The drawings contained in this Recommendation have been done in Autocad

Recommendation T.101

INTERNATIONAL INTERWORKING FOR VIDEOTEX SERVICES

(Malaga—Torremolinos, 1984; amended at Melbourne, 1988)

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Note — Annexes B, C and D will not be published in Fascicle VII.5 (T—Series Recommendations) but will be issued as a separate publication. *Annex A* — Interworking data syntax (IDS) described in ASN.1 (Recommendation X.208)

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Preamble

The CCITT,

considering

(a) that Videotex services have been implemented in different countries/regions using different data syntaxes referred to as data syntax I, data syntax II and data syntax III, which have an equal status;

(b) that the CCIR is studying standards for broadcast Teletext services for general reception and has expressed a view that it is desirable that terminal equipment compatibility should exist between broadcast Teletext systems for general reception and public network—based data base systems;

(c) that different countries/regions are entitled to use their existing systems;

(d) that interworking between Videotex services in different countries may require transcoding and/or conversion;

(e) that the 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) that Videotex interworking protocols should offer a large degree of compatibility with protocols used in other telematic services,

recommends

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1) *Note* — Annexes B, C and D will not be published in Fascicle VII.5 (T-Series Recommendations) but will be issued as a separate publication.

that the following technical provisions be applied for international interworking for Videotex services.

1 Purpose and scope of the Recommendation

1.1 *Purpose*

The purpose of this Recommendation is:

a) to facilitate the interworking of different Videotex services;

b) to identify parameters needed to communicate with Videotex terminals;

c) to provide technical recommendations desirable for potential interworking of other telematic services with Videotex services.

1.2 *Scope*

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

1.2.2 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 the pictures obtained are intended to be displayed using the current television (TV) raster standards of the different countries.

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

1.2.4 For the purpose of the international service, different data syntaxes have been identified:

a) interworking data syntax;

b) data syntax I;

c) data syntax II;

d) data syntax III;

e) other syntaxes are for further study.

2 Interworking between Videotex services — General

2.1 It is the possibility of Administrations to decide in which network(s) the Videotex service(s) are to be provided.

2.2 Serveral possibilities are considered below:

2.2.1 Videotex service operated on the PSTN; the communication between a Videotex terminal and a Videotex host computer is established over the PSTN.

2.2.2 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 prior or a Videotex service center interfacing between both networks.

2.2.3 Other possibilities (CSPDN, ISDN, etc.) could also be considered.

2.3 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 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 Recommendation. (See Recommendation F.300 for the service description).

3 International interworking of Videotex service

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

3.2 International interworking between Videotex services should use those functions that are defined in the data syntaxes implemented by the Administrations concerned: data syntaxes I, II and III defined in Annexes.

3.3 *International interworking configurations*

The various configurations for international interworking are defined in Recommendation F.300. The two major classes of interworking are defined below.

3.3.1 *Gateway to gateway interworking*

This class of interworking involves communication between gateways located in each country and where all the data handling processes involved by the interworking are performed. The protocols and data syntaxes for this class of interworking are specified in § 4.

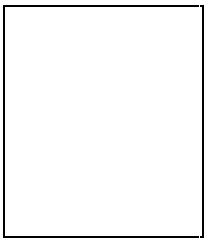
3.3.2 *Terminal to host interworking*

This class of interworking involves communication between a terminal and a host located in different countries, either directly or through a conversion unit situated in the country where the terminal is located. Several cases have been identified. The protocols and data syntaxes for the various cases of this class of interworking are specified in § 5.

4 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 a Videotex service of country A. The configuration for the international interworking between gateways is described by Figure 1/T.101:

Fig. 1/T.101/TO803410—89 = 3 cm



4.1 *International interworking at network level*

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

4.1.2 The network service definition of open systems interconnection for CCITT application is defined in Recommendation X.213.

4.1.3 When the interworking takes place between Videotex services operated on different types of network, Recommendation X.75 should apply. Interworking with ISDN should be in accordance with Recommendation T.90.

4.2 *Transport layer*

The transport layer service of open systems interconnection for CCITT applications is defined in Recommendation X.214.

The transport protocol of open systems interconnection for CCITT applications is specified in Recommendation X.224.

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

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

4.3 *Session layer*

This session layer service of open systems interconnection for CCITT applications is defined in Recommendation X.215. The session protocol of open systems interconnection for CCITT applications is specified in Recommendation X.225.

