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Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT) ï Profil podatkovnih storitev (DSP) ï Izohroni podatkovni nosilec s sledenjem (storitev tipa D, mobilnost razreda 2)

Digital Enhanced Cordless Telecommunications (DECT); Data Services Profile (DSP); Isochronous data bearer services with roaming mobility (service type D, mobility class 2)

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT).

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Date of adoption of this EN:	5 October 2001
Date of latest announcement of this EN (doa):	31 January 2002
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1 Scope

The present document specifies a profile for Digital Enhanced Cordless Telecommunications (DECT) systems conforming to EN 300 175, parts 1 to 7 ([1] to [7]). It is part of a family of profiles aimed at the general connection of terminals supporting non-voice services to a fixed infrastructure, private and public.

The type D service, mobility class 2, as described in the ETR 185 [9] supports Isochronous Data Bearer Services (IDBSs) with mobility and is suitable for transparent transfer of isochronous data streams. It is intended for use in private and public roaming applications. Video telephony, video conferencing and secure telephone services (end-to-end encrypted) over external networks can be considered as applications of IDBS.

Phase 1 of the present document defines an unprotected service offering an unrestricted digital 32 kbit/s data bearer service, strongly based on the Generic Access Profile (GAP) (defined in EN 300 444 [8]), and an unprotected single bearer, multi-rate, rate adaptation service to interwork to synchronous ITU-T Recommendations V.series interfaces.

In addition to the above, the current D.2 service supports an asynchronous version of the unprotected single bearer, multi-rate, rate adaptation service to interwork with asynchronous ITU-T Recommendations V.series interfaces.

Further phases of this profile may additionally provide multiple rate, multibearer support and limited error correction capability for services/applications requiring higher rates and high quality isochronous data transmission.

The present document specifies the requirements on the Physical layer (PHL), Medium Access Control (MAC) layer, Data Link Control (DLC) layer and Network (NWK) layer of DECT. The present document also specifies Management Entity (ME) requirements and generic Interworking Conventions (IC).

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2 References

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

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- 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.

[1] ETSI EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical layer (PHL)".

[3] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETSI EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETSI EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETSI EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8] ETSI EN 300 444: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

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[9] ETSI ETR 185: "Digital Enhanced Cordless Telecommunications (DECT); Data Services Profile (DSP); Profile overview".

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

[11] ITU-T Recommendation V.24 (2000): "List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)".

[12] ITU-T Recommendation V.34 (1998): "A modem operating at data signalling rates of up to 33 600 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits".

[13] ETSI ETS 300 474-1: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP); Profile requirement list and profile specific Implementation Conformance Statement (ICS) proforma; Part 1: Portable radio Termination (PT)".

[14] ETSI ETS 300 474-2: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP); Profile requirement list and profile specific Implementation Conformance Statement (ICS) proforma; Part 2: Fixed radio Termination (FT)".

[15] ETSI EN 300 476-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Protocol Implementation Conformance Statement (PICS) proforma; Part 1: Network (NWK) layer - Portable radio Termination (PT)".

[16] ETSI ETS 300 476-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Protocol Implementation Conformance Statement (PICS) proforma; Part 3: Medium Access Control (MAC) layer - Portable radio Termination (PT)".

[17] ETSI ETS 300 476-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Protocol Implementation Conformance Statement (PICS) proforma; Part 4: Network (NWK) layer - Fixed radio Termination (FT)".

[18] ETSI ETS 300 476-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Protocol Implementation Conformance Statement (PICS) proforma; Part 6: Medium Access Control (MAC) layer - Fixed radio Termination (FT)".

[19] ITU-T Recommendation R.140: "Definitions of essential technical terms in the field of telegraph transmission".

