



**Terrestrial Trunked Radio (TETRA);  
Voice plus Data (V+D);  
Part 3: Interworking at the Inter-System Interface (ISI);  
Sub-part 12: Transport layer independent  
Additional Network Feature Individual Call (ANF-ISIIC)**

ETSI STANDARD PREVIEW  
<https://standards.iteh.ai/en/standards/ETSI-EN-300-392-3-12-2020-04>  
4586-b981-231d3a6d79fcd/etn/ETSI-EN-300-392-3-12-2020-04

---

**Reference**REN/TCCE-03260

---

---

**Keywords**ANF, interworking, TETRA, V+D

---

**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 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

---

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

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 at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

---

**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 2020.

All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

**3GPP™** and **LTE™** 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.

# Contents

Intellectual Property Rights .....	8
Foreword.....	8
Modal verbs terminology.....	10
1 Scope .....	11
2 References .....	12
2.1 Normative references .....	12
2.2 Informative references.....	13
3 Definition of terms, symbols and abbreviations.....	13
3.1 Terms.....	13
3.2 Symbols.....	14
3.3 Abbreviations .....	14
4 ANF-ISIIC stage 1 specification .....	16
4.1 Description .....	16
4.1.1 General description .....	16
4.1.2 Qualifications on applicability to telecommunication services.....	16
4.2 Procedures .....	16
4.2.1 Provision/withdrawal.....	16
4.2.2 Normal procedures.....	16
4.2.2.1 Activation/deactivation/registration/interrogation .....	16
4.2.2.2 Invocation and operation.....	17
4.2.2.2.1 General .....	17
4.2.2.2.2 Call routing .....	17
4.2.2.2.3 Control of call time-out timers .....	17
4.2.2.2.4 Transmission control .....	17
4.2.2.2.5 Setup modification.....	17
4.2.2.2.6 Call modification.....	18
4.2.2.2.7 Call restoration after migration.....	18
4.2.2.2.8 Call clearing .....	18
4.2.2.2.9 Interaction between ANF-ISIICs.....	19
4.2.2.2.10 Resource queuing and allocation policies.....	19
4.2.3 Exceptional procedures .....	19
4.2.3.1 Activation/deactivation/registration/interrogation .....	19
4.2.3.2 Invocation and operation.....	19
4.3 Interactions with other TETRA supplementary services and ANFs.....	20
4.3.1 Introduction.....	20
4.3.2 Calling Line Identification Presentation (SS-CLIP) .....	20
4.3.3 Connected Line identification Presentation (SS-COLP).....	20
4.3.4 Calling/connected Line Identification Restriction (SS-CLIR).....	20
4.3.5 Call Report (SS-CR) .....	20
4.3.6 Talking Party Identification (SS-TPI).....	20
4.3.7 Call Forwarding Unconditional (SS-CFU) .....	20
4.3.8 Call Forwarding on Busy (SS-CFB) .....	22
4.3.9 Call Forwarding on No Reply (SS-CFNRY).....	23
4.3.10 Call Forwarding on Not Reachable (SS-CFNRC).....	24
4.3.11 List Search Call (SS-LSC).....	24
4.3.12 Call Authorized by Dispatcher (SS-CAD).....	24
4.3.13 Short Number Addressing (SS-SNA) .....	25
4.3.14 Area Selection (SS-AS) .....	25
4.3.15 Access Priority (SS-AP) .....	25
4.3.16 Priority Call (SS-PC) .....	26
4.3.17 Call Waiting (SS-CW).....	26
4.3.18 Call Hold (SS-HOLD) .....	26
4.3.19 Call Completion to Busy Subscriber (SS-CCBS).....	26
4.3.20 Late Entry (SS-LE) .....	26

