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OPERATIONS AND QUALITY OF SERVICE
TELEMATIC SERVICE

VIDEOTEX SERVICE

ITU-T Recommendation F.300

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation F.300 was revised by the ITU-T Study Group I (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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CONTENTS

			Page
1	Scope		1
	2	Definition of terms	1
	2.1	Videotex service	1
	2.2	Videotex service facilities	2
	2.3	Participants in Videotex service	3
	2.4	Videotex systems	3
3	Functionalities of the service		5
	3.1	General	5
	3.2	Application level	5
	3.3	Presentation level	8
	3.4	Session level	21
	3.5	Communication levels	22
4	Operation of the Videotex service		22
	4.1	User information/directories	22
	4.2	User authorization and identification	23
	4.3	System fields	23
5	International interworking of Videotex service		24
	5.3	International interworking configurations	24
6	Intercommunication with other telematic services		26
	6.1	Videotex-telex	26
	6.2	Telex-Videotex	26
	6.3	Videotex-Teletex	27
	6.4	Teletex-Videotex	27
	6.5	Videotex-facsimile and facsimile-Videotex	28
7	Quality of service		28
	7.1	Provision, alteration, cessation and recovery of service	28
	7.2	Availability	28
	7.3	Call establishment	28
	7.4	Call retention	29
	7.5	Information transfer	29
8	Tariffing implications		30

Recommendation F.300

VIDEOTEX SERVICE

(Melbourne, 1988, revised Helsinki, 1993)

1 Scope

1.1 This Recommendation describes the superset of characteristics and functions of international Videotex services.

1.2 The characteristics and functions of Videotex services are specified to ensure that users of a Videotex service are able to access Videotex services in other countries operating in accordance with Recommendations T.100 and T.101 and other relevant Recommendations.

1.3 The organisational and technical structures used to configure the service may differ from country to country depending on national circumstances. In particular, whether an Administration is a Videotex service provider will depend on national circumstances. However, it is the responsibility of Administrations to ensure that telecommunications facilities permit users to access Videotex services in other countries, subject to bilateral agreements and/or current regulations of both countries.

2 Definition of terms

For the purpose of this Recommendation, the following definitions apply.

2.1 Videotex service

2.1.1 General

A Videotex service is an interactive service which provides, through appropriate access by standardized procedures, for users of Videotex terminals to communicate with data bases and other computer based applications via telecommunications networks.

The Videotex service includes the following set of characteristics:

1) information is generally in an alphanumeric and/or pictorial form and may be supplemented by audio;

2) information is stored in a data base;

3) information is transmitted between the data base and users by telecommunication networks;

4) displayable information is presented on a suitably modified television receiver or other visual display device;

5) access is under the user's direct or indirect control;

6) the service is easily operated by the general public as well as specialist users, i.e. the service is user-friendly;

7) the service provides facilities for users to create and modify information in the data bases;

8) the service provides data base management facilities which allow information providers to create, maintain and manage data bases and to manage closed user group facilities;

9) the service provides computer based applications, e.g., data processing, computer games.

2.1.2 Videotex service profile

The set of functionalities required by a Videotex service. It includes the service, application and presentation functionalities.

2.1.3 Videotex application

Part of a Videotex service which is under the responsibility of only one application provider. The Videotex Service provider may also act as an application provider.

2.2 Videotex service facilities

2.2.1 General

A Videotex service facility is an application layer implementation in a Videotex service, providing a specific, clearly defined facility to Videotex users. Videotex service provides users with a number of such service facilities.

2.2.2 Videotex information retrieval

A Videotex service facility in which a user obtains information by means of a dialogue with a data base.

2.2.3 Videotex transaction

A Videotex service facility which allows users to create and/or modify information stored in a data base. Access to these facilities will generally require special functions and procedures to authenticate the authority to access. This service facility includes, but is not limited to, transactions leading to or influencing a commercial relationship between users and application providers.

2.2.4 Videotex messaging

A Videotex service facility which allows users to communicate with each other by storing messages in a commonly accessible data base. These stored messages may either be retrieved by the user or delivered automatically.