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

4.4 *Presentation layer*

4.4.1 *Presentation protocol*

The presentation layer service of open systems interconnection for CCITT applications is defined in Recommendation X.216. Presentation protocol of open systems interconnection for CCITT applications is specified in Recommendation X.226.

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

4.4.2 *Coding of Videotex information*

Coding of the contents of the display—data element

The Videotex content conforms to one of the several different data syntaxes. A data syntax, referred to as interworking data syntax, is described in Annex A. There are three existing data syntaxes, based on Recommendation T.50 and referred to as data syntax I, data syntax II and data syntax III. They are described in Annex B, Annex C and Annex D respectively. All the four annexes form an integral part of this Recommendation.

Different Administrations implementing a Videotex service may use one of the three above data syntaxes.

If two countries implement the same data syntax, then Videotex interworking between the two countries can use that same data syntax.

If one country implements one data syntax and another country implements a different data syntax, then Videotex interworking between the two countries can either:

i) use the interworking data syntax as the intermediary syntax. Transcoding/conversion into and from the interworking data syntax by the two countries will be required; or

ii) use one of the two data syntaxes with transcoding/conversion performed either at the originating or at the destination country.

For identification of the particular in—use data syntax (I or II or III), the designation and invocation of the "complete code" escape sequence may be used:

ESC 2/5 4/3 for data syntax I

ESC 2/5 4/4 for data syntax II

ESC 2/5 4/1 for data syntax III

The "complete code" environment will be terminated either by the sequence:

ESC 2/5 4/0

or by the designation and invocation of any other complete code.

4.5 *Application layer*

The association control service element (ACSE) of open systems interconnection for CCITT applications is defined in Recommendation X.217. The association control service element (ACSE) protocol of open systems interconnection for CCITT applications is specified in Recommendation X.227.

The application layer for Videotex interworking makes use of the following Recommendations:

— Recommendation T.400: Introduction to document architecture, transfer and manipulation

— Recommendation T.411: Open document architecture (ODA) and interchange format; Introduction and general principles

— Recommendation T.412: Open document architecture (ODA) and interchange format; Document structures

— Recommendation T.414: Open document architecture (ODA) and interchange format; Document profile

— Recommendation T.415: Open document architecture (ODA) and and interchange format; Document interchange format (ODIF).

The application layer for Videotex interworking makes use of DTAM (document transfer and manipulation) service and protocol described in Recommendations T.431, T.432 and T.433.

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

Recommendation T.564 describes the Videotex interworking application profile and the gateway characteristics.

Recommendation T.504 describes the document application profile for Videotex interworking.

Recommendation T.523 describes the communication application profile for Videotex interworking.

Recommendation T.541 describes the operational application profile for Videotex interworking.

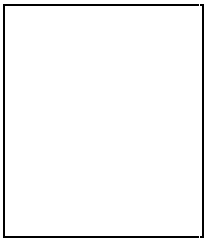
4.6 *Relation with DTAM/ODA*

The relations with the document architecture (Recommendation T.412) and the document interchange format (see Recommendation T.415) are expressed through the content architecture class attributes, and the content portion attributes are described in §§ 6 and 7.

5 International interworking between a terminal and a host

5.1 *Access via PSTN or ISDN bearer service*

Fig. T.101/TO803420—89 = 4 cm

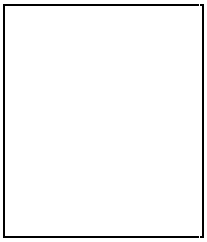


In this configuration, the terminal uses the international PSTN (respectively the ISDN bearer services) to reach the host. On the international link, the following protocols should be used:

layers 1 to 3 via PSTN:	the protocols defined by the host;
layers 1 to 3 via ISDN bearer service[2] :	Recommendation T.90;
layers 4 to 7:	the protocols (if any) defined by the host located in country B;
data syntax:	data syntax defined by the host;
dialogue/service functions:	functions defined by the host.

5.2 *Access via PSPDN or ISDN bearer service*

Fig. T.101/TO803430—89 = 4 cm

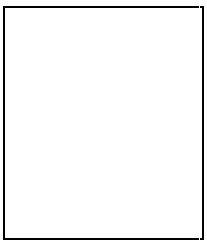


In this configuration, the terminal uses the international PSPDN (respectively the ISDN bearer services) to reach the host. On the international link, the following protocols should be used:

layers 1 to 3 via PSPDN:	Recommendation X.75;
layers 1 to 3 via ISDN bearer service[2]:	Recommendation T.90;
layers 4 to 7:	the protocols (if any) defined by the host located in country B;
data syntax:	data syntax defined by the host;
dialogue/service functions:	functions defined by the host.