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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 300 444 [8] and the following apply:

bearer service: type of telecommunications service that provides the capability for the transmission of signals between user/network interfaces

NOTE 1: For DECT systems, the Air (Radio) interface provides the bearer services between the DECT Fixed radio Termination and the DECT Portable radio Termination.

isochronous: pertaining to a signal or a time-varying phenomenon characterized by significant instants separated by time intervals having a duration theoretically equal to the duration of a unit interval or to an integral multiple of this duration (ITU-T Recommendation R.140)

mobility class 1: closed user groups, for which terminals are pre-registered off-air with one or more specific Fixed Parts (FP), and establishment of service and user parameters is therefore implicit, according to a profile-defined list

mobility class 2: private and public roaming applications for which terminals may move between FPs within a given domain and for which association of service parameters is explicit at the time of service request

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service: set of functions offered to a user by an organization

synchronous: essential characteristics of time-scales or signals such that their corresponding significant instants occur at precisely the same average rate (not in ITU-T Recommendation R.140)

synchronous transmission: transmission using isochronous signals in which the sending and receiving instruments are operating continuously in a constant time difference between corresponding significant instants (ITU-T Recommendation R.140)

3.2 Abbreviations

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

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
CC	Call Control
C-plane	Control plane
CRC	Cyclic Redundancy Check
Cs	higher layer signalling Channel (slow)
DCE	Data Circuit-terminating Equipment
DIC	DECT Independent Clocking
DLC	Data Link Control
DSP	Data Services Profile
DTE	Data Terminal Equipment
FP	Fixed Part
FT	Fixed radio Termination
GAP	Generic Access Profile
GSM	Global System for Mobile communication
I	higher layer Information channel
IC	Interworking Conventions
ICS	Implementation Conformance Statement
IDBS	Isochronous Data Bearer Service
IE	Information Element
ISDN	Integrated Services Digital Network
IWF	InterWorking Functions
IWU	InterWorking Unit
LA	Location Area
LCE	Link Control Entity
LCN	Logical Connection Number
MAC	Medium Access Control
ME	Management Entity
MM	Mobility Management
MUX	MUltipleX
NWK	NetWorK
PHL	PHysical Layer
PHY	PHYsical
PICS	Protocol Implementation Conformance Statement
PP	Portable Part
ppm	parts per million
PSTN	Public Switched Telephone Network
PT	Portable radio Termination
RAVE	Rate Adaption for V.series Equipment
SAP	Service Access Point
SDU	Service Data Unit
TAF	Terminal Adaptation Functions
TDMA	Time Division Multiple Access
ULEI	U-plane Link Endpoint Identifier
U-plane	User plane

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4 Description of services

4.1 Reference configuration

The reference configuration for this profile shall be as shown in figure 1.

