# SLOVENSKI STANDARD
# SIST ETS 300 393-1:1999

**01-julij-1999**

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**Radijska oprema in sistemi (RES) - Vseevropski sistem snopovnega radia (TETRA) - Optimiran sistem za prenos paketiranih podatkov (PDO) - 1. del: Splošna zasnova omrežja**

Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA); Packet Data Optimized (PDO); Part 1: General network design

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## Foreword

This European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is a multi-part standard and intended to comprise 11 Parts:

**Part 1:** **"General network design".**

Part 2: "Air Interface (AI)".

Part 3: "Inter-working" (DE/RES-06004-3).

Part 4: "Gateways" (DE/RES-06004-4).

Part 5: "Terminal equipment interface" (DE/RES-06004-5).

Part 6: "Line connected stations" (DE/RES-06004-6).

Part 7: "Security" (DE/RES-06004-7).

Part 8: "Management services", (DE/RES-06004-8).

Part 9: "Performance objectives" (DE/RES-06004-9).

Part 10: “SDL Model of the Air Interface” (DE/RES-06004-10).

Part11: “PICS Proforma” (DE/RES-06004-11).

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# 1 Scope

This ETS applies to the TETRA Packet Data Optimised (PDO) radio air interface standard.

It establishes the TETRA general network design of the TETRA PDO standard. It specifies the technical realisation of the Connection Oriented Network Protocol (CONP) and Specific Connectionless Network Protocol (SCLNP) to provide the services on the network layer of the TETRA radio air interface.

It defines the packet mode reference points for the Mobile Station (MS), Line Station (LS) and Network Management Unit (NMU).

It specifies a model of the air interface protocol stack where the different functions of layers and sub-layers are described.

This ETS defines the registration, authentication, mode change signalling and an overview of the functions of the Mobile link Entity (MLE) including roaming and migrating.

It specifies the TETRA addressing and identities and their organisation in groups corresponding to the different functions.

The air interface protocol services, functions and interconnection protocol stacks are listed based on ISO/IEC 8473 [11] and ISO/IEC 8208 [9].

This ETS also gives guidance on priority in annex A, and Quality of Service (QoS) in annex B.

# 2 Normative references

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This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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[1] CCITT Recommendation E.163 (1988): "Numbering Plan for the International Telephone Service".

[2] CCITT Recommendation E.164 (1988): "Numbering Plan for the ISDN Era".

[3] CCITT Recommendation E.212 (1988): "Identification Plan for Land Mobile Stations".

[4] CCITT Recommendation E.213 (1988): "Telephone and ISDN Numbering Plan for Land Mobile Stations in Public Land Mobile Networks (PLMN)".

[5] CCITT Recommendation X.121 (1988): "International Numbering Plan for Public Data Networks".

[6] CCITT Recommendation X.213: "Network Service Definition for Open System Interconnection for CCITT applications".

[7] ETR 086, Parts 1 to 3: "Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA); Technical requirements specification".

[8] ETR 101: "European digital cellular telecommunications system (Phase 2); Quality of Service (GSM 02.08) ".

[9] ISO/IEC 8208: "Information technology - Data communications - X.25 Packet Layer Protocol for Data Terminal Equipment".

[10] ISO/IEC 8348: "Information technology - Open Systems Interconnection - Network Service Definition".

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[11] ISO/IEC 8473: "Information technology - Protocol for providing the connectionless-mode network service: Protocol specification".

[12] ISO/IEC 8878: "Information technology - Telecommunications and information exchange between systems - Use of X.25 to provide the OSI Connection-mode Network Service".

[13] ECMA TR/44: "An architectural framework for private networks".

[14] ISO 8648: "Information processing systems - Open Systems Interconnection - Internal organisation of the Network Layer".