5.3 *Access via PSPDN/PAD*

Fig. T.101/TO803440—89 = 4 cm



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

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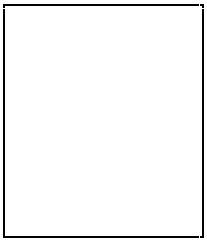
[2] The protocols to be used in the ISDN Videotex teleservice are for further study.

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

layers (1 to 3):	Recommendation X.75;
above layer 3: Recommendation X.29 +	Recommendation X.3;
data syntax:	data syntax defined by the host located in country B;
dialogue/service functions:	functions defined by the host.

5.4 *Access via PSPDN through a VIU*

Fig. T.101/TO803450—89 = 4 cm



In this configuration, the terminal is connected to a VIU (Videotex interface unit) 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 is a national matter (generally the PSTN or a leased line). The VIU performs two functions: it supports terminals and converts data syntaxes. It is up to the Administration of country A to decide how a VIU is implemented: it may be realized as a separate system or integrated with an existing equipment (PAD or Videotex access point for example).

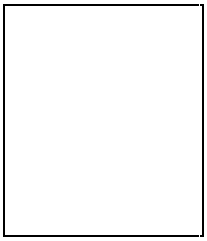
The host country B may be accessed through the international PSPDN. The type of connection between the host and the national PSPDN is a national matter (generally a leased line).

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

layers (1 to 3):	Recommendation X.75;
above layer 3:	Recommendation X.29 + Recommendation X.3. Alternatively Recommendation X.200 based protocols can be used. For this case, application profiles will need to be defined in T.500 Series of Recommendation. This is for further study.
data syntax:	the data syntax defined by the host located in country B;
dialogue/service functions:	those defined by the host.

5.5 *Access via PSPDN through a VSU*

Fig. T0803460—89 = 4 cm



In this configuration, the terminal is connected to a VSU (Videotex service unit) 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 charge and accounting. It is up to Administration of country A to decide to set up or not a VSU and to decide how a VSU, if any, is to be implemented: it may be realized as a separate system or integrated with an existing equipment (PAD, Videotex access point or Videotex service center).

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 to 3):	Recommendation X.75,
above layer 3:	Recommendation X.200 based protocols.
	For this case applications profiles need to be defined in the T.500 Series. This is for further study.
	Alternatively Recommendation X.29 plus Recommendation X.3 may be used. Extensions (Application rules) to Recommendation X.29 are necessary (see § 5.6);
data syntax:	the data syntax defined by the host located in country B;
dialogue/service functions:	those defined by the host.

5.6 *Application rules for X.29 to support administrative functions*

When an international communication is established via a VSU using Recommendation X.29, X.29 Videotex commands may be used to allow application charges (if any) to be passed from the host to the VSU.

Videotex commands should be sent in complete packet sequences with the Q bit set to one.

Videotex commands use a T(ype)—L(ength)—V(alue) encoding. Fixed length commands do not require any length indicator. When used, length indicator is coded on two bytes and defines the total length in bytes of the V field.

In order to distinguish Videotex commands from PAD commands as currently defined by Recommendation X.29, the type value of a Videotex command is defined with the most significant bit set to one.

The following values are proposed to support the exchange of charging of international connections:

— Administration (99H) L2 charging (82H), L2 charging—parameter.

The charging parameter may take either the value service—operation (80H) or the value application—operation (81H); both values may be present within the same charging parameter:

— service—operation (80H) L1 service—parameter

— application—operation (81H) L1 application parameter.

The service parameter is time dependent and may correspond either to the amount period (80H) or to the duration of the period (81H) or to a combination of them:

— amount (80H) L1 value

— period (81H) L1 value.

The application parameter may be frame dependent (80H), time dependent (81H) or transaction dependent (82H) or a combination of them:

— frame (80H) L1 value

— time (81H) L1 charging—on—time—parameter

— transaction (82H) L1 value.

The charging—on—time parameter is organized as the service parameter.

L1 is an acronym for a length coded on one byte.

L2 is an acronym for a length indicator coded on two bytes.

The following depicts the coding mechanism:

Administration L2 Charging L2 (Service) (Application)

(99H) (82H)

(Service) ::= Service L1 (Amount L1 value) (Period L1 value)

(80H) (80H) (81H)

(Application) ::= Application L1 (Frame) (Time) (Transaction)

(81H)

(Frame) ::= Frame L1 value

(80H)

(Time) ::= Time L1 (Amount L1 value) (Period L1 value)

(81H) (80H) (81H)

(Transaction) ::= Transaction L1 value

(82H)

6 Content architecture class attributes

6.1 *Content architecture class*

The value of the attribute "content architecture class" of a basic component description that conforms to this Recommendation T.101 is a ASN1 object identifier with the value.