2.2.5 Videotex conferencing

A Videotex service facility which, by providing routing and switching functions, enables users to send and receive messages in a conversational manner. This does not preclude direct terminal-to-terminal messaging using existing networks.

2.2.6 Videotex data processing

A Videotex service facility which allows the user to employ processing and storage capacity at the host computer.

2.2.7 Videotex telesoftware

A Videotex service facility which allows a host computer to deliver a program and/or data to a Videotex terminal in order to have it processed in this equipment.

2.2.8 Videotex cost limit

An optional Videotex service facility designed to protect the user or the concerned Videotex Service Provider(s) from incurring costs which exceed certain limits.

The limit can be set either by the user or by a Videotex service provider.

Limits may apply to:

- single items like one frame or one transaction,
- levels of time-based charges,
- the accumulated sum of communication and/or application charges.

The limit may be set for only one or for any combination of them. Whenever a limit is reached, one of two mechanisms may be activated:

- warning limits: the user's attention is drawn to the fact that the indicated limit will be exceeded;
- blocking limit: the user is not allowed to spend more than is indicated by the limit.

2.3 Participants in Videotex service

2.3.1 Videotex service provider

A party responsible to the user for the provision and operation of a Videotex service.

2.3.2 Videotex application provider

A party responsible by agreement with a Videotex service provider for providing information or transaction facilities to Videotex service users. The information provider may or may not operate the host computer on which the application is implemented.

2.3.2.1 internal Videotex application provider

An application provider whose applications and/or whose facilities are provided by means of the service provider's host computer(s).

2.3.2.2 external Videotex application provider

An application provider whose applications and/or whose facilities are provided by means of host computers not provided by the service provider.

2.3.3 Videotex communications network provider

A party responsible by agreement with a Videotex service provider for providing telecommunication services for interconnecting user terminals, application provider equipment and/or Videotex host computers.

2.3.4 Videotex user

A person who, by means of a Videotex terminal, uses the Videotex service.

2.3.5 Videotex closed user group

A group of users who are permitted access to applications or other Videotex service facilities that are not available to other users.

2.4 Videotex systems

2.4.1 General

A Videotex system is the hardware and software used to implement a Videotex service.

2.4.2 Videotex terminal

The equipment by means of which the user interacts with the Videotex service. A typical Videotex terminal includes:

1) a numeric keypad and/or alphanumeric keyboard and/or other graphical input devices;
2) a visual display unit or a suitably modified television receiver;
3) electronic processing and storage devices required to interface these components to the telecommunications network and to generate the display.

The terminal may also provide a direct terminal-to-terminal capability, and may include other components, such as a hard copy output unit, magnetic or optical storage devices, and additional processing and/or storage devices.

2.4.3 Videotex user/terminal identification facility

A facility which allows the Videotex system to distinguish between authorised and non authorised access to a Videotex service or certain applications of a service, e.g. messaging, closed user groups and billing, there are three types of identification.

a) Identification of the terminal.
b) Identification of the user.
c) Identification of the line.

2.4.4 telecommunication network

Telecommunications means for transmission of Videotex information.

2.4.5 Videotex host computer

The computer (or network of computers provided by a single party) on which one or more applications are implemented and/or one or more other Videotex service facilities are provided.

2.4.6 external Videotex host computer

A host computer not operated by the service provider.

2.4.7 Videotex service centre

A computer system used by the Videotex service provider to authorize access to a Videotex service. Other functions of the service centre may include assistance to users in selecting the particular application required (either provided by the service centre or by other host computers), as well as management facilities such as billing, statistics gathering, etc. The same computer may also be a host computer and/or provide a gateway function.

2.4.8 international Videotex gateway

A function of a computer providing access to a foreign Videotex service with all its capabilities and according to the international Videotex protocol. It may include protocol selection and/or protocol conversion and/or dialogue handling functions. In addition, the gateway is the point where the administrative data for the international Videotex services are handled, such as the data for international accounting, billing information in case of frame/application or additional communication charges, information about the subscriber status in case of Videotex messaging and service data concerning the service profiles or terminal profiles. The gateway can also give access to the directory of Videotex service available in the foreign country.