4.3.21	Pre-emptive Priority Call (SS-PPC).....	26
4.3.22	Include Call (SS-IC) .....	26
4.3.23	Barring of Outgoing Calls (SS-BOC) .....	27
4.3.24	Barring of Incoming Calls (SS-BIC) .....	27
4.3.25	Discreet Listening (SS-DL) .....	27
4.3.26	Ambience Listening (SS-AL) .....	28
4.3.27	Dynamic Group Number Assignment (SS-DGNA).....	28
4.3.28	Call Completion on No Reply (SS-CCNR) .....	28
4.3.29	Call Retention (SS-CRT) .....	28
4.3.30	Additional Network Feature - Inter System Interface Group Call (ANF-ISIGC).....	28
4.3.31	Additional Network Feature - Inter System Interface Short Data Service (ANF-ISISDS).....	28
4.3.32	Additional Network Feature - Inter System Interface Mobility Management (ANF-ISIMM) .....	28
4.3.33	Additional Network Feature - Inter System Interface Supplementary service (ANF-ISISS) .....	29
4.4	Interworking considerations .....	29
5	ANF-ISIIC stage 2 specification .....	29
5.1	Functional model.....	29
5.1.1	Functional model description.....	29
5.1.2	Description of functional entities.....	34
5.1.2.1	Originating/Controlling SwMI individual call control application functional entity, FE1 .....	34
5.1.2.2	Originating/Controlling SwMI ISI individual call originating functional entity, FE2 .....	34
5.1.2.3	Called/Forward Switching SwMI call control functional entity, FE3 .....	35
5.1.2.4	Called/Forward Switching SwMI ISI individual call functional entity, FE4 .....	36
5.1.2.5	Terminating SwMI individual call control functional entity, FE5 .....	36
5.1.2.6	ISI individual call terminating functional entity, FE6.....	37
5.1.2.7	New terminating SwMI call restoring functional entity, FE7 .....	37
5.1.2.8	New terminating SwMI ISI call restoring functional entity (ANF-ISIIC), FE8.....	37
5.2	Information flow .....	38
5.2.1	Examples of information flow sequences .....	38
5.2.1.1	Introduction.....	38
5.2.1.2	Successful call set-up when the called user is registered in SwMI B and uses on/off hook signalling.....	38
5.2.1.3	Successful call set up when the called user is registered in SwMI B and uses direct set-up signalling.....	39
5.2.1.4	ANF-ISIIC set-up to a called user having migrated from SwMI B, using forward switching .....	41
5.2.1.5	ANF-ISIIC set-up to a called user having migrated from SwMI B, using re-routeing .....	41
5.2.1.6	Loop avoidance in case of intra-TETRA call.....	42
5.2.1.7	Unsuccessful ANF-ISIIC call set-up.....	43
5.2.1.8	Transmission control.....	44
5.2.1.9	Call modify .....	47
5.2.1.10	Call restoration after migration .....	47
5.2.1.11	Call clearing .....	50
5.2.1.12	Resource queuing and allocation.....	51
5.2.2	Definition of information flows .....	52
5.2.2.1	General .....	52
5.2.2.2	CALL RESTORE .....	52
5.2.2.3	CALL RESTORE PREPARE .....	53
5.2.2.4	CHARACTERISTIC CHANGE .....	54
5.2.2.5	COMPLETE.....	54
5.2.2.6	MIGRATION.....	54
5.2.2.7	MODIFY .....	55
5.2.2.8	RELEASE .....	55
5.2.2.9	SETUP .....	56
5.2.2.10	SETUP PROLONGATION .....	57
5.2.2.11	TROMBONE .....	57
5.2.2.12	TX-CEASED .....	58
5.2.2.12.1	TX-CEASED 1 .....	58
5.2.2.12.2	TX-CEASED 2 .....	58
5.2.2.13	TX-CONTINUE 1.....	58
5.2.2.14	TX-CONTINUE 2.....	59
5.2.2.15	TX-DEMAND .....	59
5.2.2.16	TX-GRANTED .....	59

