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Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 22: Dynamic Group Number Assignment (DGNA)

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terrestrial Trunked Radio (TETRA) Project of the European Telecommunications Standards Institute (ETSI).

This ETS consists of 14 parts as follows:

Part 1: "General network design";

Part 2: "Air Interface (AI)";

Part 3: "Interworking at the Inter-System Interface (ISI)";

Part 4: "Gateways basic operation";

Part 5: "Peripheral Equipment Interface (PEI)";

Part 6: "Line connected Station (LS)";

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".

Transposition dates	
Date of adoption of this ETS:	31 March 2000
Date of latest announcement of this ETS (doa):	30 June 2000
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1 Scope

This European Telecommunication Standard (ETS) defines the stage 2 specifications of the Supplementary Service Dynamic Group Number Assignment (SS-DGNA) for the Terrestrial Trunked Radio (TETRA).

The SS-DGNA enables a user to dynamically define group identities and group related parameters to the TETRA system and to the subscribers in the system. These definitions are used to enable group call invocations to dynamically defined groups. This ETS specifies the creation, modification, deletion and interrogation of group definitions in the Switching and Management Infrastructure (SwMI), in the Mobile Station (MS) and in the Line Station (LS). The operations can be made within one TETRA system or over the Inter System Interface (ISI).

This specification does not include the specification for access priority used for random access in uplink and call priority used by SwMI for resource allocation for a group. Access priority and call priority can be specified for groups using Supplementary Service Access Priority (SS-AP), Supplementary Service Priority Call (SS-PC) and Supplementary Service Pre-emptive Priority Call (SS-PPC).

Man-Machine Interface (MMI) and Charging principles are outside the scope of this ETS.

Stage 2 describes the functional capabilities of the Supplementary Service introduced in stage 1 description. Stage 2 identifies the functional capabilities for the management of the service in the SwMI, in the MS and in the LS. Stage 2 describes the information flows exchanged between these entities, and it also describes the flows sent over the ISI.

NOTE: The stage 2 description is followed by the stage 3 description, which specifies the encoding rules for the information flows and process behaviour for the different entities in SwMI, MS and LS of the service.

2 Normative references

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.

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

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

[3] ETS 300 392-12-22: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 22: Dynamic Group Number Assignment (DGNA)".

[4] ETS 300 392-10-22: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 22: Dynamic group number assignment".

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

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

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

3 Definitions and abbreviations

3.1 Definitions

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

affected user: identified MS or LS user to which the supplementary service operation assigns or deassigns the group number

NOTE: In some specific cases, the term affected users may apply to all the (assigned) users of an existing group.

authorized user: user who is authorized to define, modify, delete and interrogate SS-DGNA numbers

call related DGNA: creation of a group comprising the participants in a call

call unrelated DGNA: creation of a group based on identities

DGNA number: group number added, modified, deleted and/or interrogated with SS-DGNA

3.2 Abbreviations

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

CC	Call Control
CCA	Call Control (functional entity Agent)
DGNA	Dynamic Group Number Assignment
FE	Functional Entity
GSSI	Group Short Subscriber Identity
GTSI	Group TETRA Subscriber Identity
ISI	Inter-System Interface
LS	Line Station
MS	Mobile Station
SS	Supplementary Service

NOTE: The abbreviation SS is only used when referring to a specific supplementary service.

SwMI	Switching and Management Infrastructure

4 Functional model

4.1 Functional model description

The functional model shall comprise the following Functional Entities (FEs):

- FE1 Affected user functional entity;
- FE2 Dynamic Group Number Assignment (DGNA) functional entity in home SwMI and in visited SwMI;
- FE3 Authorized user functional entity.

The following relationships shall exist between these FEs:

- ra between FE1 and FE2;
- rb between FE2 and FE3.

Figure 1 shows these FEs and their relationships.

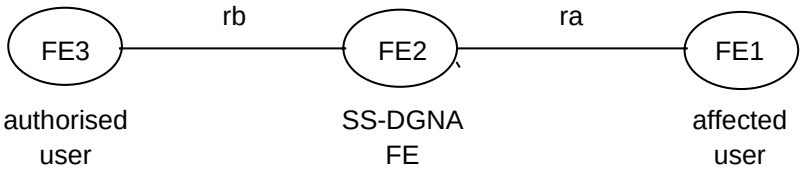

Figure 1: Functional model for SS-DGNA

4.2 Description of FEs

4.2.1 Affected user functional entity, FE1

The FE that serves the affected user for DGNA number assignment, deassignment and interrogations.

