



**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)**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE).

The present document is part 3, sub-part 13 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";

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 current document is based on ETSI EN 300 392-3-3 [i.6]. The main changes are:

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

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

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).

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1 Scope

The present document defines the group call communication of interworking at the Inter-System Interface (ISI) for Terrestrial Trunked Radio system (TETRA) supporting Voice plus Data (V+D).

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 Specification ISI general design [2];
- General Design, PSS1 over E.1 [i.7];
- General Design, SIP/IP [i.8];
- Transport Layer Independent Additional Network Feature - ISI Individual Call (ANF-ISIIC) [3];
- Transport Layer Independent Additional Network Feature Group Call (ANF-ISIGC) (the present document);
- Transport Layer Independent Additional Network Feature Short Data service (ANF-ISISD) [i.9];
- Transport Layer Independent Additional Network Feature Mobility Management (ANF-ISIMM) [4];
- Generic Speech Format Implementation [i.10].

The present document is the ANF-ISIGC sub-part 3-13.

In analogy with Recommendation ITU-T I.130 [i.3], the stage one, stage two and stage three of the three level structure is used to describe the TETRA Inter-System Interface services as provided by European Private or Public Trunked Radio System operators:

- Stage 1, is an overall service description, from the service subscriber's and user's standpoint;
- Stage 2, identifies the functional capabilities and information flows needed to support the services described in stage 1; and

NOTE: The information flows in stage 2 have been drawn as Message Sequence Charts (MSC).

- Stage 3, defines the signalling system protocols and functions needed to implement the services described in stage 1.

The present document details the Interworking Basic Operation of the Terrestrial Trunked Radio system (TETRA). Specifically the present document details the stage 1 aspects (overall service description) of the ANF-ISIGC as seen from the TETRA Switching and Maintenance Infrastructure point of view at the Inter-System Interface (ISI). It details the stage 2 aspects (functional partitioning) of ANF-ISIGC which includes the identification of the functional entities and the flows between them, and finally it details the stage 3 signalling protocols for the ANF-ISIGC services, i.e. the protocols at the relevant reference points between the functional entities defined in stage 2.

The ANF-ISIGC service specifies:

- TETRA Group Call Clear Speech over the ISI, acknowledged and unacknowledged;
- TETRA Group Call End-to-End Encrypted Speech over the ISI;
- TETRA Group Call Circuit Mode one slot data over the ISI;
- TETRA Group Call Circuit Mode one slot End-to-End Encrypted data over the ISI;
- TETRA Group Call Circuit Mode $N \times 2,4$ kbit/s, $N \times 4,8$ kbit/s or $N \times 7,2$ kbit/s data, with $N = 2, 3$ or 4 ;
- TETRA Group Call Circuit Mode $N \times 2,4$ kbit/s $N \times 4,8$ kbit/s or $N \times 7,2$ kbit/s End-to-End Encrypted data, with $N = 2, 3$ or 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: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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 TS 100 392-3-9: "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 TS 100 392-3-12: "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)".
- [4] ETSI TS 100 392-3-15: "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)".
- [5] ETSI EN 300 392-7: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security".
- [6] ETSI EN 300 392-11-6: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 6: Call Authorized by Dispatcher (CAD)".
- [7] ETSI EN/ETS 300 392-12 (all parts): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3".
- [8] ETSI EN 300 395-2: "Terrestrial Trunked Radio (TETRA); Speech codec for full-rate traffic channel; Part 2: TETRA codec".
- [9] ISO/IEC 11571: "Information technology - Telecommunications and information exchange between systems - Private Integrated Services Networks - Addressing".
- [10] ETSI EN 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

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

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 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".
- [i.2] Recommendation ITU-T Z.100: "Specification and Description Language (SDL)".
- [i.3] Recommendation ITU-T I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [i.4] Recommendation ITU-T E.164: "The international public telecommunication numbering plan".
- [i.5] Recommendation ITU-T X.121: "International numbering plan for public data networks".
- [i.6] ETSI EN 300 392-3-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 3: Additional Network Feature Group Call (ANF-ISIGC)".
- [i.7] ETSI TS 100 392-3-10: "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".
- [i.8] ETSI TS 100 392-3-11: "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".
- [i.9] ETSI TS 100 392-3-14: "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.10] ETSI TS 100 392-3-8: "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".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

controlling linked group: group in a set of linked groups which is homed in the group linking controlling SwMI

controlling SwMI: functional entity which sets up and maintains a call between two or more SwMIs

group home SwMI: SwMI where the Group Home DataBase (G-HDB) resides

NOTE: The MNI of the group home SwMI is equal to that of that group.

group linking controlling SwMI: SwMI which controls the group linking of one of its own groups to one or more and which controls a group call on a linked group

NOTE: The group linking controlling SwMI is the home SwMI of the linked groups.

group linking home SwMI: See group linking controlling SwMI.