2.4.9 Videotex access point

A function of a computer providing access to Videotex host computers, protocol conversion for layers 1-3 management facilities such as billing, statistics gathering and dialogue handling capabilities.

2.4.10 Videotex interface unit

A function of a computer providing protocol conversion for layers 4-7 (of OSI Reference Model) and/or data syntax conversion and optionally protocol conversion for layers 1-3 (PAD). It may also handle some administrative tasks such as billing for the conversion charges and optionally the communication network charges. A Videotex Interface Unit is typically used between a terminal and a foreign Videotex Service Centre.

2.4.11 Videotex service unit

It is a Videotex interface unit with the additional functions of handling application charges and accounting, and may also provide user authorization and/or identification.

2.4.12 Videotex data base

A set of information and/or transaction facilities that can be accessed by, or made available to, users.

2.4.13 Videotex frame

The information that is retrieved by a single user function from a terminal and presented as a complete entity (full screen contents or parts of the screen, e.g. areas on the screen) by the terminal, but may include information that requires scrolling before it is displayed and may include dynamic effects such as overwriting. Local user action may take place within a frame.

2.4.14 Videotex page

An organised set of one or more frames.

2.4.15 Videotex form

A form is a frame where one or several fields are defined for the collection of user data.

2.4.16 Videotex system field

A data collection field in which a predetermined type of data is filled in by the videotex service or by the user.

3 Functionalities of the service

3.1 General

3.1.1 This clause describes the various service, presentation and application facilities that may be used in the Videotex service to support an application.

3.1.2 In order to ensure non-obsolescence of data bases and to permit the international exchange of data, a range of service profiles will be defined. They will allow the service profile(s) used in preparing an application to be compared with the service profile assumed by the user. It will then be possible to determine whether or not the user can interact directly with the application.

3.1.3 Applications will require knowledge of the service profile assumed by the user in order to detect differences between the service profile assumed by the user and those assumed in preparing the application.

3.1.4 If it is not possible for the user to interact directly with the application then, the data syntax and/or application and service functions may be transcoded or, the terminal or application adapted.

3.1.5 If the service profile assumed by the user and that assumed in preparing the application differ and adaption or transcoding is not possible, then applications should exercise discretion in limiting access to data when the displayed information may not convey the complete meaning of the application.

3.1.6 What transcoding adaptation or limitation of access is necessary and where this takes place may be predefined for a set of service profiles or may be negotiated during the session.

3.2 Application level

3.2.1 The application level describes the functions of the Videotex service that enable users to access and use the different applications. While it is desirable that all Videotex services employ the same commands and visual identifiers for these functions, further studies are required. Some keying sequences may be used for more than one function. Some of these functions may be implicit in other functions and some functions may not be implemented or appropriate in some Videotex services. Additional functions may be required subject to further study.

3.2.2 Service functions

These functions may be used, according to implementation. They can be divided into two categories whether they are selected by the user or by the application provider.

3.2.2.1 Service functions selected by the user

From the user point of view, these functions are selected by routing to or selecting an appropriate point in the Videotex service.

3.2.2.1.1 Function V1

Select an application on a Videotex service (containing an identification of the application).

3.2.2.1.2 Function V2

Leave the application and return to the first effective choice in the national Videotex service.

3.2.2.1.3 Function V3

Return to the first effective choice of the foreign Videotex service.

3.2.2.1.4 Function V4

Leave the application and return to the point from which this application was selected.

3.2.2.1.5 Function V5

Provide billing information.

3.2.2.1.6 Function V6

Leave the Videotex service (mandatory).

3.2.2.1.7 Function V7

Request service/application identification.

3.2.2.2 Service functions selected by the application provider

These functions may be used to enable an application provider to transfer a call to another application with no intervention from the user. In this case, the first application provider (called rerouting) requests the Videotex service to connect the user to another application (called rerouted). Several functions may be offered as follows.

3.2.2.2.1 Function R1

Request the rerouting to another application. This is the basic function. The Videotex service clears the call with the rerouting application only when the user is connected to the rerouted one. In case of failure, the rerouting application receives a report precising the reason of the failure. The dialogue between the rerouting application and the user can then start again.

