



**Rail Telecommunications (RT);
Future Railway Mobile Communication System (FRMCS);
Building Blocks and Functions;
Part 3: Train On-Board functions and interfaces**

[ETSI TS 103 765-3 V1.1.0 \(2025-11\)](https://standards.iteh.ai/catalog/standards/etsi/362d753a-c9aa-4529-850c-67e62cd02e40/etsi-ts-103-765-3-v1-1-0-2025-11)

<https://standards.iteh.ai/catalog/standards/etsi/362d753a-c9aa-4529-850c-67e62cd02e40/etsi-ts-103-765-3-v1-1-0-2025-11>

Reference

DTS/RT-0085

Keywords

FRMCS, interface, protocol, railways

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from the
[ETSI Search & Browse Standards](#) application.

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on [ETSI deliver](#) repository.

Users should be aware that the present document may be revised or have its status changed,
this information is available in the [Milestones listing](#).

If you find errors in the present document, please send your comments to
the relevant service listed under [Committee Support Staff](#).

If you find a security vulnerability in the present document, please report it through our
[Coordinated Vulnerability Disclosure \(CVD\)](#) program.

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2025.
All rights reserved.

Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology.....	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	7
3 Definition of terms, symbols and abbreviations.....	7
3.1 Terms.....	7
3.2 Symbols.....	8
3.3 Abbreviations	8
4 On-Board FRMCS reference points	9
4.1 Background	9
4.2 OB _{App}	9
4.3 FS _{OMR}	9
4.3.1 Introduction.....	9
4.3.2 Profiles management.....	9
4.4 OB _{ANT}	10
4.5 OB _{OM}	10
5 On-Board FRMCS general requirements	10
5.1 On-Board FRMCS Radio Modules	10
5.2 Location and positioning.....	10
5.2.1 Generalities	10
5.2.2 Functional requirements	11
5.3 Profile Storage.....	11
6 On-Board Multipath Function.....	11
7 On-Board FRMCS procedures	12
7.1 General procedures.....	12
7.1.1 FRMCS Start of Operation	12
7.1.2 FRMCS Close of Operation.....	12
7.1.3 Inter-FRMCS Domain Transition using two On-Board FRMCS Radio Modules.....	13
7.1.3.1 Inter-FRMCS Domain Transition (IFDT) procedure.....	13
7.1.3.2 Inter-FRMCS Domain transition: Type I or Type III applications.....	15
7.1.3.2.1 Inter-FRMCS Domain transition: Type I or Type III applications with no open session.....	15
7.1.3.2.2 Inter-FRMCS Domain transition: Type I or Type III applications with an open session.....	15
7.1.3.3 Inter-FRMCS Domain transition: Type II applications.....	16
7.1.3.3.1 Inter-FRMCS Domain transition: Type II applications entering the Domain of applicability	16
7.1.3.3.2 Inter-FRMCS Domain transition: Type II applications entering a FRMCS Domain which is not in the Domain of applicability	17
7.1.3.4 Inter-FRMCS Domain transition: Type IV applications.....	17
7.1.4 GSM-R to FRMCS transition	17
7.1.4.1 GSM-R to FRMCS transition procedure.....	17
7.1.4.2 GSM-R to FRMCS transition: Type I or Type III applications.....	18
7.1.4.3 GSM-R to FRMCS transition: Type II applications entering the Domain of applicability.....	18
7.1.4.4 GSM-R to FRMCS transition: Type IV applications.....	18
7.2 Procedures not associated with a reference point	19
7.2.1 MC Client IP assignment procedure	19
7.2.2 MC Client readiness procedure.....	19
7.2.3 MC Client readiness for network transition procedure	19
7.2.4 MC Client teardown procedure.....	20
7.2.5 OB _{APP} Application Context clearance procedure.....	21
7.2.6 Ongoing communication release procedure.....	21

7.2.7	Logging.....	21
7.3	Procedures associated with OB _{APP} endpoints.....	22
7.3.0	Introduction.....	22
7.3.1	/registrations endpoint procedures.....	22
7.3.1.1	Application registration procedure.....	22
7.3.1.2	Application-initiated deregistration procedure.....	23
7.3.2	/sessions endpoint procedures.....	23
7.3.2.1	On-Board-FRMCS-initiated session initiation procedure.....	23
7.3.2.2	On-Board-FRMCS-initiated session termination procedure.....	24
7.3.2.3	On-Board-FRMCS-terminated incoming session invite procedure.....	25
7.3.2.4	On-Board-FRMCS-terminated incoming session response procedure.....	26
7.3.2.5	On-Board-FRMCS-terminated session termination procedure.....	26
7.3.2.6	Information query on ongoing sessions for an application.....	26
7.3.2.7	Information query on a specific ongoing session for an application.....	26
7.3.3	/notifications endpoint procedures.....	27
7.3.3.1	Procedure for opening the notification event stream.....	27
7.3.3.2	Procedure upon subscription to a channel.....	27
7.3.3.3	Procedure upon unsubscription from all channels.....	28
7.3.3.4	Procedure upon unsubscription from a channel.....	28
7.3.3.5	Procedure of notification to an application over a channel.....	28
7.3.3.6	Procedure upon subscription to location reporting channel.....	28
7.3.3.7	Procedure to list subscriptions of an application.....	29
7.3.3.8	Procedure to unsubscribe an application from a specific subscription.....	29
7.3.4	/versions endpoint procedure.....	29
7.3.5	/keepalive endpoint procedure.....	29
History		30

<https://standards.iteh.ai/catalog/standards/etsi/103765-3/2025-11>
 i T E h S t a n d a r d s
 (h t t p s : / / s t a n d a r d s . i t e h . a i / c a t a l o g / s t a n d a r d s / e t s i / 1 0 3 7 6 5 - 3 / 2 0 2 5 - 1 1)
 D o c u m e n t
 E T S I

<https://standards.iteh.ai/catalog/standards/etsi/103765-3/2025-11>
 h t t p s : / / s t a n d a r d s . i t e h . a i / c a t a l o g / s t a n d a r d s / e t s i / 1 0 3 7 6 5 - 3 / 2 0 2 5 - 1 1

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the [ETSI IPR online database](#).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Foreword

This final draft Technical Specification (TS) has been produced by ETSI Technical Committee Railway Telecommunications (RT), and is now submitted for the Vote phase of the ETSI Standardisation Request deliverable Approval Procedure (SRdAP).

The present document is part 3 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".

Modal verbs terminology

In the present document **"shall"**, **"shall not"**, **"should"**, **"should not"**, **"may"**, **"need not"**, **"will"**, **"will not"**, **"can"** and **"cannot"** are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"must" and **"must not"** are **NOT** allowed in ETSI deliverables except when used in direct citation.