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ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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Foreword

This European Telecommunication Standard (ETS) has been prepared by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS has been produced in the light of:

- a) Videotex services being implemented in different countries using different data syntax profiles (as described in ETS 300 072 [32]);
- b) the International Radio Consultative Committee (CCIR) expressing the view that terminal equipment compatibility should exist between broadcast Teletext ¹⁾ systems for general reception and public network-based database systems;
- c) the right of different countries to use their existing systems;
- d) the possible requirement for transcoding and/or conversion to permit interworking between Videotex services in different countries;
- e) interworking between Videotex services may be provided by using different types of networks such as the Public Switched Telephone Network (PSTN), Packet Switched Public Data Network (PSPDN), Circuit Switched Public Data Network (CSPDN), Integrated Services Digital Network (ISDN), etc;
- f) the need for Videotex interworking protocols to offer a large degree of compatibility with those protocols used in other telematic services.

This ETS provides a number of technical provisions to enable the interworking of different Videotex services at the international level, identifies the parameters required to communicate with Videotex terminals and certain technical recommendations for the potential interworking of other telematic services with Videotex services.

This ETS is also closely related , and normatively references, to three other ETSs (ETSs 300 072 [32], 300 106 [33] and 300 107 [34]). Full details are given in Clause 2 (Normative references) of this Standard.

1) The term "Teletex" has not yet been definitively adopted by the CCIR.

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1 Scope

This ETS describes the characteristics of coded information that is exchanged between countries participating in the international interactive Videotex service.

Videotex systems are text communication systems having, in addition, the capability of a given level of pictorial representation and a repertoire of display attributes. The text and pictures obtained are intended to be displayed using the current television (TV) raster standards of the different countries.

Different data syntax profiles are offered as a choice for the service providers to implement their services. Substantial degrees of compatibility exist between these options, but some transcoding and/or conversion may be necessary to facilitate interworking.

For the purpose of the international service, different data syntax profiles have been identified in ETS 300 072 [32]:

- a) Profile 1;
- b) Profile 2;
- c) Profile 3;
- d) Profile 4;
- e) "ASCII";
- f) other data syntaxes are for further study.

NOTE 1: "ASCII" uses the International Reference Version of the character set of the CCITT Recommendation T.50 and additional control functions for characters specified in ISO standard 6429.

NOTE 2: The use of this non-videotex data syntax is provisional and is pending the result of the work undertaken in the ETSI TE1/VT group as well as in CCITT.

2 Normative references

This ETS incorporates by dated or 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] CCITT Recommendation X.3 (1988): "Packet assembly disassembly facility (PAD) in a public data network".
- [2] CCITT Recommendation X.25 (1988): "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to Public Data Networks by dedicated circuit".
- [3] CCITT Recommendation X.28 (1988): "DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country".
- [4] CCITT Recommendation X.29 (1988): "Procedures for the exchange of control information and user data between a packet assembly/disassembly (PAD) facility and a packet mode DTE or another PAD".
- [5] CCITT Recommendation X.75 (1988): "Packet-switched signalling system between public networks providing data transmission services".

- [6] CCITT Recommendation X.200 (1988): "Reference model of open systems interconnection for CCITT applications".
- [7] CCITT Recommendation X.213 (1988): "Network service definition for open systems interconnection for CCITT applications".
- [8] CCITT Recommendation X.214 (1988): "Transport service definition for open systems interconnection for CCITT applications".
- [9] CCITT Recommendation X.224 (1988): "Transport protocol specification for open systems interconnection for CCITT applications".
- [10] CCITT Recommendation X.215 (1988): "Session service definition for open systems interconnection for CCITT applications".
- [11] CCITT Recommendation X.225 (1988): "Session protocol specification for open systems interconnection for CCITT applications".
- [12] CCITT Recommendation X.216 (1988): "Presentation service definition for open systems interconnection for CCITT applications".
- [13] CCITT Recommendation X.226 (1988): "Presentation protocol specification for open systems interconnection for CCITT applications".
- [14] CCITT Recommendation X.217 (1988): "Association control service element service definition for open systems interconnection for CCITT applications".
- [15] CCITT Recommendation X.227 (1988): "Association control service element protocol specification for open systems interconnection for CCITT applications".
- [16] CCITT Recommendation T.90 (1988): "Characteristics and protocols for terminal for telematics services in ISDN".
- [17] CCITT Recommendation T.101 (1988): "International interworking for Videotex services".
- [18] CCITT Recommendation T.400 (1988): "Introduction to document transfer, architecture and manipulation".
- [19] CCITT Recommendation T.411 (1988): "Open document architecture (ODA) and interchange format - Introduction and general principles".
- [20] CCITT Recommendation T.412 (1988): "Open document architecture (ODA) and interchange format - Document structures".
- [21] CCITT Recommendation T.414 (1988): "Open document architecture (ODA) and interchange format -Document profile".
- [22] CCITT Recommendation T.415 (1988): "Open document architecture (ODA) and interchange format - Open document interchange format (ODIF)".
- [23] CCITT Recommendation T.431 (1988): "Document transfer and manipulation (DTAM) - Introduction and general principles".
- [24] CCITT Recommendation T.432 (1988): "Document transfer and manipulation (DTAM) - Service definitions".
- [25] CCITT Recommendation T.433 (1988): "Document transfer and manipulation (DTAM) - Protocol specifications".
- [26] CCITT Recommendation T.441 (1988): "Document transfer and manipulation (DTAM) - Operational structure".