3.2.2.2.2 Function R2

Request rerouting with transmission of information to the rerouted application. In this case, the rerouting application provider sends information that will be transmitted to the rerouted application by the Videotex service.

3.2.2.2.3 Function R3

Request the rerouting with transmission of information to be returned to the rerouting application. In this case, the information to be returned is stored in the Videotex service during the communication between the user and the rerouted application. It is transmitted back to the rerouting application in two cases:

- the rerouted application provider requests to transfer the call back to the rerouting one;
- the user, after the call with the rerouted application has been cleared, requests access to the rerouting application again.

3.2.2.2.4 Function R4

Request barring of cascade rerouting. Cascade rerouting occurs when rerouted application asks for the call to be transferred to a third application. At the request of the rerouting application provider, this transfer can be barred by the Videotex service.

3.2.3 Dialogue functions

The following functions may be used within the application to retrieve items of information or, to collect data and forward them to application, according to implementation.

3.2.3.1 **FunctionsD1** [a) to d)]

Declare valid an input. The input is forwarded for processing. Several types of input have been identified. In some cases an input is implicitly terminated.

a) Free-text input – only limited by the size of the field.

b) Direct selection of a frame if it is directly retrievable.

c) Progress through a choice from one frame to another frame by the use of one or two digits.

d) Select a frame through the use of a keyword.

3.2.3.2 **Function D2**

Correcting an input. When the user is inputing data either in retrieval or in data collection mode it is the facility to correct an input character by character.

3.2.3.3 **Function D3**

Clearing an input. In the same situation as above (D2), it is the facility offered to the user to clear a full input.

3.2.3.4 **Function D4**

Move one step forward in the application.

3.2.3.5 **Function D5**

Move to the next input field.

3.2.3.6 **Function D6**

Retrace the previous step of the user's action. The number of steps may need to be limited and certain steps may be excluded from the retrace.

3.2.3.7 **Function D7**

Move to the previous field.

3.2.3.8 **Function D8**

Repeat the frame; retransmission of the information necessary to restore the latest displayed image, e.g., in the case of transmission error. Fields will contain the last user input.

3.2.3.9 **Function D9**

Repeat the updated frame; repeat the same frame with any changes that there may have been since the last access. Fields will contain the default values.

3.2.3.10 **Function D10**

Return to the first menu in the application.

3.2.3.11 **Function D11**

Previous menu; retrace the last frame in the previous progression of the user's action that allowed a choice in the application.

3.2.3.12 **Function D12**

Ask for help or guidance without leaving the application.

3.2.3.13 **Function D13**

Retrace the last frame in the previous progression of the user's action that contained a form, without any input by the user.

3.2.3.14 Function D14

Retrace the last frame in the previous progression of the user's action that contained a form, including the contents of the fields entered by the user.

3.2.3.15 Function D15

Interrupt the action in progress. Whether the interrupt results in an abort or a temporary hold is application dependent.

3.2.3.16 Function D16

Set a marker at the current point in the application for access at a later time within the same session.

3.2.3.17 Function D17

Abstain from forwarding the contents of the input fields.

3.2.3.18 Function D18

Declare valid a set of inputs e.g., the contents of a form are forwarded for processing.

3.3 Presentation level

3.3.1 General principles

3.3.1.1 This subclause provides a set of definitions and specifies a set of functional capabilities and possible enhancements for the presentation level of the international Videotex service.

3.3.1.2 The definitions provided, and functional capabilities specified in this subclause apply to text in its broad sense; i.e. text consisting of symbols, phrases or sentences in natural or artificial languages, pictures, diagrams and tables.

3.3.1.3 Each functional capability is individually specified independent of what implementation techniques or coding schemes are used by the terminal equipment. Specification of the repertoires and coding is the subject of Recommendations T.100 and T.101.

3.3.2 Structure of display

3.3.2.1 Defined display area

The rectangular part of the screen that can be used by the Videotex service. Its structure may be redefined. (See Figure 1.)

3.3.2.2 Border area

The part of the screen which is outside the defined display area. (See Figure 1.)

