FREQUENTIS RAIL PULSE

FREQUENTIS PUBLIC TRANSPORT NEWS

Thomas Karl, Vice President
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Dear Reader!

The rail industry is on the move – and so are we. Every step we take together helps shape the future of safe, reliable, and efficient railway communications.

In this edition, we start with an overview of our latest solutions, supporting operators on the complex transition towards the Future Railway Mobile Communication System (FRMCS).

We then turn to research, with insights into our work in Europe's Rail Joint Undertaking, UNITEL (UNIFE), and Horizon Europe's FP2 MORANE initiative, showing how we drive innovation at a European level.

A highlight closer to home is our collaboration with the Lower Austrian Public Transport Network (NÖVOG): MissionX at the Schneeberg Railway. This lighthouse project demonstrates the operational readiness of MCX, a cornerstone of FRMCS, for safety-critical rail operations.

You can then read about innovations from our partners CCA Control Center Apps, CNS-Solutions and Support, and Mission Embedded, before we round off with success stories from around the globe.

I hope you enjoy this edition and find inspiration in how our experts can support you on your route to FRMCS.

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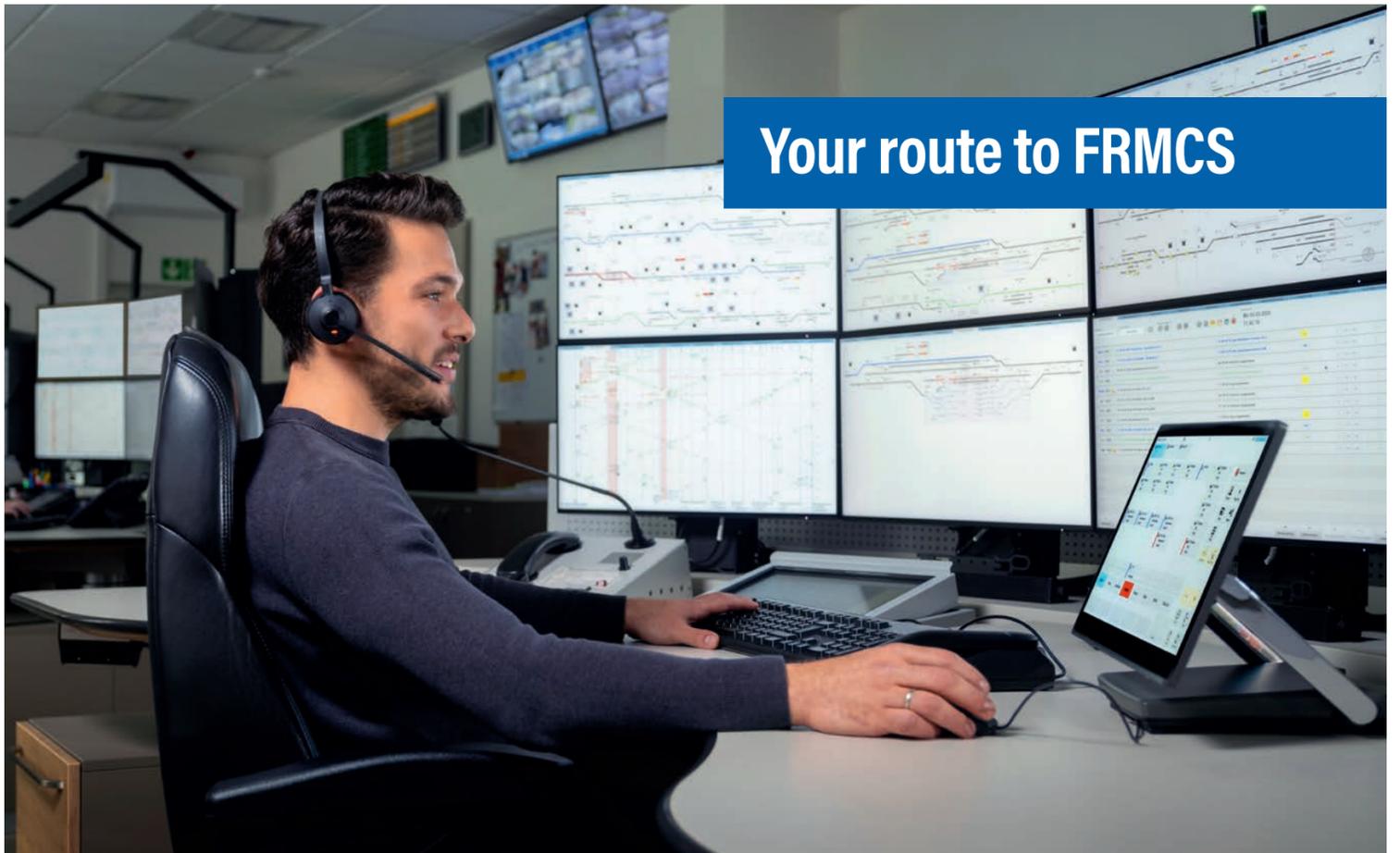
Your route to FRMCS

