



**Terrestrial Trunked Radio (TETRA);
Voice plus Data (V+D) and Direct Mode Operation (DMO);
Part 18: Air interface optimized applications;
Sub-part 4: Net Assist Protocol 2 (NAP2)**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Terrestrial Trunked Radio (TETRA).

The present document is part 18, sub-part 4 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)";

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

TS 100 392-5: "Peripheral Equipment Interface (PEI)";

TS 100 392-7: "Security";

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

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

TS 100 392-11: "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 spacings and channel numbering";

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

TR 100 392-17: "TETRA V+D and DMO specifications";

TS 100 392-18: "Air interface optimized applications":

Sub-part 1: "Location Information Protocol (LIP)";

Sub-part 2: "Net Assist Protocol (NAP)";

Sub-part 3: "Direct mode Over The Air Management protocol (DOTAM)";

Sub-part 4: "Net Assist Protocol 2 (NAP2)".

NOTE: 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.

1 Scope

The present document defines Net Assist Protocol 2 that is optimized for TETRA air interface. It defines services:

- allowing information to be passed to a location determining entity;
- allowing a location determining entity to request assistance information.

The information passed to the location determining entity, when relevant, reflects the content and format of the equivalent information (navigation data) which passes from satellites to the location determining entity.

The protocol is capable of supporting more than one position determining technology. Presently it covers multiple GNSS, and is extensible to all network positioning methods.

2 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 <http://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.

2.1 Normative references

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

- [1] IS-GPS-200F: "Navstar GPS Space Segment/Navigation User Interfaces", September 21, 2011.

NOTE: Available at: <http://www.gps.gov/technical/icwg/#is-gps-200>

- [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 TS 100 392-18-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D) and Direct Mode Operation (DMO); Part 18: Air interface optimized applications; Sub-part 1: Location Information Protocol (LIP)".

- [5] IS-GPS-705B: "Navstar GPS Space Segment/User Segment L5 Interfaces", September 21, 2011.

- [6] IS-GPS-800, Navstar GPS Space Segment/User Segment L1C Interfaces, September 4, 2008.

- [7] IS-QZSS, Quasi Zenith Satellite System Navigation Service, Interface Specifications for QZSS, Ver.1.1, July 31, 2009.

- [8] Galileo OS Signal in Space ICD (OS SIS ICD), Issue 1.1, Galileo Joint Undertaking, September 2010.

NOTE: Available at: http://ec.europa.eu/enterprise/policies/satnav/galileo/open-service/index_en.htm

- [9] Global Navigation Satellite System GLONASS, Interface Control Document, Version 5.1, 2008.

- [10] Specification for the Wide Area Augmentation System (WAAS), US Department of Transportation, Federal Aviation Administration, DTFA01-96-C-00025, 2001.