5.2.2.17	TX-INTERRUPT .....	60
5.2.2.18	TX-WAIT .....	60
5.3	Functional entity actions .....	60
5.4	Allocation of functional entities to physical equipment/SwMIs.....	60
6	ANF-ISIIC stage 3 specification .....	63
6.1	ANF-ISIIC coding requirements .....	63
6.1.1	General.....	63
6.1.2	TETRA PDUs.....	63
6.1.2.1	General encoding rule .....	63
6.1.2.2	ISI-SETUP PDU message sent by the originating or the forward switching SwMI .....	63
6.1.2.3	ISI-PROGRESS PDU used to give information about the call progress.....	65
6.1.2.4	ISI-REDIRECT PDU sent by the called SwMI when it is not the terminating SwMI because of migration or SS-CF invocation .....	65
6.1.2.5	ISI-FORWARD SWITCH PDU sent by the originating or the forward switching SwMI to request forward switching .....	67
6.1.2.6	ISI-ALERTING PDU sent by by the terminating or the forward switching SwMI to give information about the connected party alerted .....	67
6.1.2.7	ISI-CONNECT PDU sent by by the terminating or the forward switching SwMI to give information that the connected party has answered the call .....	67
6.1.2.8	ISI-CALL PROCEEDING sent by the terminating SwMI before the ISI-ALERTING or ISI-CONNECT message .....	69
6.1.2.9	ISI-SETUP PROLONGATION PDU sent to prolong the call setup time .....	69
6.1.2.10	ISI CONNECT ACKNOWLEDGE PDU sent by the originating SwMI.....	69
6.1.2.11	Transmission control PDUs sent by the controlling SwMI .....	70
6.1.2.12	ISI-TX WAIT PDU possibly sent by either the controlling or the terminating SwMI.....	71
6.1.2.13	ISI-INFO DEMAND and ISI-INFO REPLY PDU possibly sent by either the originating or the terminating SwMI .....	71
6.1.2.14	Transmission control PDUs sent by the terminating SwMI .....	72
6.1.2.15	TETRA PDUs to restore the call after the calling or the connected user has migrated in a new SwMI.....	73
6.1.2.15.1	Case where no connection between the old SwMI and the new SwMI already exists or has not been identified.....	73
6.1.2.15.2	Cases where no new connection is needed between the old SwMI and the new SwMI.....	75
6.1.2.16	ISI-DISCONNECT PDU sent by a SwMI in case of call clearing or call rejection.....	77
6.1.2.17	TETRA PDUs specific for interaction with supplementary service protocol sent to the originating SwMI .....	77
6.1.2.18	ISI-QUEUING PDUs sent towards the terminating SwMI.....	78
6.1.2.19	ISI-RESOURCE PDU sent towards the Terminating SwMI .....	79
6.1.2.20	ISI-RESOURCE RESPONSE PDUs sent towards the Called or Originating SwMI after the call has connected .....	79
6.1.3	TETRA PDU information element coding .....	79
6.1.3.1	Introduction .....	79
6.1.3.2	Specific ISI definition of some information elements already defined for air interface messages .....	80
6.1.3.2.1	Basic service information .....	80
6.1.3.2.2	Call status .....	80
6.1.3.2.3	Call time-out, set-up phase .....	80
6.1.3.2.4	Disconnect cause information element .....	81
6.1.3.2.5	PDU type .....	82
6.1.3.3	New information elements used at the ISI .....	83
6.1.3.3.1	Call diverted to a dispatcher .....	83
6.1.3.3.2	Call has been forward switched.....	83
6.1.3.3.3	Call identified as fleet call .....	83
6.1.3.3.4	Called/forwarded-to external subscriber number.....	83
6.1.3.3.5	Called/forwarded-to party extension .....	83
6.1.3.3.6	Called/forwarded-to party SSI.....	83
6.1.3.3.7	Called/forwarded-to party fleet number SSI.....	83
6.1.3.3.8	Called/forwarded-to user having migrated .....	84
6.1.3.3.9	Calling external subscriber number .....	84
6.1.3.3.10	Calling external subscriber number parameters.....	84
6.1.3.3.11	Calling party fleet number SSI .....	84
6.1.3.3.12	Calling party presentation indicator.....	84

