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Rail Telecommunications (RT) - Future Railway Mobile Communication System (FRMCS) - Building Blocks and Functions - Part 2: Service Stratum

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Foreword

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This Technical Specification (TS) has been produced by ETSI Technical Committee Railway Telecommunications (RT).

The present document is part 2 of a multi-part deliverable covering Building Blocks and Functions for the Future Railway Mobile Communication System (FRMCS), as identified below:

Part 1: "Transport Stratum";

Part 2: "Service Stratum";

Part 3: "Train On-Board functions and interfaces";

Part 4: "Trackside functions and interfaces";

Part 5: "User Equipment (UE) capabilities".

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Introduction

As the needs of the railway sector continue to evolve, ongoing digitalisation presents the appropriate response. In 2012, UIC initiated efforts to develop the Future Railway Mobile Communication System (FRMCS) - a modern replacement for GSM-R, which is expected to become obsolete in the early 2030s. This UIC project resulted in the creation of the FRMCS Functional Requirements Specification (FRS) and the FRMCS System Requirements Specification (SRS), both of which focus primarily on the communication needs of railways and serve as the foundation for developing the GSM-R successor.

The present document defines the building blocks and functions of the FRMCS Service Stratum, detailing how these components interact i.e. interfaces and procedures, and provide FRMCS services to users and groups of users using them for communicating amongst each other.

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1 Scope

The present document defines the Service Stratum for the Future Railway Mobile Communications System (FRMCS). In general, the FRMCS Service Stratum provides communication service and corresponding complementary service resulting from 3GPP Mission Critical Services (MCX) and 3GPP multimedia system.

While FRMCS is defined in various FRMCS ETSI Technical Specifications, the present document determines necessary components of the FRMCS Service Stratum, encompassing:

- Building blocks and corresponding reference points of 3GPP MCX/IMS.
- Reference points between MC systems/IMS for interconnection and unilateral use by MC organizations (MC migration).
- Reference points between the MC system/IMS and external systems.
- QoS and priority management.
- User identification, authentication and authorization for the use of the FRMCS service stratum.
- Communication security aspects.
- Complementary and auxiliary service, e.g. alternative user addressing schemes.

2 References

2.1 Normative references

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References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 123 228 (V18.9.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP Multimedia Subsystem (IMS); Stage 2 (3GPP TS 23.228 version 18.9.0 Release 18)".

[2] ETSI TS 123 280 (V18.12.0): "LTE; Common functional architecture to support mission critical services; Stage 2 (3GPP TS 23.280 version 18.12.0 Release 18)".

[3] ETSI TS 124 482 (V18.0.1): "LTE; Mission Critical Services (MCS) identity management; Protocol specification (3GPP TS 24.482 version 18.0.1 Release 18)".

[4] ETSI TS 124 484 (V18.7.0): "LTE; Mission Critical Services (MCS) configuration management; Protocol specification (3GPP TS 24.484 version 18.7.0 Release 18)".

[5] ETSI TS 133 180 (V18.1.0): "LTE; Security of the Mission Critical (MC) service (3GPP TS 33.180 version 18.1.0 Release 18)".

[6] ETSI TS 123 379 (V18.12.0): "LTE; Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2 (3GPP TS 23.379 version 18.12.0 Release 18)".

[7] ETSI TS 124 379 (V18.10.0): "LTE; Mission Critical Push To Talk (MCPTT) call control; Protocol specification (3GPP TS 24.379 version 18.10.0 Release 18)".

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