Future made in Austria
A new era in railway communications

At a time when technological evolution is constant and the need for adaptability is more critical than ever...

Frequentis is continuously evolving its Operations Communications Manager (OCM). Markus Myslivec gives insights into the solution and how it contributes to the digital transformation of railway communications towards FRMCS.

Why is the OCM an innovation, and how does it support major railways globally?

The OCM is a fully hardware-independent, web-based application, ensuring compatibility with various devices, including desktops, tablets, and smartphones. It supports both the existing Global System for Mobile Communications – Railway (GSM-R), and the Future Railway Mobile Communication System (FRMCS), making it a truly future-proof solution with full backward compatibility. The OCM enables railway operators to deploy technology today that will also meet tomorrow's needs. Equally, Frequentis is continuously evolving the OCM in line with changing customer needs and FRMCS specifications.

What makes the OCM special compared to traditional systems?

The OCM offers a customisable user interface through its layout editor. New functionality is introduced by simply configuring additional user-interface elements called "widgets". This is done by operator superusers, who can configure layouts, themes and functionalities to match their team workflows, resulting in a more intuitive and customer-specific HMI. This is fundamentally different to legacy railway communication systems, whose monolithic structure prevents this kind of adaptability.

And how does this enhance operational efficiency for railway operators?

The OCM streamlines operations by offering a high degree of user accessibility and security. It integrates with Identity and Acc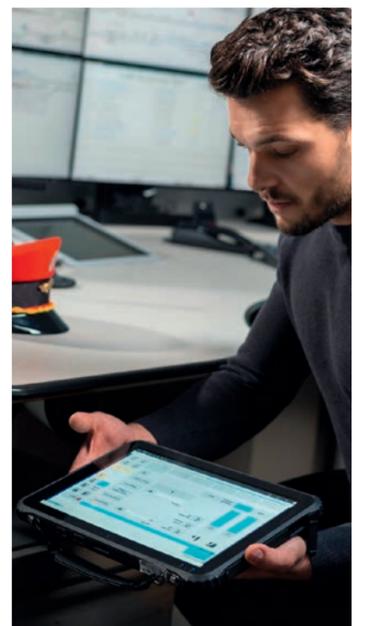ess Management (IAM) systems, ensuring only authorised personnel can access critical communication channels. Additionally, its widget-based system allows operators to integrate GIS mapping, CCTV feeds and real-time notifications, improving situational awareness and decision-making.

What role does Frequentis play in the transition to FRMCS?

First, Frequentis participates and contributes to the ongoing specification work for FRMCS. For example, we are part of the International Union of Railways (UIC) super group and we work on the UIC FIS (Functional Interface Specification). Furthermore, Frequentis became an associated member of Europe's Rail Joint Undertaking (ERJU) in 2025. Needless to say, we are also a member of the MORANE2 consortium.

We apply the results of all this specification work, in addition to the feedback and requirements from dialogues with customers, to our solutions and products. These technologies enable the smooth transition from legacy technology to FRMCS, where each railway operator´s technology journey is built on specific steps:

The Fixed Terminal System 3020 (FTS 3020) draws upon our expertise as the number one provider of voice and data operations communications for control rooms using the existing GSM-R technology. We are currently enhancing the FTS 3020 with the elements required for connectivity and functionality within FRMCS.

As an intermediate step, our Frequentis bearer-independent communication solution (BIC) mimics GSM-R functionalities like REC (Railway Emergency Call) over non-GSM-R networks. To do so, BIC abstracts applications and services from

communication bearers, enabling railways to run newer communication technologies alongside GSM-R during a controlled transition period. BIC services use public mobile broadband networks such as public 4G/5G mobile networks to provide access to railway-specific communication services without the need for a dedicated GSM-R infrastructure.

In what ways does MissionX enable next-generation communications?