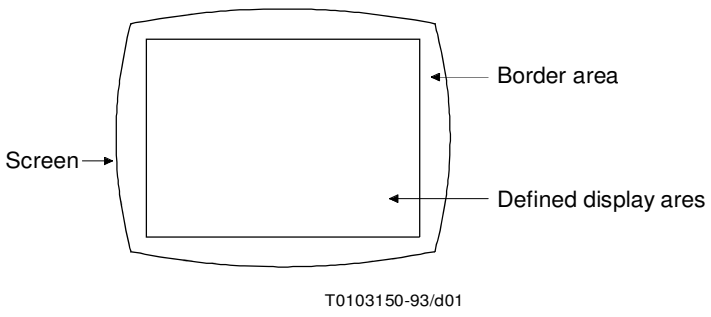


FIGURE 1/F.300

3.3.2.3 Character location structure

The defined display area is made up of an array of contiguous character locations in which each character location is the area needed for the display of one character in normal size including any space required to separate alphanumeric characters. In this structure each graphic element is displayed in one or more character locations on the defined display area.

3.3.2.4 Cartesian coordinate structure

Graphic elements are defined within a two-dimensional space using either normalized or absolute coordinates. Rectangular defined display areas map into the square coordinate space.

Normalized coordinates use a cartesian 0 to 1 (non inclusive) numbering scheme. As an example, in the case of a television screen with a 4 : 3 aspect ratio, the defined display area corresponds to 0 to 1 (non inclusive) in the X axis and 0 to approximately 0.75 in the Y axis. The drawing of graphic elements into the entire normalized coordinate space may be permissible but only the inscribed 4 : 3 area will be visible.

An absolute coordinate system may, for example, use a CCIR-defined standard for digitized television signals of 540 pixels horizontally and 480 pixels vertically within the defined display area.

3.3.2.5 Active drawing area

An active drawing area is an area within the defined display area within which graphic elements are to be displayed. The definition of an active drawing area cancels any previous active drawing area, but has no effect on graphic elements already being displayed.

3.3.2.6 Scrolling area

A scrolling area is an area smaller than or equal to the defined display area, within which the characters and associated attributes move in specified increments under the action of format effectors (whether explicit or implied) or specific controls. The procedure for scrolling is defined by two processes:

1) the designation of the screen area inside which a scroll operation is to be executed;

2) the execution of the scrolling action.

Scrolling occurs in a direction perpendicular to the character path or logical pel path and far enough to bring the next intended character location or the location of the next logical pel just into the scrolling area.

3.3.2.7 Input field

This function specifies an input field to be used as a user area on the display screen. An input field may be provided to accept user input from the terminal keyboard and to support editing by the user. Any number of input fields may be defined. An input field is preinitialized with graphic characters inviting the user to input data. These input request characters may be represented by one or several dots but their display depends on the various implementations depending on a profile of the communication.

3.3.2.8 Marked characters

Characters may be marked for further action at the terminal, such as transfer to an output device.

More than one type of marking may exist and each may be separately processed.

3.3.2.9 Protected/unprotected area

Areas within the defined display area can be protected against alteration, manipulation or erasure. The protection is valid for attributes as well as characters.

Protected areas can only be altered by the use of an unprotected function or by the action of clearing the screen.

3.3.2.10 Multi-plane configuration

A multi-plane configuration can be defined through multi-plane control commands which include addressing, priority relationship and attribute. For example, a character plane on a photographic plane configuration offers scrolling characters on a steady photographic picture, or a photographic plane on another photographic plane configuration offers simple animation.

3.3.3 Graphic elements

Graphic elements are used to display text, including symbols, or pictures. They are categorized below. Applicable to each of the following categories is a set of display attributes and control functions. Attributes and control functions for each category are specified in 3.3.5, 3.3.6, 3.3.7 and 3.3.8, for the international Videotex service. Those attributes and control functions which are commonly applicable to all categories of graphic elements are defined in 3.3.4.

3.3.3.1 Alphanumeric characters

3.3.3.1.1 Alphanumeric characters are those graphic elements pertaining to the written form of text. They include alphabetic letters with or without diacritical signs, numerical digits and fractions, punctuation marks, typographical symbols, mathematical signs, as well as space and special letters, signs and symbols.