{ 0 1 8 16 3 }

6.2 *Content type*

The content architecture class attribute "content type" cannot be used to specify the content architecture class defined in this Recommendation.

7 Content portion attributes

7.1 *Type of coding*

Classification	Defaultable
Applicability	Videotex content architecture class
Structure	ASN1 object identifier
Permissible values	ASN1 object identifier

{ 0 1 8 16 4 } for “IDS encoding”
{ 0 1 8 16 5 } for “Data syntax I encoding”
{ 0 1 8 16 6 } for “Data syntax II encoding”
{ 0 1 8 16 7 } for “Data syntax III encoding”

Default value: “IDS encoding”

Definition: for Videotex interworking, the possible values correspond to the data syntaxes described in Annexes A, B, C, D of this Recommendation.

7.2 *Specific coding attributes*

These attributes provide additional information required for encoding/decoding the content information, as well as other information intrinsic to the content portion and type of coding.

7.2.1 *Subset*

Classification	Defaultable
Applicability	Videotex content architecture class
	Type of coding “IDS encoding”
Values	Integer [0, 1 to 5, 81 to 92]
Default value	0
Definition	This attribute identifies the subset (rank or profile) used within the IDS. Value 0 is used when no subset is specified.

7.2.2 *Rank*

Classification	Defaultable
Applicability	Videotex content architecture class
	Type of coding “Data syntax I encoding”
Values	Integer [0, 1 to 5]
Default value	0
Definition	This attribute identifies the rank used within Data syntax I. Value 0 is used when the rank is not specified.

7.2.3 *Profile*

Classification	Defaultable
Applicability	Videotex content architecture class
	Type of encoding “Data Syntax II encoding”
Values	Integer [0, 81 to 92]
Default value	0
Definition	This attribute identifies the profile used within Data Syntex II. Value 0 is used when the profile is not specified.

8 Formal definition of Videotex dependent data type

8.1 *Introduction*

This section contains formal definition in ASN.1 notation (defined in Recommendation X.208) of the data type corresponding to attributes applicable to Videotex.

This data type is:

— the data type to represent specific coding attributes.

8.2 *Representation of specific coding attributes*

```
Videotex—coding—attributes ::= CHOICE {
        subset    [0] IMPLICIT subset OPTIONAL
        rank      [1] IMPLICIT rank OPTIONAL
        profile   [2] IMPLICIT profile OPTIONAL }
Subset [a]
            ::= INTEGER { undefined          (0)
                          rank 1             (1)
                          rank 2             (2)
                          rank 3             (3)
                          rank 4             (4)
                          rank 5             (5)
                          profile 1          (81)
                          profile 2          (82)
                          profile 3          (83)
                          profile 4          (84)
                          profile X1—1       (85) [b]
                          profile X1—2       (86)
                          profile X1—3       (87)
                          profile X1—4       (88)
                          profile X2—1       (89)
                          profile X2—2       (90)
                          profile X2—3       (91)
                          profile X2—4       (92) }
Rank        ::= INTEGER { undefined          (0)
                          rank 1             (1)
                          rank 2             (2)
                          rank 3             (3)
                          rank 4             (4)
                          rank 5             (5) }
Profile     ::= INTEGER { undefined          (0)
                          profile 1          (81)
                          profile 2          (82)
                          profile 3          (83)
                          profile 4          (84)
                          profile X1—1       (85)
                          profile X1—2       (86)
                          profile X1—3       (87)
                          profile X1—4       (88)
                          profile X2—1       (89)
                          profile X2—2       (90)
                          profile X2—3       (91)
                          profile X2—4       (92) }
```

[a] Use of subset IDS is for further study.

[b] Profil $X_{i—j}$: geometric profile X_i together with alphamosaic profile j.

8.3 *Summary of ASN.1 object identifiers (see Table 1/T.101)*

TABLE 1/T.101

Videotex document application profile	0 1 8 16 0
DM1 communication application profile	0 1 8 16 1
Videotex operational application profile	0 1 8 16 2
T.101 Content architecture class	0 1 8 16 3
Type of coding	
IDS	0 1 8 16 4
Data syntax I	0 1 8 16 5
Data syntax II	0 1 8 16 6
Data syntax III	0 1 8 16 7
Application context	0 1 8 16 8