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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

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**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**

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Foreword

This draft European Standard (EN) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document is part 3, sub-part 8 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.

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.

Proposed national transposition dates

Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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.

Introduction

The present document defines the solution in the speech transportation format that applies in the ISI.

The present document also describes the transportation of ISI speech transmission over E1 time-division multiplexed digital lines using LAPF/HDLC encapsulation (when ISI signalling uses PSS1 as transport layer) and over IP network using RTP and UDP encapsulation (when ISI signalling adopts SIP as transport layer).

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1 Scope

The present document specifies speech transmission format implementation independent of SwMI type.

The present document defines the format of user information that is transported between two SwMIs using the TETRA ISI.

The present document covers how TETRA air interface circuit mode traffic is encoded for transport over various media.

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.

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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] Void.
- [3] ETSI EN 300 395-2: "Terrestrial Trunked Radio (TETRA); Speech codec for full-rate traffic channel; Part 2: TETRA codec".
- [4] ETSI ETS 300 402-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 3: Frame relay protocol specification".
- [5] IETF RFC 3550: "RTP: A Transport Protocol for Real Time Applications".
- [6] IETF RFC 4566: "SDP: Session Description Protocol".
- [7] 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".

2.2 Informative references

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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] Recommendation ITU-T G.703: "Physical/electrical characteristics of hierarchical digital interfaces".
- [i.2] Recommendation ITU-T G.704: "Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s hierarchical levels".
- [i.3] Recommendation ITU-T I.431: "Primary rate User-Network interface - Layer 1 specification".
- [i.4] Recommendation ITU-T I.233.1: "ISDN Frame Relaying Bearer Service".
- [i.5] Recommendation ITU-T Q.922: "Digital subscriber Signalling System No. 1 (DSS 1); Data Link Layer; ISDN Data Link Layer Specification for Frame Mode Bearer Services".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

ISI PDU frame rate: nominal time between start of two consecutive ISI Traffic PDUs

NOTE: There may be gaps in the flow of the ISI speech frames so that a ISI speech frame is missing in its normal time position.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACELP	Algebraic CELP
AI	Air Interface
BECN	Backward Explicit Congestion Notification
CR	Change Request
CSRC	Contributing Source
DE	Discard Eligibility indicator
DLCI	Data Link Connection Identifier
DMO	Direct Mode Operation
E1	European format for digital transmission
ETS	European Technical Specification
FCS	Frame Check Sequence