Our MissionX offering spans MCX services which comprise voice (MCPTT), data (MCData), and video (MCVideo) communications. Furthermore, it includes enhanced and rail-specific communication features such as Ad Hoc Group Calls and simultaneous operation of various networks via IWF (Inter Working Function).

Users of mission-critical communications and information in the field can draw on our mobile applications built on optimised user-experience, while owners and providers of critical infrastructure can make use of our network monitoring and management services. Finally, control room operators can take advantage of new features and integration with multimedia such as video streams. Our solutions strictly adhere to open standards, hence they integrate with all standards-compliant networks and any devices that can host our services.   «

What's next in Rail Research?

Günter Graf

Frequentis is deeply involved in helping to develop the FRMCS based on 3GPP mission-critical services.

FRMCS will replace GSM-R as the standard for railway communication services, offering higher throughput and capacity, enhanced security and reliability, and greater flexibility.

Frequentis is working with standardisation bodies such as Europe's Rail Joint Undertaking and UNITEL (UNIFE) to help define FRMCS, consider its likely operational impacts, and develop robust strategies for enabling safe, cost-effective migration. The company plays a crucial role in major research projects such as Horizon Europe FP2-MORANE2.

Jointly, the partners will continue to increase capacity, enhance digitalisation, and boost the competitiveness of passenger and freight rail transport in the European Union and beyond – since innovation is part of Frequentis' DNA!

Europe's Rail Joint Undertaking

Mid-2025, Frequentis joined Europe's Rail Joint Undertaking (ERJU) as an associated member, strengthening Europe's rail sector and its commitment to delivering a more competitive, digital, resilient, and sustainable railway system. Working alongside industry leaders Frequentis will bring in our expertise in key technological and operational areas, such as the development of the next EU rail communication system, cybersecurity, safety-critical systems, and AI-driven predictive maintenance. Jointly, we will drive innovation in Europe's rail sector, paving the way for the future of European mobility.

UNITEL (UNIFE)

The UNITEL Committee and Technical Group focus on the development and implementation of the future interoperable railway communication system (FRMCS/Next Generation), the inherent successor of GSM-R, as part of the future ERTMS. UNITEL brings together the major railway tele-

Jointly making FRMCS a reality!

communication products suppliers and companies that have significant experience in current GSM-R and future railway systems.

As part of the committee, members ensure that the railway communication system fulfils existing and future signalling, train control and traffic management requirements, as well as supporting European railway research initiatives.

Horizon Europe FP2-MORANE2

This landmark project, co-funded by Europe's Rail and the European Smart Networks and Services Joint Undertakings, started at the end of 2024. As part of the project, prototypes will be tested in three European laboratories and under real track conditions, including on both conventional and high-speed lines. FRMCS is an essential component of the European Rail Traffic Management System (ERTMS).

Frequentis is proud to play an active role in preparing European Rail for the successful introduction of the FRMCS!   «

Mission Critical Services debut on Austrian Railways

Gerald Sauprigl

NÖVOG is one of the early adopters of MCX, the technological foundation of FRMCS. This lighthouse project demonstrates its operational readiness for safety-critical rail operations.

In Austria, the distinctive green and orange 'Salamander' train on the Schneeberg in Lower Austria is very well known. This cog railway has been a memorable feature of Austrian history since 1897, transporting passengers and goods up to seven times a day to Hochschneeberg station – the highest train station in Austria. Operations are conducted using four trains designed in the image of the native fire salamander.

Although impeccably maintained, these unique units and their technology, manufactured in Scotland, are over 25 years old. The existing radio communication system had therefore become outdated and increasingly difficult to support due to a lack of spare parts.

Train services in control mode require clearance from a central dispatch, and in the past, communication was challenging, with poor voice clarity. Alongside outdated equipment, sub-standard audio quality was a major motivator for replacing the system.

The Salamander train on its way down the mountain

How Schneeberg Railway sets course for FRMCS

Frequentis delivered a comprehensive MissionX system, including application and management servers, control centre software, mobile devices, and recording capabilities. The system was integrated with public mobile networks based on the safety-critical 3GPP-standard, ensuring seamless, optimised communication for all safety-critical users – from dispatchers to train, service, and maintenance staff.

The significantly enhanced audio quality, proven in rigorous testing, is complemented by additional features such as clear display of train numbers to help dispatchers quickly identify trains. The control centre can now distinguish call types – such as whether it's an emergency call from a passenger compartment or a routine call from the train driver. The solution also enables reverse communication, enabling announcements from the control centre to passenger carriages. The user interface is designed with dispatchers' workflows in mind, ensuring intuitive operation.

