

Automated Railway Booking System MARS-1 recognized as an IEEE Milestone

August 29, 2025

Railway Technical Research Institute

Railway Information Systems Co., Ltd.

Hitachi, Ltd.

The automated railway booking system MARS-1^{*1} developed by the Railway Technical Research Institute, originally part of the former Japanese National Railways ("JNR") and Hitachi, Ltd. ("Hitachi"), was recognized as an IEEE Milestone on May 20, 2025. This honor is awarded by IEEE), the world's largest technical professional organization advancing technology for humanity, to recognize historic achievements that have made a significant contribution to society and industry. (Details of this recognition are outlined in Table 1.)

The automated railway booking system MARS was conceived by Dr. Mamoru Hosaka of the Railway Technical Research Institute of JNR (now the Railway Technical Research Institute, a public interest incorporated foundation, "RTRI"). The prototype MARS-1 was designed based on RTRI's logical design and developed by Hitachi, with the circuit design and manufacturing completed in July 1959. Following the breakup and privatization of JNR, the operation and management of MARS was transferred to Railway Information Systems Co., Ltd. MARS has been in continuous operation for over 60 years, undergoing continuous improvement, and is currently used as an online system for managing and issuing tickets for the JR Group.

Additionally, a plaque dedication ceremony by IEEE is scheduled for a later date.

*Refer to Figure 1

Table 1: Details of the Recognition

Title:

MARS-1 First Automated Railway Booking System, 1960

Plaque citation summarizing the achievement and its significance:

In 1960, Japanese National Railways introduced Magnetic-electronic Automatic Reservation System-1 (MARS-1), the first automated railway booking system. Initially supporting real-time reservations of 3,600 seats per day and up to fifteen days in advance, it later adopted a task-sharing multicomputer architecture that could support additional routes, including the Bullet Train in 1965. Continually upgraded, it supported daily sales of more than one million tickets by 1991, and reshaped worldwide rail ticketing.

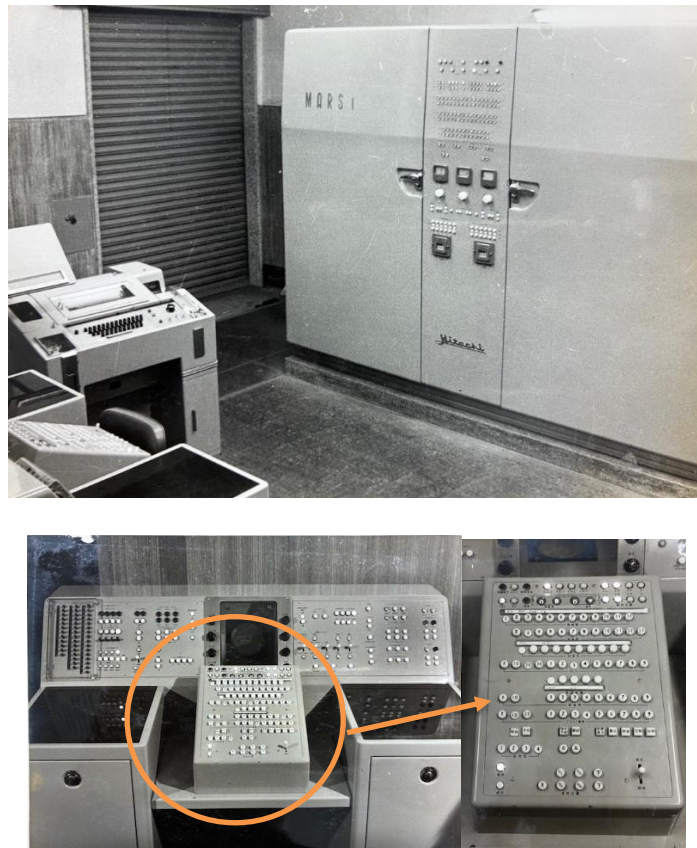


Figure 1. MARS-1 central processing unit (top photo) and control panel (bottom photo)



Figure 2. Seat reservation counter at the time of opening
(Left: MARS-1 (Tokyo Station, 1960), Right: MARS-101 (Tokyo Station, 1965))

[Overview of IEEE and IEEE Milestones]

About IEEE:

IEEE is the world's largest technical professional organization and a public charity dedicated to advancing technology for the benefit of humanity. Through its highly cited publications, conferences, technology standards, and professional and educational activities, IEEE is the trusted voice in a wide variety of areas ranging from aerospace systems, computers, and telecommunications to biomedical engineering, electric power, and consumer electronics. Learn more at <https://www.ieee.org>.

As of 2025, IEEE has more than 480,000 members across 190 countries. More than half of its members are based outside the United States, including over 14,000 members in Japan.

Established in 1983, the year before IEEE's 100th anniversary, the IEEE Milestone program recognizes historic achievements in all technical areas associated with IEEE that are at least 25 years old and have made significant contributions to society and industry. The program aims to highlight outstanding technical achievements which are found in unique products, services, seminal papers, and patents and enhance public understanding and appreciation of the engineers who created them.

In Japan, 58 IEEE Milestones have been recognized between 1995 and June 2025, including the Yagi-Uda Antenna (1924), the Tokaido Shinkansen (1964), and the Nobeyama 45m Radio Telescope (1982).

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
