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FRMCS enters critical testing phase ahead of European field trials

First set of system test cases published as participants develop groundwork for further testing of the new railway communications platform.



Photo Credit: DB AG/Oliver Lang

THE FP2-MORANE-2 consortium has published the first unified set of system test cases for the Future Railway Mobile Communication System (FRMCS) and confirmed that large-scale laboratory testing will begin across three European integration facilities, marking a significant step toward replacing the ageing GSM-R railway communications standard.

Announced at the project’s mid-term conference, the test cases are based on the FRMCS V2.2 specifications and cover onboard systems, trackside systems and FRMCS interfaces. The consortium says the protocols provide a standardised blueprint for assessing how FRMCS equipment should perform under realistic railway operating conditions, helping to ensure interoperability between suppliers and across national networks.

The event heard how testing activities are progressing in integration laboratories hosted by Ericsson, Nokia and Kontron. Engineers are integrating cab radios, dispatcher systems, 5G networks, mission-critical applications and GSM-R interworking functions. The laboratories will also test voice communications, Railway Emergency Call functionality, ETCS, automated train operation (ATO) and train control and management systems (TCMS) to verify that equipment from different vendors can operate together in a fully compliant manner.

The consortium described the laboratory phase as the first comprehensive stress test of the new telecommunications system, designed to validate FRMCS connectivity, GSM-R interworking and inter-vendor interoperability before operational trials begin.

Field trials

Preparations for field trials are also advancing across Europe.

Infrastructure managers Adif of Spain, DB InfraGO of Germany, ProRail of the Netherlands and Trafikverket of Sweden are preparing for the tests by constructing masts, installing onboard equipment and deploying FRMCS 5G mission-critical systems. Testing will include integration of onboard systems and testing of 5G networks, including cross-border scenarios, with operational testing scheduled to start from 2027 onwards.

FP2-MORANE-2 is a 34-month programme led by the International Union of Railways (UIC) and involving railways, suppliers and mobile network operators from across Europe. The project aims to validate FRMCS specifications so they can be incorporated into future Technical Specifications for Interoperability (TSI), supporting the migration to a harmonised European 5G railway communications framework.

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