The system also offers future scalability. Furthermore, passengers benefit from extended network coverage, enabling them to share their impressions in real time or request help immediately in an emergency using their own mobile phone.

"This is the first time MCX has been implemented solely for railway operations in Austria. By using the same cutting-edge technology that forms the basis of the Future Railway Mobile Communication System (FRMCS), we aim to position ourselves as pioneers."
Philipp Hammerl, Head of Technical Operations, Lower Austrian Public Transport Network (NÖVOG)

Rail digitalisation at 1,800 metres

The MissionX solution from Frequentis integrates voice, video and data into a single, intuitive application. It is tailored to the specific needs of safety-critical rail operations. With MissionX on the Schneeberg Railway, the project partners have successfully proven that MCX – as a mission-critical cornerstone of FRMCS – is ready for deployment today.

Customer profile

Lower Austrian Public Transport Network (NÖVOG) is a company owned by the Provincial Government of Lower Austria. With six railway lines, two cable cars, 578 regional bus routes, and 14 on-demand transport services, the company provides a comprehensive public and tourist mobility network throughout Lower Austria. The railway lines include the metre-gauge Schneeberg Railway, the narrow-gauge Mariazell Railway, Citybahn Waidhofen, and Waldviertel Railway, as well as the standard-gauge Wachau Railway and Reblaus Express.   «

Digital Incident Management
for modern transport hubs

Eva Kanz

Railway stations are high-pressure environments where teams must respond to challenges. Digital platforms like CCA OnSite provide real-time information to manage stations.

Railway stations are the face of the railway system. Our perception of train travel is strongly shaped by the quality of experience at these locations: safety, cleanliness, service, and a sense of organisation all play a crucial role.

From report to resolution – CCA OnSite in a rail station environment

CCA OnSite has been specifically developed to support incident and operations management in transport hubs. Through integrations with reporting systems, mobile input by station staff, or dispatch centre entries, the platform enables structured coordination of disruptions, incidents, and service requests.

The system covers all aspects of operational management – from legally compliant documentation and alerting of relevant parties, to the dispatching of service teams, information sharing, and access to CCTV systems. In collaboration with Frequentis, CCA OnSite also integrates mission-critical voice communications via MCX, enabling seamless interaction between voice and data within one unified platform.

All core functionalities are available both centrally via a web application and on the go through smartphones or tablets – optimised for mobile use. This ensures that all team members – according to their role – are kept up to date and can actively contribute to incident resolution.

CCA OnSite supports a wide range of deployment scenarios: from large stations with dedicated control rooms to smaller sites where a single staff member manages operations via a tablet. Scaling up staff during critical situations is quick and straightforward.

In addition, CCA OnSite includes a site concept that enables cross-station collaboration: staff can act across different locations according to their roles, while control centres and management maintain a comprehensive overview of the overall situation. «

AI-powered video monitoring

Sylvia Oberauer

Elevating safety and efficiency for rail operators

Safety is the backbone of rail transport – rising numbers of incidents demand smarter solutions.

Today, rail operators face growing pressure to protect passengers, staff, vehicles, and infrastructure while ensuring operational resilience. This requires more than conventional surveillance – it calls for automation, intelligence, and real-time responsiveness. To meet these demands, Mission Embedded has evolved its video monitoring platform overVIEW.

The 2025 overVIEW evolution, called overVIEW ONBOARD, delivers smarter incident detection and broader integration options. Rail operators benefit from these innovations directly in their vehicles, complemented by features like secure remote video access, fleet management and audit-compliant incident documentation (including vehicle metadata, timestamps, and event triggers).

The system uses AI-based video analytics including functions like automated passenger counting, available seat detection, unattended object detection, and empty train detection. It also enables AI-powered inspection of passenger cabins to identify dirt or litter, supporting targeted cleaning and maintenance planning.

overVIEW can be seamlessly integrated into existing infrastructures. It supports public or private cloud and on-premises deployments. Fully compliant with the EU AI Act, NIS2, and GDPR, it provides operators with a solid foundation to meet rising safety demands, ensuring secure operations and strengthening passenger trust. «

overVIEW – Mission Embedded's AI-powered video monitoring solution for greater railway safety

