We promote technological development for Gauge Change Trains and other transportation systems.

**Development of Railway Technology**

**Technological Development for Gauge Change Trains**

A Gauge Change Train can automatically adjust the wheel gauge to the track gauge so that a Shinkansen train (standard gauge) can be directly operated on conventional lines (narrow gauge).

Since a Gauge Change Train can be directly operated on different gauge lines, this eliminates the inconvenience of changing trains thus shortening the required travel time.

**Yamanashi Maglev Test Line**

A superconducting magnetically levitated transport system (Maglev linear-motor train) is a new transit system which is attracting global attention as a 21st century railway system.

In their evaluation compiled in July 2009, the Maglev Technological Practicality Evaluation Committee of the Ministry of Land, Infrastructure, Transport and Tourism states “Maglev technological development already has potential for establishing practical technology, including the aspect of operation as an ultra-high-speed mass transportation system, so that the skills to operate commercial lines can be comprehensively and systematically developed and detailed specifications and technical standards, etc., for such lines can be formulated in detail.”

Central Japan Railway Company, Railway Technical Research Institute and JRJT constructed the remaining sections to conduct service tests and verify the long-term durability.

In addition, running tests have been implemented across the whole stretch of 42.8 km since August 2013.

**Development of Snow Melting System**

For trains running through heavy snowfall areas, we have contributed significantly to improving transportation safety during winter season by developing and installing various snow melting systems.

**Development of new train control systems**

An on-board principal ATC (Automatic Train Control) system, which fully adopts a non-insulated track circuit, was introduced to the Tohoku Shinkansen (between Hachinohe and Shin-Aomori) for the first time as Shinkansen, allowing reduced travel time and train operation intervals, as well as improving riding comfort.

In addition, a system was developed allowing its use also for the section at a commercial frequency of 60 Hz for the Hokkaido Shinkansen (Nagano—Kanazawa). Furthermore, for the section of Hokkaido Shinkansen (Shin-Aomori—Shin Hakodate-Hokuto), which will be a common running path for Shinkansen and conventional railways, an ATC for a three-rail system applicable to both Shinkansen and conventional railways is planned to be introduced.

**Development of a GRAPE System to Assist Transportation Planning**

By optimally exploiting the geographic information system (GIS), the Geographic Information System for Railway Project Evaluation (GRAPE) is a support tool for public transportation planning, primarily for railways. It not only shows an evaluation of how new railway lines develop but also various measures to boost convenience, e.g. those facilitating train connections and revisions to train diagrams.

At the request of the central government, local governments and railway companies, JRJT implements various surveys by effectively utilizing support systems such as GRAPE.

*GRAPE: GIS for Railways Project Evaluation*