- [27] CCITT Recommendation T.504 (1988): "Document application profile for videotex interworking".
- [28] CCITT Recommendation T.523 (1988): "Communication application profile DM-1 for videotex interworking".
- [29] CCITT Recommendation T.541 (1988): "Operational application profile for videotex interworking".
- [30] CCITT Recommendation T.564 (1988): "Gateway characteristics for videotex interworking".
- [31] CEPT Recommendation T/SF-59: "Videotex Service".
- [32] ETS 300 072: "Terminal Equipment (TE); Videotex presentation layer protocol ; Videotex presentation layer data syntax".
- [33] ETS 300 106: "Terminal Equipment (TE) ; International Videotex interworking between a terminal and a host".
- [34] ETS 300 107: "Terminal Equipment (TE) ; International Videotex interworking between gateways".
- [35] CCITT Recommendation T.70 (1988): "Network independent basic transport service for the telematic services".

3 Abbreviations

The following abbreviations apply:

ACSE	Association Control Service Element
CCITT	International Telegraph and Telephone Consultative Committee
CCIR	International Radiocommunication Consultative Committee
CEPT	Conférence Européenne des Postes et Télécommunications
CSPDN	Circuit Switched Public Data Network
DATAM	Document Architecture Transfer And Manipulation
DTAM	Document Transfer And Manipulation
ETS	European Telecommunication Standard
ISDN	Integrated Services Data Network
OSI	Open Systems Interconnection
PAD	Packet Assembly/Disassembly
PDN	Public Data Network
PSPDN	Packet Switched Public Data Network
PSTN	Public Switched Telephone Network
VIU	Videotex Interface Unit
VSU	Videotex Service Unit

4 Interworking between Videotex services

4.1 General

It is the responsibility of service providers to decide on which network(s) the Videotex service(s) are to be provided.

Several possibilities are considered below:

- a) Videotex service operated on the PSTN; the communication between a Videotex terminal and a Videotex host computer is established over the PSTN;
- b) Videotex service operated on the PSTN and a public data network (PDN) (generally a PSPDN); the communication between a Videotex terminal connected to the PSTN and a Videotex host computer connected to a PDN is established via a Videotex access point or a Videotex service centre interfacing between both networks.
- c) Other possibilities (CSPDN, ISDN, etc.) may also be considered.

International interworking between Videotex services via gateways and connected to any network (PSTN, PSPDN, CSPDN, ISDN, etc.) may be possible. Such interworking allows a Videotex terminal pertaining to a Videotex service to access a Videotex host computer pertaining to another Videotex service. International interworking between a Videotex terminal in one country and a Videotex host in another country may also be possible. All international data exchange should comply with the specifications contained in this ETS (the service description is given in CEPT Recommendation T/SF-59 [31]).

5 International interworking of Videotex services

Videotex interworking allows a Videotex terminal in a given country to interact in real time with a Videotex application located in a different country.

International interworking between Videotex services should use those functions that are defined in the data syntax profile implemented by the administrations concerned.

5.1 International interworking configurations

The various configurations for international interworking are defined in CEPT Recommendation T/SF-59 [31]. The two major classes of interworking are defined in subclauses 5.1.1 and 5.1.2.

5.1.1 Gateway to gateway interworking

This class of interworking involves communication between gateways located in each country. The protocols and data syntaxes for this class of interworking are specified in Clause 6.

5.1.2 Terminal to host interworking

This class of interworking involves communication between a terminal and a host located in different countries, either directly or through a Packet Assembly/Disassembly (PAD) or a conversion unit situated in the country where the terminal is located. In this context, a host should be interpreted either as a single host or as a national Videotex service (network). Several cases have been identified. The protocols and data syntaxes for the various cases of this class of interworking are specified in Clause 7.

