

VDE Urges Modernization of Railway Radio Systems

From the perspective of the Information Technology Society within VDE (VDE ITG), last week's failure of the railway radio system shows that the already planned infrastructure upgrade cannot come soon enough.

(Frankfurt am Main, June 29, 2026) The failure of the railway radio system on Tuesday, June 23, caused chaos on the rails. According to experts at the Information Technology Society within VDE (VDE ITG), while the affected GSM-R network meets high safety standards, it is vulnerable because it is a hierarchical, centralized specialized network whose failure can paralyze all rail traffic. "GSM-R is structurally vulnerable due to its outdated technical specifications," says Dr.-Ing. Damian Dudek, Managing Director of VDE ITG. Together with his colleagues Dr. Matthias Wirth, Prof. Dr. Klaus Mößner (Chemnitz University of Technology), and Prof. Dr. Ralf Tönies (Osnabrück University of Applied Sciences), he has authored a recent VDE brief on the failure of the railway radio infrastructure and its future.

According to information from the railway operator, the cause of Tuesday's outage was the replacement of a switch—a network distribution component—which resulted in a software error. "This would not have been a problem, as the systems are designed with redundancy and would have switched over to the parallel system in this case," the VDE brief states. "However, the switchover signal failed to materialize, and the system had to be checked and switched over manually."

The Future of Railway Radio: FRMCS as the Next Generation

The authors see hope for improvement in the planned implementation of the Future Railway Mobile Communication System (FRMCS). FRMCS is technologically based on the 3GPP standard for 5G mobile networks, with the functional specifications being driven by the UIC (International Union of Railways) and gradually implemented into European railway legislation.

The schedule calls for FRMCS to be operated in test areas alongside GSM-R starting in 2026, before being rolled out on the main corridors between 2028 and 2032 and fully implemented across the board by 2035.

Experts at VDE ITG are now calling for the modernization of the railway radio system to be accelerated. “To avoid jeopardizing rail safety and the digitization of the rail sector, the technical infrastructure must be prioritized, contingency plans for GSM-R outages must be developed, and cooperation between the ministries of transportation, digital affairs, and the economy must be strengthened,” Dudek summarizes. “The importance of communication technology in our critical infrastructures cannot be overstated.”

About the Information Technology Society within VDE (VDE ITG):

The Information Technology Society within VDE (VDE ITG) is a community of experts working in the field of information and communication technology (ICT). Founded in 1954, this technical society aims to pave the way for innovative technology topics, bringing them from the scientific world into our economy and society. It combines theory and practice to promote the technology topics of tomorrow, which are crucial for the digital transformation of the economy and society. The ITG sees itself as a driving force in the ICT field and supports the VDE vision of a livable and e-dialistic future.

For more information, visit www.vde.com/itg

About VDE:

VDE, one of the largest technology organizations in Europe, has been regarded as a synonym for innovation and technological progress for more than 130 years. VDE is the only organization in the world that combines science, standardization, testing, certification, and application consulting under one umbrella. The VDE mark has been synonymous with the highest safety standards and consumer protection for more than 100 years.

Our passion is the advancement of technology, the next generation of engineers and technologists, and lifelong learning and career development “on the job”. Within the VDE network more than 2,000 employees at over 60 locations worldwide, more than 100,000 honorary experts, and around 1,500 companies are dedicated to ensuring a future worth living: networked, digital, electrical.

Shaping the e-dialistic future.

The VDE (VDE Association for Electrical, Electronic & Information Technologies) is headquartered in Frankfurt am Main. For more information, visit www.vde.com

Press contact: Matthias Schmidt-Stein, Phone +49 69 6308-398, presse@vde.com