Autonomous drones to speed up bridge-strike recovery

Christian Stimakovits
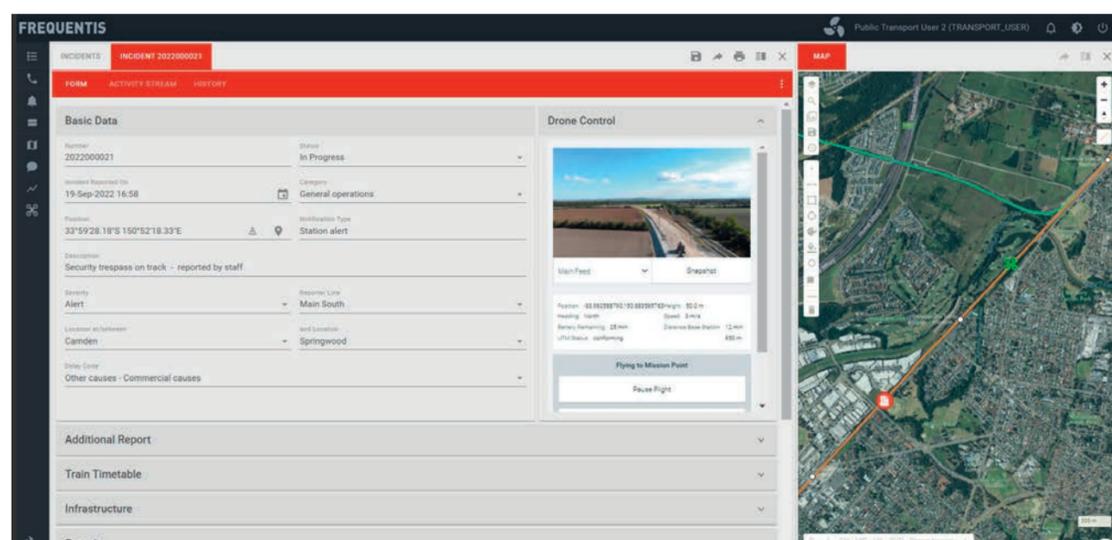
CNS incident and crisis management software enabling the use of autonomous drones

Faster inspections help rail operators cut delays and boost service resilience

A 'bridge strike' is when a vehicle collides with a railway bridge, potentially damaging the structure and forcing trains to stop until safety is confirmed. These incidents are among the most disruptive in rail operations.

Today, post-bridge-strike inspections are carried out manually, with response times typically ranging from 20 to 60 minutes. This time-critical process directly affects how quickly services can resume. In the UK alone, bridge strike delays cost taxpayers around £20 million each year. CNS Solutions & Support GmbH (CNS) is tackling this challenge with an innovative approach: remotely piloted autonomous drones operating Beyond Visual Line of Sight (BVLOS), fully integrated with the CNS Incident and Crisis Management (ICM) software. When a bridge strike occurs, ICM automatically deploys a drone to the site, enabling rapid inspection and guiding operators through a dynamic response checklist.

This automation reduces inspection times from up to an hour to just minutes, allowing services to restart more quickly. By combining proven drone technology with incident management expertise, CNS is helping the railway industry strengthen resilience, cut delays, and minimise disruption for passengers. «

Trusted rail solutions spanning the globe

Gerald Sauprigl

With more than 10,000 dispatcher terminal positions delivered to customer control centres in over 25 countries, Frequentis solutions play a vital role in public transportation worldwide. The success story continues – discover recent projects ensuring safe, seamless public transport.

MCX system trial for ÖBB

The infrastructure group of Austrian Federal Railways (ÖBB Infrastruktur-AG) is testing Frequentis Mission Critical Services in the Austrian rail network to prepare for the transition to FRMCS. The aim is to deliver an MCX system that provides equivalent performance to a live implementation.

NÖVOG sets course for FRMCS with Schneeberg railway

The Austrian tourist train Schneeberg railway has deployed an advanced digital communications system to improve operational capabilities. The Frequentis solution will ensure seamless and streamlined mission-critical communications over public mobile networks. Read more on .

Long-term relationship with Norwegian Bane NOR reaches the next level

The Norwegian railway operator, Bane NOR, has chosen Frequentis to upgrade its railway dispatcher terminals and application for enhanced railway operations. This strong collaboration delivers a state-of-the-art communication system, facilitating the transition to future technology.

SBB trusts in next-generation communication system

Swiss Federal Railways (SBB) has selected Frequentis to deliver and implement a new communication system that will replace the current dispatcher system and manage communication for over 11,000 trains daily. The new platform, called IMS Service BTA, will enhance communication between train control centres, staff, and emergency teams, ensuring smoother operations across the network.