6.1.3.3.13	Cause for PDU addressed to originating SwMI.....	84
6.1.3.3.14	Connected external subscriber number.....	85
6.1.3.3.15	Connected external subscriber number parameters .....	85
6.1.3.3.16	Connected party presentation indicator .....	85
6.1.3.3.17	Connected party extension.....	85
6.1.3.3.18	Connected party SSI.....	85
6.1.3.3.19	Connected party fleet number SSI.....	85
6.1.3.3.20	Controlling SwMI.....	86
6.1.3.3.21	Incoming call barring status .....	86
6.1.3.3.22	Forwarded-to external subscriber number .....	86
6.1.3.3.23	Forwarded-to user extension .....	86
6.1.3.3.24	Forwarded-to user SSI.....	86
6.1.3.3.25	Last Forwarding SwMI MNI.....	86
6.1.3.3.26	Modify accepted .....	86
6.1.3.3.27	Modify request .....	87
6.1.3.3.28	MSISDN present as external subscriber number.....	87
6.1.3.3.29	New SwMI MNI.....	87
6.1.3.3.30	Number of digits in called/forwarded-to external subscriber number .....	87
6.1.3.3.31	Number of digits in calling external subscriber number.....	87
6.1.3.3.32	Number of digits in connected external subscriber number .....	87
6.1.3.3.33	Number of digits in forwarded-to external subscriber number.....	88
6.1.3.3.34	Number of digits in visited/forwarded-to SwMI PISN number.....	88
6.1.3.3.35	Originating SwMI MNI.....	88
6.1.3.3.36	Other end SwMI MNI .....	88
6.1.3.3.37	Override SS-CAD invocation.....	88
6.1.3.3.38	PDU addressed to originating SwMI.....	88
6.1.3.3.39	Possible ISI trombone or loop connection detected.....	88
6.1.3.3.40	Restoring party extension .....	89
6.1.3.3.41	Restoring party SSI.....	89
6.1.3.3.42	Resource release permission.....	89
6.1.3.3.43	Resource release signalling support.....	89
6.1.3.3.44	Resource indicator.....	89
6.1.3.3.45	Routeing method choice .....	90
6.1.3.3.46	Routeing method response.....	90
6.1.3.3.47	Security level at air interface.....	90
6.1.3.3.48	Setup resource allocation.....	90
6.1.3.3.49	Speech service requested/chosen/used .....	91
6.1.3.3.50	Speech services supported.....	91
6.1.3.3.51	SS-CF invocation counter.....	91
6.1.3.3.52	SS-CF invoked .....	91
6.1.3.3.53	SS-CLIR invoked for other party .....	91
6.1.3.3.54	Terminating SwMI MNI.....	91
6.1.3.3.55	Visited/forwarded-to SwMI MNI.....	92
6.1.3.3.56	Visited/forwarded-to SwMI PISN number .....	92
6.2	ANF-ISIIC state definitions .....	92
6.3	ANF-ISIIC signalling procedures.....	92
6.3.1	General.....	92
6.3.2	Call establishment.....	92
6.3.2.1	Call request and call proceeding .....	92
6.3.2.2	Called user migration .....	92
6.3.2.2.1	Introduction .....	92
6.3.2.2.2	Called user having migrated in SwMI C different from SwMI A .....	93
6.3.2.2.3	Called user having migrated in SwMI C coinciding with SwMI A.....	95
6.3.2.3	Call characteristics and set-up time negotiation by the terminating SwMI.....	96
6.3.2.4	Call through connection .....	96
6.3.2.4.1	Call confirmation indication by the terminating SwMI.....	96
6.3.2.4.2	Resource queuing and different resource allocation policies when no forward switching SwMIs involved.....	97
6.3.2.4.3	Resource queuing and different resource allocation policies if forward switching SwMIs are involved.....	99
6.3.2.5	Failure of call establishment .....	101
6.3.3	Call maintenance procedures .....	101