3.3.3.1.2 In this Recommendation, alphanumeric characters are denoted by names which are intended to reflect their customary meaning and not to specify a particular style or font design for the textual characters when displayed.

3.3.3.1.3 Dynamically redefinable characters are defined and down-loaded into the terminal, which can then use them as additional graphic elements.

3.3.3.2 Pictorial characters

Pictorial characters are used to construct drawings with blocks; each character defines a pattern within a block of predetermined dimensions and will occupy one character position when displayed. Unlike alphanumeric characters, a pictorial character has a specifically designed pattern when displayed. The pattern can either be predetermined such as in the case of mosaic characters or line drawing characters or be dynamically redefinable. Pictorial characters also differ from alphanumeric characters in the manner in which certain attributes such as underlining or proportional spacing apply.

3.3.3.3 Geometric elements

Geometric elements are used to construct drawings of various types by a succession of overlay of points, straight lines, arcs, etc. Each element is specified in terms of normalized Cartesian coordinates to describe the position, end-points, or vertices of each drawing operation.

3.3.3.4 Photographic elements

Photographic elements are used to render an image by the transmission and display of an array of individual picture elements (pixels) within an active drawing area. The photographic elements may be used to display a two-colour picture, a picture using a range of colours from a palette, or a picture with an unrestricted range of colours. In the case of an unrestricted range of colours the image may be subjectively similar to a still broadcast-quality television picture.

3.3.4 Common display attributes and control functions

The attributes and control functions detailed in this section apply to all types of graphic elements described in 3.3.3 above.

3.3.4.1 General

3.3.4.1.1 Foreground and background specification

The foreground is a graphic element and the background is the remaining area of the display against which the foreground is displayed.

NOTE – The background may be specified in two different ways, depending on the implementation:

a) as a single solid colour at the location of each graphic element on the display,

b) as the cumulative result of all graphic elements displayed prior to the foreground, which subsequently amends the affected background by overwriting.

3.3.4.1.2 Attribute techniques

3.3.4.1.2.1 Parallel attributes

Parallel attributes are the property of the active position and move with it under the action of format effectors or spacing display characters (including space).

3.3.4.1.2.2 Serial attributes

Serial attributes are set between markers on a row. They apply from the position of the active position at the time they are received to the end of the row or until a contradictory marker is reached.

3.3.4.1.2.3 Non-spacing and spacing attributes

Display attributes may be implemented in such a way that they may be changed at each character location (non-spacing attributes) or a displayed character location may be required to implement the change (spacing attribute).

3.3.4.1.3 Colour

Colour in this context is considered to include saturated and unsaturated colours of any intensity, grey tones, black and white. A colour may also be set to "transparent", in which case a lower plane (e.g. background) will be displayed.

Alternative colour modes are used to interpret the numerical value of the colour parameter, either directly in terms of colour components or indirectly as an index into a colour look-up table (palette).

The colour range may be extended by providing a number of colour look-up tables. These colour look-up tables may hold a fixed repertoire of colours, or may be redefinable.

3.3.4.2 Common display attributes

3.3.4.2.1 Foreground colour

The colour of graphic elements can be specified by this attribute.

3.3.4.2.2 Background colour

This attribute is used to specify the colour to be used for the background when graphic elements are displayed, in a similar manner to the specification of foreground colour.

3.3.4.2.3 Border colour

The border area may be specified as a single colour or more than one colour.

3.3.4.2.4 Flash

This attribute allows the graphic element to be flashed at a specified rate and phase relationship for the primary purpose of gathering attention. The following attribute states are defined:

1) *Steady*

   The graphic elements are displayed normally.

2) *Flash rate*

   The on/off interval and the rate of flashing may be specified or may take on predefined values.

3) *Flash phase*

   The phase relationship between flashing graphic entities may be specified or may take on predefined values.

4) *Flash colour*

   The graphic elements may change between various colours, that is between foreground or background colours or between referenced colours in a colour look-up table.

3.3.4.2.5 Conceal

The characters are displayed as spaces until the user chooses to make them appear.