6 International interworking between gateways

The international interworking between gateways allows a Videotex terminal located in country A to access the Videotex services located in country B via the Videotex service of country A. The configuration for the international interworking between gateways is described by figure 1 below:

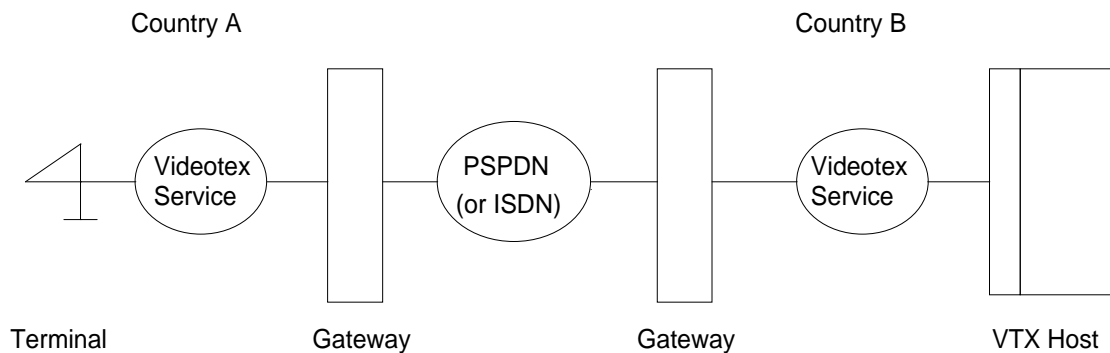


Figure 1: Gateway to Gateway interworking configuration

6.1 International interworking at network level

International interworking between Videotex services should preferably take place between networks of the same type when these networks are provided by both service providers involved (PSPDN, CSPDN, ISDN and leased lines, etc...).

The network service definition of Open Systems Interconnection (OSI) for CCITT application is defined in CCITT Recommendation X.213 [7].

When the interworking takes place between Videotex services operating on different types of network, CCITT Recommendation X.75 [5] should apply. Interworking over ISDN may be based on CCITT Recommendation T.90 [16] or bilateral agreement.

6.2 Transport layer

The transport layer service of OSI for CCITT applications is defined in CCITT Recommendation X.214 [8].

The transport protocol of OSI for CCITT applications is specified in CCITT Recommendation X.224 [9].

Both classes 0 (corresponding to CCITT Recommendation T.70 [35]) and 2 may be used.

When class 0 is selected, then the protocol used is fully compatible with CCITT Recommendation T.70 [35]. When class 2 is selected, explicit flow control shall be used.

6.3 Session layer

This session layer service of OSI for CCITT applications is defined in CCITT Recommendation X.215 [10]. The session protocol of OSI for CCITT applications is specified in CCITT Recommendation X.225 [11].

The use of the session protocols by Videotex interworking is defined in CCITT Recommendation T.523 [28].

6.4 Presentation layer

6.4.1 Presentation protocol

The presentation layer service of OSI for CCITT applications is defined in CCITT Recommendation X.216 [12]. Presentation protocol of OSI for CCITT applications is specified in CCITT Recommendation X.226 [13].

The use of the presentation protocols by Videotex interworking is defined in CCITT Recommendation T.523 [28].

6.4.2 Coding of Videotex information

Coding of the contents of the display-data element:

The Videotex content conforms to one of the several different data syntax profiles. There are four existing data syntax profiles defined in ETS 300 072 [32], Profile 1, Profile 2, Profile 3 and Profile 4, and there is "ASCII" as stated in Clause 1.

Different service providers implementing a Videotex service may use one or more of the above mentioned data syntax profiles. The mechanism of switching between the different data syntax profiles is described in ETS 300 072 [32]. If two countries implement the same data syntax profile, then Videotex interworking between the two countries can use that same data syntax profile.

If one country implements one data syntax profile and another country implements a different data syntax profile, then Videotex interworking between the two countries shall use one of the two data syntax profiles with transcoding/conversion performed either at the originating or at the destination country.

6.5 Application layer

The Association Control Service Element (ACSE) of OSI for CCITT applications is defined in CCITT Recommendation X.217 [14]. The ACSE protocol of OSI for CCITT applications is specified in CCITT Recommendation X.227 [15].

The application layer for Videotex interworking makes use of CCITT Recommendations Recommendation T.400 [18], T.411 [19], T.412 [20], T.414 [21], and T.415 [22].

The application layer for Videotex interworking makes use of Document Transfer And Manipulation (DTAM) especially of DTAM service and protocol described in CCITT Recommendations T.431 [23], T.432 [24] and T.433 [25].