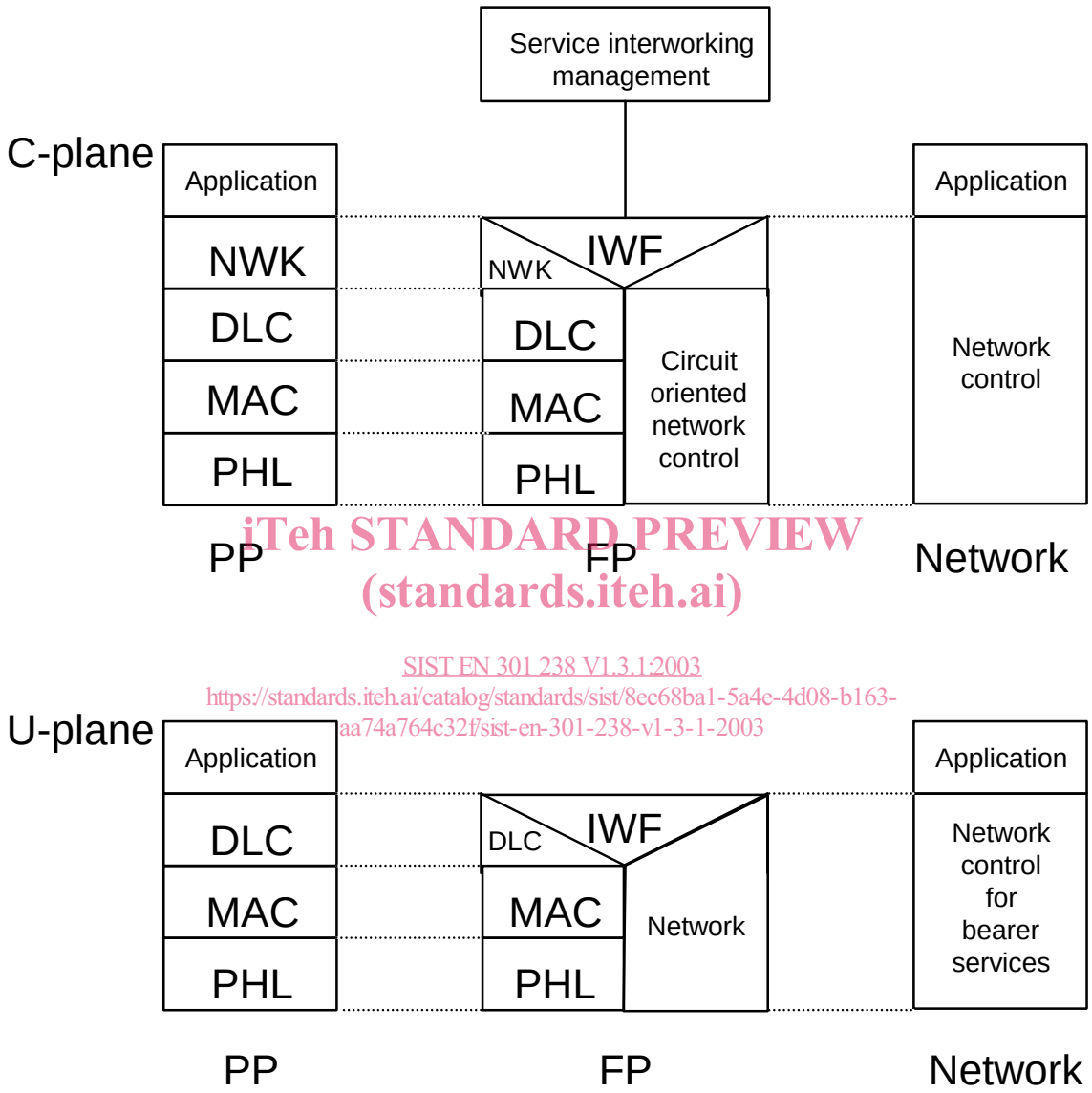

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Figure 1: Profile reference configuration showing interworking to connection-oriented networks via the C-plane and U-plane

4.2 Service objectives

4.2.1 General

The service objectives for the Control plane (C-plane) are those of mobility class 2, described in clause 6.2.2 of ETR 185 [9].

The service objectives for the User plane (U-plane) are listed in clauses 4.2.2 and 4.2.3.

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4.2.2 32 kbit/s unprotected service

The U-plane service objectives for the unprotected service are detailed in table 1.

Table 1: Service objectives of the 32 kbit/s unprotected service

Transfer mode	Circuit mode
Transfer capability	Unrestricted digital
Data structure integrity	semi-octet
Continuous data rate	32 kbit/s
User data protection	none
User data delay	10 ms
Service change and negotiation	optional
Encryption support	mandatory

4.2.3 Unprotected rate adaptation service

The U-plane service objectives for the unprotected rate adaptation service are detailed in table 2.

Table 2: Service objectives of the unprotected rate adaptation service

Transfer mode	Circuit mode
Transfer capability	Unrestricted digital
Data structure integrity	Octet
Continuous data rate	By steps of 2,4 kbit/s up to 28,8 kbit/s; and by steps of 4 kbit/s up to 28,0 kbit/s
User data protection	None
User data delay	15 ms
Service change and negotiation	Optional
Encryption support	Mandatory
Network independent clocking	Supported
In band rate changes	Supported
ITU-T Recommendation V.24 [11] control signalling	Optional
Asymmetric rates	Supported

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5 Physical layer (PHL) requirements

The requirements of the GAP, defined in EN 300 444 [8], clause 11 shall apply, with the following exception:

- in clause 11.1, the sentence "To carry the speech information, full slots shall be used" shall be replaced by "Full slots shall be used".

