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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)

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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)

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Terrestrial Trunked Radio (TETRA).

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

EN 300 392-1: "General network design";

EN 300 392-2: "Air Interface (AI)";

EN 300 392-3: "Interworking at the Inter-System Interface (ISI)";

EN 300 392-3-1: "General design";

EN 300 392-3-2: "Additional Network Feature Individual Call (ANF-ISIIC)";

EN 300 392-3-3: "Additional Network Feature Group Call (ANF-ISIGC)";

EN 300 392-3-4: "Additional Network Feature Short Data Service (ANF-ISISDS)";

EN 300 392-3-5: "Additional Network Feature for Mobility Management (ANF-ISIMM)";

TS 100 392-3-6: "Speech format implementation for circuit mode transmission";

TS 100 392-3-7: "Speech Format Implementation for Packet Mode Transmission";

ETS 300 392-4: "Gateways basic operation";

EN 300 392-5: "Peripheral Equipment Interface (PEI)";

EN 300 392-7: "Security";

EN 300 392-9: "General requirements for supplementary services";

EN 300 392-10: "Supplementary services stage 1";

EN 300 392-11: "Supplementary services stage 2";

EN 300 392-12: "Supplementary services stage 3";

ETS 300 392-13: "SDL model of the Air Interface (AI)";

ETS 300 392-14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

TS 100 392-15: "TETRA frequency bands, duplex spacing and channel numbering";

TS 100 392-16: "Network Performance Metrics";

TS 100 392-17: "TETRA V+D and DMO Release 1.1 specifications".

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1 Scope

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

- general design aspects (e.g. reference points, numbering and addressing, or protocol architecture);
- the interworking between TETRA networks;
- the interworking of TETRA networks with other networks, via gateways;
- the supplementary services applicable to the basic TETRA tele- or bearer services.

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:

- ISI general design;
- Additional Network Feature - ISI Individual Call (ANF-ISIIC);
- Additional Network Feature - ISI Group Call (ANF-ISIGC);
- Additional Network Feature - ISI Short Data service (ANF-ISISD);
- Additional Network Feature - ISI Mobility Management (ANF-ISIMM);
- Speech Format Implementation for Circuit Mode Transmission;
- Speech Format Implementation for Packet Mode Transmission.

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

In analogy with ITU-T Recommendation I.130 [19], 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). Therefore PISN basic call information flows are also shown together with the ANF-ISIGC information flows.

- Stage 3, defines the signalling system protocols and switching 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 this sub-part 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 × 2,4 kbit/s, N × 4,8 kbit/s or N × 7,2 kbit/s data, with N = 2, 3 or 4;
- TETRA Group Call Circuit Mode N × 2,4 kbit/s N × 4,8 kbit/s or N × 7,2 kbit/s End-to-End Encrypted data, with N = 2, 3 or 4.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

[1] ETSI EN 300 172: "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Circuit-mode basic services [ISO/IEC 11572 (2000) modified]".

[2] ETSI EN 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

[3] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[4] ETSI EN 300 392-3-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 1: General design".

[5] 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)".

[6] ETSI EN 300 392-3-5: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)".

[7] ETSI EN 300 392-7: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security".

[8] ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".

[9] 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)".

[10] ETSI EN/ETS 300 392-12 (all parts): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3".

[11] ETSI ETS 300 395-2: "Terrestrial Trunked Radio (TETRA); Speech codec for full-rate traffic channel; Part 2: TETRA codec".

[12] 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".

[13] ISO/IEC 11574: "Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit-mode 64 kbit/s bearer services - Service description, functional capabilities and information flows".

[14] ISO/IEC 11582: "Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Generic functional protocol for the support of supplementary services - Inter-exchange signalling procedures and protocol".

[15] ITU-T Recommendation I.140: "Attribute technique for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[16] ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

[17] ITU-T Recommendation I.460: "Multiplexing, rate adaption and support of existing interfaces".

[18] ITU-T Recommendation Z.100: "Specification and Description Language (SDL)".

[19] ITU-T Recommendation I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[20] ITU-T Recommendation V.110: "Support by an ISDN of data terminal equipments with V-Series type interfaces".

[21] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[22] ITU-T Recommendation X.121: "International numbering plan for public data networks".

3 Definitions and abbreviations

3.1 Definitions

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

controlling SwMI: Switching and Management Infrastructure (SwMI) which sets up and maintains a call between two or more SwMIs

foreign user: user who is not a member of the called group

group home: home of the GTSI, i.e. the SwMI where the network code (MNC) is equal to that of the group (GTSI)

individual home: home of the MS's ITSI, i.e. the SwMI where the network code (MNC) is equal to that of the individual subscriber (ITSI)

linking controlling SwMI: SwMI that controls the linking of one of its own groups to one or more groups from other SwMIs

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

linking home SwMI: See linking controlling SwMI.

linking participating SwMI: SwMI that participates in the group linking by linking (joining) one group to the group linking

linked group: linking of one or more group identities from different TETRA SwMIs which forms a multigroup across several TETRA SwMIs and where one of these is designated to be the home of the linked group

originating SwMI: SwMI from where the call originates, i.e. where the initial call set-up is detected

NOTE: Once the calling user has been connected, the originating SwMI becomes a participating SwMI.

participating SwMI: SwMI only participates in the call without controlling it and will always be the end point of the call, i.e. where the call is terminated

served SwMI: SwMI that is involved in a group call either as the originating SwMI, the controlling SwMI or as the participating SwMI, hence utilizing the ANF-ISIGC service