[15] ETS 300 392-1: "Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

[16] ETS 300 392-2: "Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[17] ETS 300 393-2: "Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA); Packet Data Optimized (PDO); Part 2: Air Interface (AI)".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of this ETS, the following definitions apply:

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**announced cell re-selection:** Cell re-selection where MS-MLE informs the Switching and Management Infrastructure (SwMI) both in the old cell (leaving cell) and in the new cell (arriving cell) that cell change is performed. There are two types of announced cell re-selection relevant to PDO:

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- type 2:
  - the MS-MLE knows the new cell before changing to it, but does not know the channel allocation on the new cell in advance;
- type 3:
  - the MS-MLE does not know the new cell before changing to it. The old cell is only informed by the MS-MLE that it want to change cell.

**attached:** A MS is said to be attached to a cell when the MS is registered on the cell. The MS may be in idle mode (i.e. not actively processing a transaction) or in traffic mode (i.e. actively processing a transaction in reception and/or in transmission). It is the Mobility Management (MM) which decides when a MS is said to be attached.

**authentication:** A function which allows the infrastructure to check that a MS is valid to operate in the system or which allows a MS to check that the infrastructure is valid to operate in.

**background measurement:** Measurement performed by the lower layers while maintaining current service toward the service users, i.e. MS-MLE.

**bearer service:** A type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces.

**bundle:** A collection of Inter-TETRA Connections (ITCs) which utilises the same scenario over the Inter-System Interface (ISI).

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**cell re-selection:** The act of changing the serving cell from an old cell to a new cell. The cell re-selection is performed by procedures located in MLE and in the MAC. When the re-selection is made and possible registration is performed, the MS is said to be attached to the cell.

**cell-id:** Characterized as the channel number of the main carrier on the cell.

**constant delay service:** A Network Service (NS) where the transit delay of the Network Service Data Units (NSDUs) between the network connection endpoints remains constant for the duration of the connection.

**direct set-up signalling:** A signalling procedure where immediate communication can take place between the calling and the called users without the alerting process and without an explicit response from the called user that he has answered.

**external data transactions:** A data transaction where only one of the parties, either the source or the destination, is in a TETRA network. The other party is in a non-TETRA network.

**foreground measurement:** Measurements performed by the lower layers while employing the whole capacity, e.g. no concurrent service is maintained.

**functional group:** A set of functions which may be needed in TETRA Land Mobile Network (TLMN) access arrangements. In a particular access arrangement, specific functions in a function group may but need not be present.

NOTE 1: Specific functions in a functional group may be performed in one or more pieces of equipment.

**Grade of Service (GoS):** Refers to certain traffic engineering variables which may be used to provide a measure of the adequacy of a NS under specified conditions.

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**home network:** A network where a subscriber has a direct subscription. This means that a subscriber identity has been allocated in advance of any network access.

SIST ETS 300 393-1:1999
https://standards.iteh.ai/catalog/standards/sist/3fd1114a1-6d67-41c3-8eb8-481ab9c211d0/sist-ets-300-393-1-1999

**initial cell selection:** The act of choosing a first serving cell to register in. The initial cell selection is performed by procedures located in MLE and in the Medium Access Control (MAC). When the cell selection is made and possible registration is performed, the MS is said to be attached to the cell.

**internal data transactions:** A data transaction where both the source (the calling party) and the destination (the called party) both lie in a TETRA network domain.

**interrupted measurement:** Measurements performed by the lower layers interrupting current services.

**inter-TETRA data transaction:** A data transaction where source and destination are in different TETRA networks.

**Inter-TETRA Connections (ITCs):** ITCs are provided by the InterVening Networks (IVNs) at the ISI and terminate at interfaces at C reference points. They may be grouped into bundles, each connecting to a specific type of IVN. Bundles, in turn, may comprise more than one interface between the SwMI and the IVN.

**Inter-TETRA Links (ITLs):** ITLs are provided by the Intervening Network Adaption (INA) and terminate at interfaces at the Q reference point in the ISI. An ITL is characterised by its ITL identity which corresponds to the instance of the Q reference point. The ITL comprises 1 DQ channel and a number of UQ channels each of them having certain channel characteristics.