6 MAC layer requirements

For both the services, the following shall apply:

a) bit a12 of the Fixed Part Capabilities message (defined in EN 300 175-3 [3], clause 7.2.3.4) shall be set to 1; and

b) the MAC Extended Fixed Part Capabilities message (defined in EN 300 175-3 [3], clause 7.2.3.5) shall be used and bit a44 of Extended capabilities field shall be set to 1.

NOTE: The Extended Fixed Part Capabilities message is broadcast by a FP to indicate the support of the D profile.

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6.1 32 kbit/s unprotected service

The requirements of the GAP, defined in EN 300 444 [8], clause 10 shall apply.

6.2 Unprotected rate adaptation service

The requirements of GAP, defined in EN 300 444 [8], clause 10 shall apply, with the following additions/variations (a to j):

a) replace clause 10.1 with the following text:

10.1 General

The FT and PT shall support In_normal_delay service as defined in EN 300 175-3 [3], clause 10.8.3.2.

The FT and PT shall support frame format as follows:

- full slot mode defined in EN 300 175-3 [3], clause 4.2.2;
- D-field mapping shall support the D-00 and D32 as defined in EN 300 175-3 [3], clause 6.2.1.1.

The FT and PT shall support A-field mapping A-MAP.

The FT and PT shall understand all A field tail identifications (a0, a1 and a2) in the header field as defined in EN 300 175-3 [3], clauses 6.2.1.2 and 7.1.2.

The FT and PT shall support the following B-field field identifications (a4, a5 and a6) as defined in EN 300 175-3 [3], clause 7.1.4:

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- U-type: In, "000"B;
- no B-field, "111" B (shall only be used for dummy bearers).

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The FT and PT shall support T-MUX as defined in EN 300 175-3 [3], clause 6.2.2.1.

The FT and PT shall support B-field multiplex E/U MUX type U32a.

The FT and PT shall support scrambling as defined in EN 300 175-3 [3], clause 6.2.4.

The FT and PT shall provide R-CRC generation and checking as defined in EN 300 175-3 [3], clause 6.2.5.2. The FT and PT shall provide X-CRC generation and checking as defined in EN 300 175-3 [3], clauses 6.2.5.3 and 6.2.5.4.

The PT shall support the normal duty cycle idle_locked mode as defined in EN 300 175-3 [3], clauses 11.3 and 4.3.1.

The FT and PT shall support primary scan procedure as defined in EN 300 175-3 [3], clause 11.8.

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b) replace clause 10.2.3 with the following text:

10.2.3 Q_T - FP capabilities

If the bit a33 in higher layer capabilities (see table 102) is set to value "1", the PT may assume the values as indicated in table 91 to be set to value "1". The FT shall set the respective values to "1".

Table 91: Values used within FP capabilities

MAC message	Field within the message	Standard values within the MAC message	Normative action/comment
<<FP capabilities>>			
	<QH>	3	
	<a12>	1	Extended FP info
	<a17>	1	Full slot
	<a24>	1	Advanced A-field set-up
	<a28>	1	In normal delay

Higher layer information: the management entity in the FP supplies the MAC layer with a 16-bit SDU via the Management Entity (ME) SAP. At the PT the MAC layer passes the 16-bits out through the ME SAP to the management entity.

For the setting of the higher layer information bits, see clause 13.6.

c) add the following new clause 10.2.5 with the following text:

10.2.5 Q_T - Extended FP capabilities

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The procedure shall be performed as defined in clauses 7.2.3.5 and 7.2.3.1 of EN 300 175-3 [3].

Table 92a: Values used within Extended FP capabilities

SIST EN 301 238 V1.3.1:2003
https://standards.iteh.ai/catalog/standards/sist/8ec68ba1-5a4e-4d08-b163-aa74a764e32f/sist-en-301-238-v1-3-1-2003

MAC message	Field within the message	Standard values within the MAC message	Normative action/comment
<<Extended FP capabilities>>			
	<QH>	4	
	<a44>	1	D profile