6.3.3.1	Transmission control procedures .....	101
6.3.3.2	Call modification.....	101
6.3.3.3	Call restoration.....	102
6.3.3.3.1	General call restoration procedure.....	102
6.3.3.3.2	Specific call restoration procedure in a SwMI already on the path of the call .....	103
6.3.4	DTMF procedures.....	104
6.3.5	ANF-ISIIC clearing .....	104
6.4	ANF-ISIIC impact of interworking with ISDN/PISN/PSTN .....	105
6.5	Protocol interactions between ANF-ISIIC and supplementary services and other ANFs .....	106
6.5.1	Interaction with SS-CLIR .....	106
6.5.2	Interactions with SS-CF.....	106
6.5.2.1	Interaction with SS-CF at call establishment .....	106
6.5.2.2	Specific interaction with SS-CFNRY at call establishment .....	107
6.5.2.3	Interaction with SS-CF at call restoration .....	107
6.5.3	Interaction with SS-CAD.....	108
6.5.3.1	Invocation of a specific ANF-ISIIC.....	108
6.5.3.2	Interception of an already invoked ANF-ISIIC.....	108
6.5.3.3	Call authorization by a distant dispatcher .....	108
6.5.3.4	Completion of call establishment .....	108
6.5.3.4.1	Call not diverted to dispatcher.....	108
6.5.3.4.2	Call diverted to dispatcher.....	108
6.5.4	Interactions with SS-PC, SS-PPC and SS-CRT.....	109
6.5.5	Interaction with SS-CW .....	109
6.5.6	Interaction with SS-HOLD .....	110
6.5.7	Interaction with SS-CCBS and SS-CCNR.....	110
6.5.8	Interaction with SS-BIC.....	110
6.5.9	Area Selection (SS-AS) and selected area number.....	110
6.5.10	Interactions with other supplementary services.....	110
6.6	ANF-ISIIC parameter values (timers).....	110
<b>Annex A (informative): Interactions of SS-CFU with ANF-ISIIC.....</b>		<b>111</b>
A.1	Possible SS-CFU activation .....	111
A.2	Invocation and operation.....	111
A.2.1	Invocation.....	111
A.2.2	Called user home SwMI being SwMI A .....	111
A.2.3	Called user home SwMI being SwMI B.....	111
A.2.3.1	Introduction.....	111
A.2.3.2	Forwarded-to user with home SwMI being SwMI B, being registered in its home SwMI.....	112
A.2.3.3	Forwarded-to user with home SwMI being SwMI B, having migrated.....	113
A.2.3.4	Forwarded-to user with home SwMI different from SwMI B, being registered in its home SwMI .....	113
A.2.3.5	Forwarded-to user with home SwMI different from SwMI B, having migrated .....	113
<b>Annex B (informative): Change Requests.....</b>		<b>116</b>
History .....		117

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is 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 Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, 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.

---

# Foreword

This European Standard (EN) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE).

The present document is part 3, sub-part 12 of a multi-part deliverable covering the Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D), as identified below:

Part 1: "General network design";

Part 2: "Air Interface (AI)";

**Part 3: "Interworking at the Inter-System Interface (ISI)":**

Sub-part 1: "General design";

Sub-part 2: "Additional Network Feature Individual Call (ANF-ISIIC)";

Sub-part 3: "Additional Network Feature Group Call (ANF-ISIGC)";

Sub-part 4: "Additional Network Feature Short Data Service (ANF-ISISDS)";

Sub-part 5: "Additional Network Feature for Mobility Management (ANF-ISIMM)";

Sub-part 6: "Speech format implementation for circuit mode transmission";

Sub-part 7: "Speech Format Implementation for Packet Mode Transmission";

Sub-part 8: "Generic Speech Format Implementation";

Sub-part 9: "Transport layer independent, General design";

