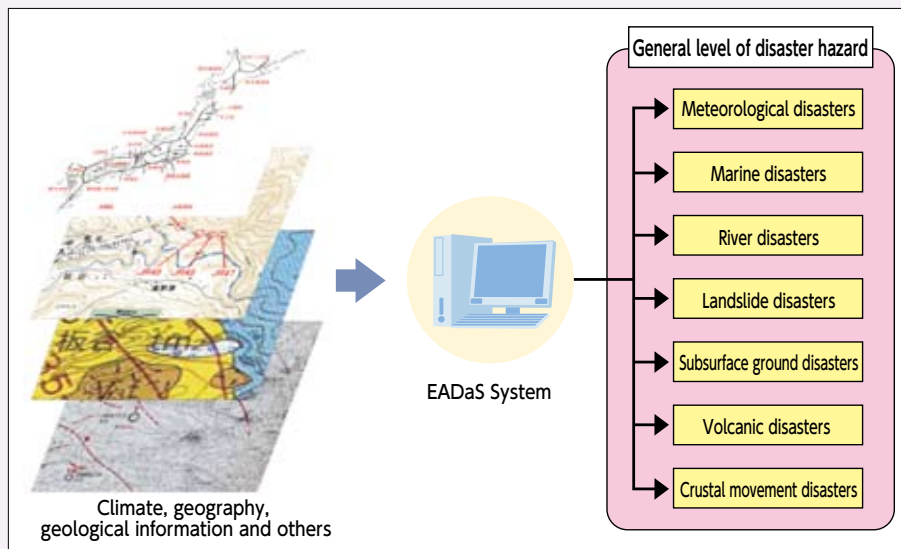# Technological developments supporting railway safety

■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.

General level of disaster hazard

- Meteorological disasters
- Marine disasters
- River disasters
- Landslide disasters
- Subsurface ground disasters
- Volcanic disasters
- Crustal movement disasters

EADaS System

Climate, geography, geological information and others

EADaS system (image)

■Earthquake safety measures

In order to prevent secondary accidents in the case of Shinkansen derailment due to an earthquake, JR East has developed and introduced railcar guide systems (L-shaped car guide and rail rollover prevention devices) and glued insulated joints.

Currently, we are proceeding with research and development on measures on rail expansion joint sections.


Rail rollover prevention devices

■Training materials for workers handling maintenance vehicles

JR East has developed training materials for drivers and persons in charge of maintenance vehicles, and is utilizing the tools for training these people. Trainees can learn about frequently occurring human errors while conducting maintenance on trains through personal computers. The objective of the training is to assist trainees in learning the necessary skills for the prevention of human error. The tools encourage "thinking and speaking by themselves" trainee initiative and promote active learning through encouraging trainees to discover new things through mutual learning with other trainees and shared experience. By doing so, the tools aim for the training contents to be rooted and prevent operational accidents with maintenance vehicles.

A sample case study
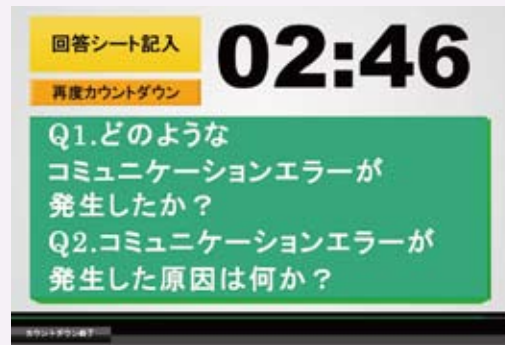
The presentation of issues and promotion of active learning