4.2.2 SS-DGNA functional entity, FE2

The FE within the network which ensures SS-DGNA operations: assignment, deassignment, definition, deletion, modification and interrogations in the home SwMI of the group for which SS-DGNA has been invoked. This FE also distributes assigment/de-asssignment requests to FEs in visited SwMIs.

4.2.3 Authorized user functional entity, FE3

The FE that serves the authorized user for DGNA number call related and call un-related definitions, deletion, modification and interrogations. Some of the authorized user capabilities may be allocated to the affected user e.g. to interrogate his own groups.

4.2.4 Functional entity FE2 in visited SwMI

The FE within the network which ensures SS-DGNA operations: assignment, deassignment, definition, deletion, modification and interrogations in another than home SwMI of the group for which SS-DGNA has been invoked. This FE also distributes assigment/de-asssignment requests to FEs in that SwMI.

4.3 Relationship to basic call functional model

In case of call related SS-DGNA FE3 shall be collocated with the authorized user CCA when this supplementary service is defined and then invoked.

NOTE: FE1 is not collocated with the affected user CCA because FE1 does not have any function during the definition and invocation of SS-DGNA and the assignment is independent of the call although a call related signalling may be utilized.

In case of call related SS-DGNA FE2 shall be collocated with a CC entity which will provide FE2 with the group composition.

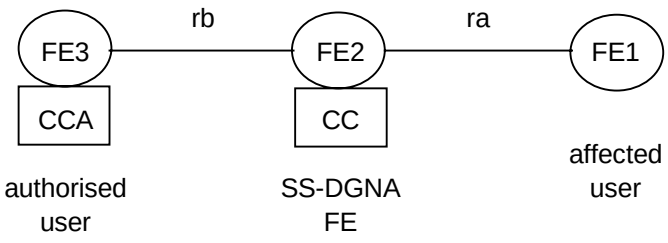

Figure 2: The relationships between the basic service and call related SS-DGNA FEs

5 Information flows

5.1 General on information flows

The definitions of information flows define the informational contents exchanged between the different functional entities.

In the tables listing the elements in information flows, the column headed type indicates which of these elements are mandatory "M", conditional "C" or optional "O".

The response/confirmation information flows for confirmed information flows (e.g definition or interrogation requests) have been named differently from the corresponding request/indication information flow so that the same names can be used for the corresponding (stage 3) PDU messages. However this difference consists only in the addition of the extension "ACK" after the name of the corresponding request/indication information flow.

The details of the element values are described in stage 3 as service primitive parameter values, refer to ETS 300 392-12-22 [3] subclause 5.4.

5.2 Definition of SS-DGNA number

Call related and call unrelated DGNA numbers shall be created using the DEFINE request/indication information flow.

For call unrelated -DGNA number definition, the participants in the group and the corresponding group parameters may be included in this information flow or modification information flow will be used later for completion of the definition.

For the creation of a call related DGNA group, the users currently participating in the group call (but not those nominally in the group and not participating in the call, e.g. because they were not powered on, or they had not attached to the group) shall be implicitly defined as affected users, and the corresponding group parameters shall be implicitly defined as being those of the group call. Thus there is no need to include these users or parameters in the corresponding DEFINE information flow. However, it shall be possible for the authorized user to add affected users to this group in defining their group parameters and/or to change some common group parameters (compared to those of the group call), in explicitly including these users and/or parameters in the DEFINE request/indication information flow used to define the call related DGNA number.

Call related DGNA number definition shall be ended after this single DEFINE request/indication information flow has been acknowledged, i.e. any additional modification shall be part of call unrelated SS-DGNA definition.

5.2.1 DEFINE

DEFINE is a confirmed information flow across relationship rb from FE3 to FE2.

NOTE: The response/confirmation information flow corresponding to the DEFINE request/indication information flow is DEFINE ACK (see subclause 4.1).

The DEFINE request/indication information flow shall be used to define a call unrelated or call related DGNA number, with the possibility in the latter case to add affected users to the DGNA number being defined and/or to change some common group parameters (compared to those of the group call), at the same time. The parameters included in the definition request shall override the call parameters, if any. If a parameter is not given in the request, a default value shall be valid for the DGNA number.

In the case of creation of a SS-DGNA group, the authorized user shall determine the number which shall be included in the DEFINE request/indication information flow, unless as an option, FE2 can allocate it. If this option is supported, the number of the group being defined by SS-DGNA does not need to be included in the DEFINE request/indication information flow: if it has not been included, FE2 shall find a valid group number, make the definition for that number and return it to FE3 in the DEFINE ACK information flow.