Sub-part 10: "General design, PSS1 over E.1";

Sub-part 11: "General design, SIP/IP";

**Sub-part 12: "Transport layer independent Additional Network Feature Individual Call (ANF-ISIIC)";**

Sub-part 13: "Transport layer independent Additional Network Feature Group Call (ANF-ISIGC)";

Sub-part 14: "Transport layer independent Additional Network Feature Short Data Service (ANF-ISISDS)";



Sub-part 15: "Transport layer independent Additional Network Feature, Mobility Management (ANF-ISIMM)";

Part 4: "Gateways basic operation";

Part 5: "Peripheral Equipment Interface (PEI)";

Part 7: "Security";

Part 9: "General requirements for supplementary services";

Part 10: "Supplementary services stage 1";

Part 11: "Supplementary services stage 2";

Part 12: "Supplementary services stage 3";

Part 13: "SDL model of the Air Interface (AI)";

Part 14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 15: "TETRA frequency bands, duplex spacings and channel numbering";

Part 16: "Network Performance Metrics";

Part 17: "TETRA V+D and DMO specifications";

Part 18: "Air interface optimized applications";

Part 19: "Interworking between TETRA and Broadband systems".

NOTE 1: Part 3, sub-parts 6 and 7 (Speech format implementation), part 4, sub-part 3 (Data networks gateway), part 10, sub-part 15 (Transfer of control), part 13 (SDL) and part 14 (PICS) of this multi-part deliverable are in status "historical" and are not maintained.

NOTE 2: Some parts are also published as Technical Specifications such as ETSI TS 100 392-2 and those may be the latest version of the document.

The present document is based on ETSI EN 300 392-3-2 [1.9] "Interworking at the Inter-System Interface, Sub-part 2 Additional Network Feature for Individual Call (ANF-ISIIC)". The main changes are:

- Removal of any reference to the bearer protocol
- Clean up of stage 2 descriptions

For all sub-parts in the TETRA specification ETSI EN 300 392-3, "Interworking at the Inter-System Interface (ISI)" the terms ISI and TETRA ISI are equivalent.

### National transposition dates

Date of adoption of this EN:	13 November 2019
Date of latest announcement of this EN (doa):	31 July 2020
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2021
Date of withdrawal of any conflicting National Standard (dow):	31 January 2021

---

## 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.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/92199227-3350-4586-b981-231d3a6d79fd/etsi-en-300-392-3-12-v1.2.1-2020-04>

# 1 Scope

The present document defines the Terrestrial Trunked Radio (TETRA) system supporting Voice plus Data (V+D). It specifies:

- the interworking of individual calls between TETRA networks;
- the supplementary services interaction with individual calls between TETRA networks.

The TETRA V+D interworking - basic operation part defines the interworking between TETRA networks over the corresponding interface: the Inter-System Interface (ISI). It comprises the following sub-parts:

- Transport layer independent General design [2];
- General Design, PSS1 over E.1 [3];
- General Design, SIP/IP [4];
- Transport layer independent Additional Network Feature - ISI Individual Call (ANF-ISIIC) (the present document);
- Transport layer independent Additional Network Feature - ISI Group Call (ANF-ISIGC) [5];
- Transport layer independent Additional Network Feature - ISI Short Data service (ANF-ISISDS) [i.8];
- Transport layer independent Additional Network Feature - ISI Mobility Management (ANF-ISIMM) [6];
- Generic Speech Format Implementation [i.7].

The present document is the ANF-ISIIC sub-part.

Like all other Additional Network Feature (ANF) specifications, those of ANF-ISIIC are produced in three stages, according to the method described in Recommendation ITU-T I.130 [i.4]. The present document contains the stage 1 and 2 descriptions of ANF-ISIIC, and stage 3 description. The stage 1 description specifies the ANF as seen by its users, which are essentially the individual call control entities in both TETRA networks. The stage 2 description identifies the functional entities involved in the ANF and the information flows between them. And the stage 3 description of ANF-ISIIC specifies its protocol.

