



Communications Technology

Frequentis

Three Capabilities Railways Need for FRMCS Transition

FRMCS will unlock new levels of flexibility, data exchange and connectivity



The future of railway communications is taking shape. Yet the most difficult phase may still lie ahead. Markus Myslivec, Head of Public Transport Solutions, Frequentis, explores the capabilities needed to make FRMCS a success.

From Concept to Implementation

For years, Future Railway Mobile Communication System (FRMCS) has been shaped through research, standardisation and industry collaboration. Now, the focus is shifting from definition to real world operations.

Built on 5G and IP-based, broadband mission-critical communication services, named MCX, FRMCS will unlock new levels of flexibility, data exchange and connectivity. But success will depend

on more than deploying new technology.

Railways cannot stop operations while communication systems evolve. GSM-R must continue supporting safety-critical services as FRMCS capabilities are introduced, tested and scaled. The operators best prepared for this future are the ones that build three essential capabilities.

Capability One: Operating Between Worlds

FRMCS will not replace GSM-R overnight. Railway operators are already preparing for a period of coexistence, where current and future communication environments must work together for many years.

Successful operators will need:

- seamless interoperability between GSM-R and FRMCS
- migration paths that avoid operational disruption
- the ability to introduce new capabilities gradually

What Does It Require?

A transition strategy built around coexistence and parallel operation rather than replacement and silo networks. Railway operators need communication architectures that allow current and future systems to interwork, enabling a controlled migration at a pace that reflects operational priorities, infrastructure readiness and national rollout plans.

Frequentis Perspective

This approach is reflected in Frequentis' FRMCS service layer architecture, which enables interworking between GSM-R and FRMCS environments through components such as the Interworking Function (IWF), allowing operators to evolve their communication systems without disrupting today's operations and guaranteeing interoperability.

Capability Two: Keeping People at the Centre of Change

FRMCS will change the tools available to railway operations teams, but successful migration depends on maintaining confidence and usability in the control room.

Successful migration will require:

- continuity of dispatcher workflows
- intuitive, adaptable and unified user interfaces
- solutions that evolve alongside operational needs

Why Technology Should Work for People

A human-centred approach to technology adoption, ensuring that new capabilities enhance operations rather than complicate them.

Frequentis Perspective

With decades of experience supporting safety-critical control rooms, Frequentis understands that communication technology must be designed around operational needs. The evolution towards the next generation dispatcher reflects this approach, providing a flexible environment that supports today's GSM-R operations while preparing teams for future FRMCS capabilities.

Capability Three: Building Flexibility for the Future

FRMCS will not be a one-time technology change. As standards mature, operational requirements evolve and new capabilities emerge, railway operators will need communication systems that can adapt.

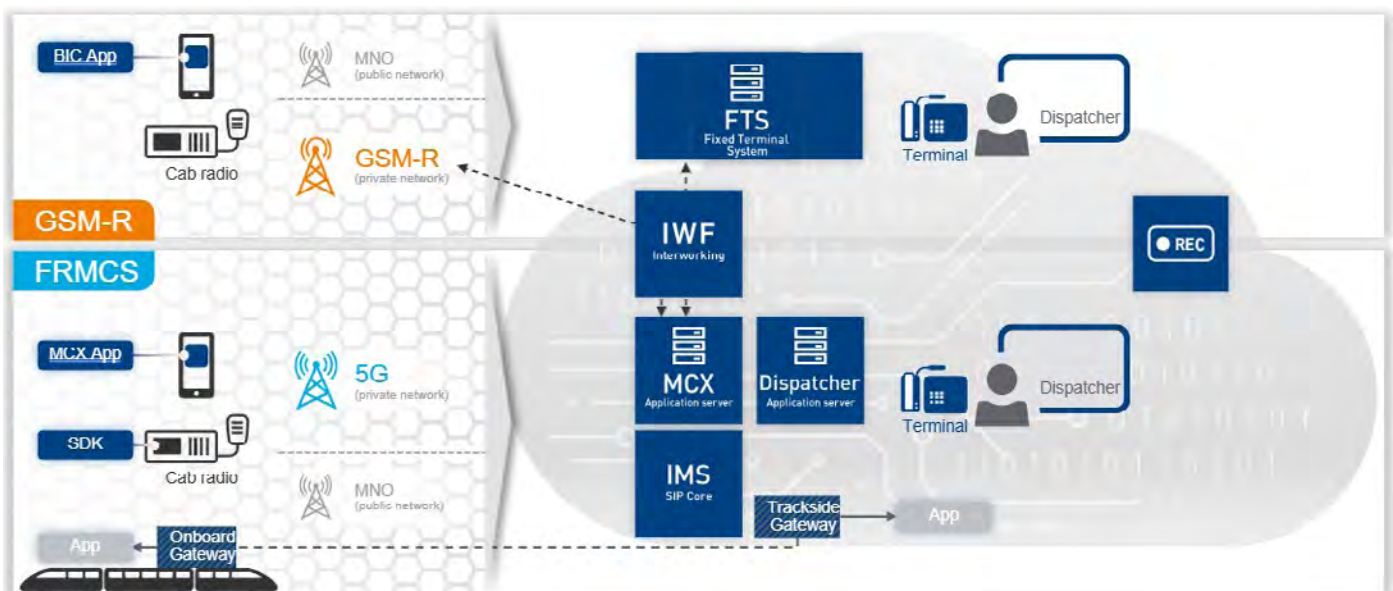
Successful migration will require:

- open, standards-based architectures
- freedom to evolve within a multi-vendor ecosystem
- software-driven systems that can adapt over time

Why Flexibility Matters

The technology foundation must be built around interoperability and flexibility: Railway operators need solutions aligned with open standards such as the European Standards Organisation ETSI, the global

Bridging legacy and next-generation rail communications



3rd Generation Partnership Project (3GPP) and the International Union of Railways (UIC), enabling them to integrate different technologies and avoid dependency on a single supplier, while still being able to integrate specific communication and information systems.

Frequentis Perspective

Frequentis designs its FRMCS solutions for multi-vendor ecosystems, based on open standards and modular architectures, as well as integration of legacy systems. This gives operators the flexibility to evolve their communication environments while maintaining control over long-term investment decisions.

Different Starting Points, One Destination

FRMCS migration will not look the same for every railway. Network infrastructure, operational priorities, spectrum availability and investment cycles will all shape the path forward.

What early adopters demonstrate is that progress does

not require waiting for a single moment of change. It requires a strategy that allows organisations to introduce future capabilities while protecting current operations.

Planning Your FRMCS Journey

As FRMCS testing accelerates across Europe, with national programmes as well as MORANE2 among other European Rail Joint Undertaking (ERJU) projects, the industry is proving that the technology works. The next challenge is ensuring it works at scale, in live operations, and throughout a migration period that will span many years. Success will be defined not only by technical validation, but by the ability to maintain continuity while introducing change.

Every railway will follow its own path to FRMCS. The organisations best positioned for success will be those that start planning early, build flexibility into their migration strategy and prepare for coexistence from day one. Frequentis supports operators in turning that strategy into operational reality.

About Frequentis Public Transport

Frequentis is an international supplier of communication and information systems for control centres with safety-critical tasks, leveraging 75 years of cross-domain experience in aviation, defence and transport. The company also holds the number one market share in GSM-R dispatcher terminal positions; more than 10,000 units have been delivered to customer control centres in over 25 countries. Railway customers include UK Network Rail, German Rail (DB Deutsche Bahn), Swiss Federal Railways (SBB), Austrian ÖBB and Wiener Linien, and Australian Sydney Trains.

[For more information visit our website.](#)



Markus Myslivec is the Head of Public Transport Solutions at Frequentis. Markus has a long history in railway communications, ranging from software development for GSM-R mobile terminals to technical leadership in fixed line operational communication projects. He also represents Frequentis within UIC FRMCS working-groups, ETSI TC RT and the UNITEL committee of UNIFE.

Migration stories:

Austrian Federal Railways (ÖBB): Preparing through validation and gradual migration

Through trials and validation activities, ÖBB is exploring the technologies and operational concepts needed for future FRMCS deployment.

Swiss Federal Railways (SBB): Evolving the operational workplace

SBB's focus on dispatcher evolution and interoperability using FRMCS ready architecture demonstrates the importance of preparing the control room alongside the communication network.

Lower Austrian Transport Company (NÖVOG): Exploring new models for regional rail

NÖVOG demonstrates how mission-critical communication services can already be delivered over public mobile networks, opening new possibilities for regional operators.

Queensland Rail: A data-first approach

Queensland Rail highlights how FRMCS principles can support incremental adoption, with data capabilities introduced as an early step.