The application layer for Videotex interworking makes use of operational structures described in CCITT Recommendation T.441 [26].

CCITT Recommendation T.564 [30] describes the Videotex interworking application profile and the gateway characteristics.

CCITT Recommendation T.504 [27] describes the document application profile for Videotex interworking.

CCITT Recommendation T.523 [28] describes the communication application profile for Videotex interworking.

CCITT Recommendation T.541 [29] describes the operational application profile for Videotex interworking.

6.6 Relationship with Document Architecture Transfer And Manipulation (DATAM)

The relationships with the Open Document Architecture (CCITT Recommendation T.412 [20]) and the document interchange format (CCITT Recommendation T.415 [22]) are expressed in ETS 300 107 [34].

7 International interworking between a terminal and a host

Details of terminal to host protocols are described in ETS 300 106 [33].

7.1 Access via PSTN or ISDN bearer service

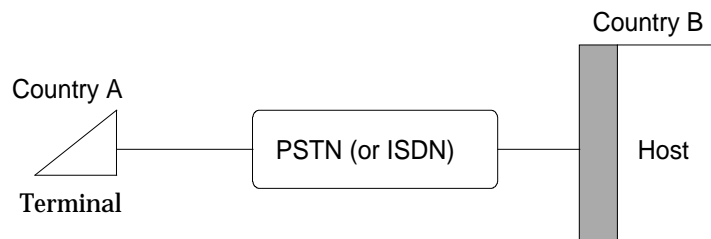


Figure 2: Access via PSTN or ISDN bearer service

In this configuration, the terminal uses the international PSTN (respectively the ISDN bearer services) to reach the host.

On the international link, the following protocols should be used:

- layers 1-3 via PSTN: the protocols defined by the host;
- layers 1-3 via ISDN bearer service: CCITT Recommendation T.90 [16];
- layers 4-7: the protocols (if any) defined by the host located in country B;
- data syntax: data syntax defined by the host in country B;
- dialogue/service functions: functions defined by the host in country B.

7.2 Access via PSPDN or ISDN bearer service

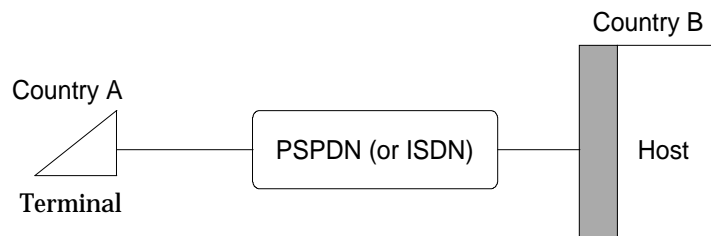


Figure 3: Access via PSPDN or ISDN bearer service

In this configuration, the terminal uses the international PSPDN (respectively the ISDN bearer services) to reach the host. On the international link, the following protocols should be used:

- layers 1-3 via PSPDN: CCITT Recommendation X.75 [5];
- layers 1-3 via ISDN bearer service: CCITT Recommendation T.90 [16];
- layers 4-7: the protocols (if any) defined by the host located in country B;
- data syntax: data syntax defined by the host in country B;
- dialogue/service functions: functions defined by the host in Country B.

7.3 Access via PSPDN/PAD

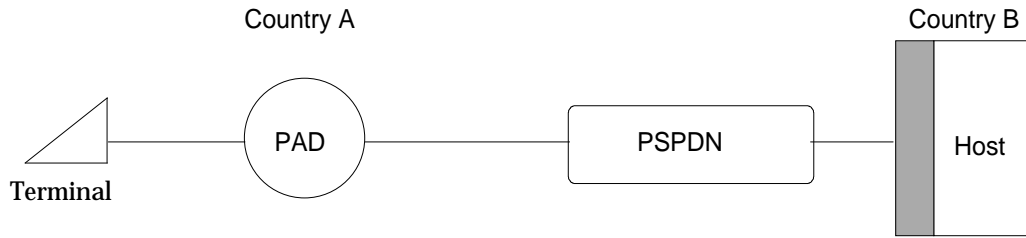


Figure 4: Access via PSPDN/PAD

In this configuration, the terminal is connected to a PAD which gives access to the international PSPDN; both the terminal and the PAD are located in country A. The type of connection between the Terminal and the PAD shall be a national matter (for example the PSTN or a leased line).

The host of country B may be accessed through the international PSPDN. The type of connection between the host and the national PSPDN shall be a national matter (for example a leased line).