**NOTE 1:** According to Recommendation ITU-T I.130 [i.4], the stage 3 description of a bearer or tele-service addresses the network implementation aspects. Consequently, it comprises two steps: the specifications of all protocols at the various reference points involved in any of the service procedures (notably the service operation) are the first step of the stage 3 description, and the specifications of the functions of the corresponding network entities are its second step.

**NOTE 2:** The SDL diagrams have not been provided since they can be derived from the specification of the functional entity actions in the stage 2 description.

The present document applies to TETRA networks which support inter-TETRA individual calls. More specifically, it applies to their Circuit Mode Control Entities (CMCE), as defined in clause 14.2 of ETSI EN 300 392-2 [1], and to their ANF-ISIIC entities defined in the stage 2 description.

The relation between the ANF-ISIIC and the transport layer protocol is described in the General Design documents [2], [3] and [4].

## 2 References

### 2.1 Normative references

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.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE 1: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

NOTE 2: Note that for the TETRA standards, the reference is always to a European Standard (ETSI EN 300 xxx) if such has been published, but the latest version of that standard can be either an EN or a Technical Specification (ETSI TS 100 xxx), even if this is not visible in the reference list.

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

- [1] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".
- [2] ETSI EN 300 392-3-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 9: Transport layer independent, General design".
- [3] ETSI EN 300 392-3-10: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 10: General design, PSS1 over E.1".
- [4] ETSI EN 300 392-3-11: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 11: General design, SIP/IP".
- [5] ETSI EN 300 392-3-13: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 13: Transport layer independent Additional Network Feature Group Call (ANF-ISIGC)".
- [6] ETSI EN 300 392-3-15: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 15: Transport layer independent Additional Network Feature, Mobility Management (ANF-ISIMM)".
- [7] ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".
- [8] ETSI EN 300 392-12-4: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 4: Call Forwarding (CF)".
- [9] ISO/IEC 11572: "Information technology -- Telecommunications and information exchange between systems -- Private Integrated Services Network -- Circuit mode bearer services -- Inter-exchange signalling procedures and protocol".
- [10] ETSI EN 300 392-12-8: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 8: Area Selection (AS)".

## 2.2 Informative references

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.

NOTE 1: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

NOTE 2: Note that for the TETRA standards, the reference is always to a European Standard (ETSI EN 300 xxx) if such has been published, but the latest version of that standard can be either an EN or a Technical Specification (ETSI TS 100 xxx), even if this is not visible in the reference list.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI EN 300 392-7: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security".
- [i.2] ETSI EN 300 392-10-19: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 19: Barring of Incoming Calls (BIC)".
- [i.3] ETSI EN 300 395-2: "Terrestrial Trunked Radio (TETRA); Speech codec for full-rate traffic channel; Part 2: TETRA codec".
- [i.4] Recommendation ITU-T I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [i.5] ETSI TR 102 300-5: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Designers' guide; Part 5: Guidance on numbering and addressing".
- [i.6] Void.
- [i.7] ETSI EN 300 392-3-8: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 8: Generic Speech Format Implementation".
- [i.8] ETSI EN 300 392-3-14: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 14: Transport layer independent Additional Network Feature Short Data Service (ANF-ISISDS)".
- [i.9] ETSI EN 300 392-3-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 2: Additional Network Feature Individual Call (ANF-ISIIC)".

---

## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 300 392-3-9 [2] and the following apply:

**called SwMI:** Switching and Management Infrastructure to which ANF-ISIIC routes the first call attempt

**controlling SwMI:** Switching and Management Infrastructure responsible of the speech item management in half duplex individual calls

NOTE: During the call setup the originating SwMI is also the controlling SwMI. When the calling party migrates during a call the control of the call is transferred to that SwMI.

**fleet call:** call to a closed user group using a Fleet Specific Short Number

NOTE: Refer to ETSI TR 102 300-5 [i.5], clause 5.4.3.