On the international link, the following protocols should be used:

- layers (1-3): CCITT Recommendations X.75 [5];
- above layer 3 : CCITT Recommendations X.29 [4] and X.3 [1];
- data syntax: data syntax defined by the host located in country B;
- dialogue/service functions: functions defined by the host in country B.

7.4 Access via PSPDN through a Videotex Interface Unit (VIU) ⁽²⁾

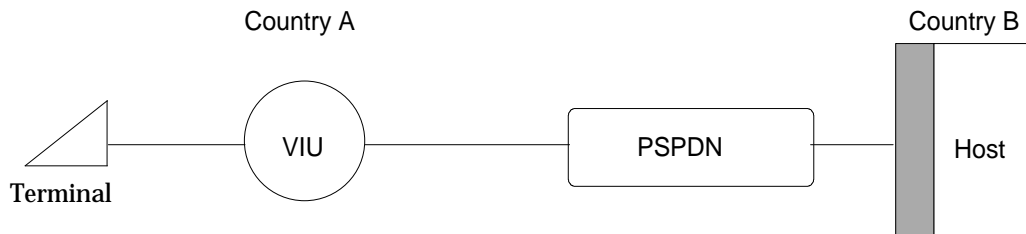


Figure 5: Access via PSPDN through a VIU

In this configuration, the terminal is connected to a Videotex Interface Unit (VIU) which gives access to the international PSPDN; both the terminal and the VIU are located in country A. The type of connection between the Terminal and the VIU shall be a national matter (for example the PSTN or a leased line). The VIU performs the following functions: it supports terminals and converts between data-syntax profiles and/or performs profile switching. It shall be the responsibility of the service provider of country A to decide to set up and to decide how a VIU is implemented: it may be realised as a separate system or integrated with existing equipment (PAD or Videotex access point for example).

The host of country B may be accessed through the international PSPDN. The type of connection between the host and the national PSPDN shall be a national matter (generally a leased line).

2) Some other networks (CSPDN, ISDN) may be used between the VIU and the Host. The use of these networks is pending the results of the CEPT SF group.

On the international link, the following protocols should be used:

- layers (1-3): CCITT Recommendation X.75 [5];
- above layer 3 : CCITT Recommendations X.29 [4] and X.3 [1].

Alternatively CCITT Recommendation X.200 [6] based protocols can be used. For this case, application profiles shall need to be defined on the basis of the relevant CCITT Recommendations. This is for further study.

- data syntax: the data syntax defined by the host;
- dialogue/service functions: those defined by the host.

7.5 Access via PSPDN through a Videotex Service Unit (VSU)

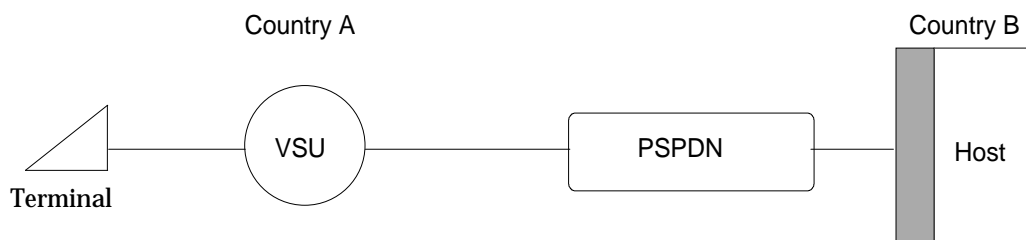


Figure 6: Access via PSPDN through a VSU

In this configuration, the terminal is connected to a VSU which gives access to the international PSPDN; both the terminal and the VSU are located in country A. A VSU is a VIU which is also in charge of handling application charging and accounting and user identification and/or authorization. It shall be the responsibility of the service provider of country A to decide to set up a VSU and to decide how a VSU, if any, shall be implemented: it may be realized as a separate system or integrated with existing equipment (PAD, Videotex access point or Videotex service centre).

The host in country B may be reached through the international PSPDN. The type of connection between the host and the national PSPDN is a national matter (generally a leased line).

On the international link, the following protocols should be used:

- layers (1-3): CCITT Recommendation X.75 [5];
- above layer 3 : CCITT Recommendation X.200 [6] based protocols.

For this case, application profiles shall need to be defined on the basis of the relevant CCITT Recommendations, this is for further study. Alternatively CCITT Recommendation X.29 [4] plus CCITT Recommendation X.3 [1] may be used. The use of the extension of CCITT Recommendation X.29 [4] for Telematic applications in the specific case of Videotex is described in ETS 300 106 [33].

- data syntax: the data syntax defined by the host;
- dialogue/service functions: those defined by the host.

History

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