3.3.4.3 Common control functions

The following functions control the display of either a portion of the graphic elements or the entire screen. They apply to all types of graphic elements described in 3.3.3.

3.3.4.3.1 Reset

This function reinitializes the control and attribute parameters to their default values, either on a selective basis or on a global basis.

Certain control functions implicitly reset some attributes.

3.3.4.3.2 Overwriting mode

Specified elements of the displayed image can be cleared and replaced by the display of new data, or can be logically combined (e.g., logical OR operation) with the new data to produce a superposed display.

3.3.4.3.3 Clear screen

This function clears the whole screen to black or to the background colour.

3.3.4.3.4 Clear partial screen

This function clears part of the screen to black or to the background colour on a selective basis. Any of the following structures may be chosen:

- active drawing area;
- scrolling area;
- input field;
- one or more planes;
- marked characters;
- protected area.

3.3.4.3.5 Wait

This function is used to cause a delay of a specified time in the processing of presentation level functions currently received by the Videotex terminal.

3.3.4.3.6 Define dynamically redefinable sequences (macro)

This function provides the capability of grouping graphic elements, attributes and control functions. A macro is labelled with a name and consists of an arbitrary sequence of graphic elements, attributes, parameter values and appropriate control functions. The name thereafter acts as a substitute for the entire string of specified functions which make up that particular macro. Separate groupings may exist which contain only graphic elements from one of the categories defined in 3.3.3 above.

3.3.4.3.7 Select macro sets

This function provides for the selection of an already defined set of macro sequences, allowing individual sequences within such a set to be called by their names. When a macro name is called, the entire macro sequence is processed.

3.3.5 Display of alphanumeric text

The character repertoires for this subclause are those specified in Recommendations T.100 and T.101.

Terminals must be able to display correctly the following formats:

31 columns 16 rows of Latin-based alphanumeric characters

40 columns 20 rows of Latin-based alphanumeric characters

40 columns 24 rows of Latin-based alphanumeric characters

Whereas the attributes and control functions defined in this subclause are used mainly with alphanumeric characters, some also apply to pictorial characters.

3.3.5.1 Attributes for alphanumeric text

3.3.5.1.1 Character rotation

This attribute determines the rotation of an alphanumeric character relative to the horizontal direction. The rotation can either be chosen from a fixed set, i.e., 0°, 90°, 180° or 270°, or can be any angle between 0° and 360°.

3.3.5.1.2 Character path

This attribute determines the writing direction, i.e., the direction in which the active position is automatically advanced after a character is displayed. Four directions are possible: right, left, up and down. These directions may either be expressed relative to the character rotation or relative to fixed screen coordinates.

3.3.5.1.3 Inter-character spacing

This attribute determines the distance the cursor is moved after a character is displayed.

3.3.5.1.4 Inter-row spacing

This attribute determines the relative location of the active cursor when it is advanced to a new line in a direction perpendicular (relative –90°) to the character path.

3.3.5.1.5 Alphanumeric character size

The size of an alphanumeric character can be specified in one of the following manners:

a) by specifying the width and height of the character field;

b) by specifying a double-height character, where the height is set to twice its default value and the width is set to its default value;

c) by specifying a double-width character, where the width is set to twice its default value and the height is set to its default value;

d) by specifying a double-size character, where both height and width are set to twice their default values;

e) by specifying proportional spacing in a given character height.

3.3.5.1.6 Underline

This attribute is used for underlining alphanumeric characters either individually or on a character-string basis.

3.3.5.1.7 Invert

Alphanumeric characters can be displayed either in normal mode or in inverted (reverse video) mode. In inverted mode, the explicit background and foreground colours are interchanged.

3.3.5.1.8 Cursor

A cursor may be used to indicate the character location(s) on the screen in which the next alphanumeric or pictorial character is to be written. More than one style can be defined for the cursor, e.g. underscore, block, cross hair or manufacturer dependent. Also the cursor can be either flashing or steady or invisible.

3.3.5.1.9 Text font

This attribute determines which of a choice of fonts is to be used for displaying the text.

3.3.5.2 Format effector functions

Format effectors are control functions that influence the positioning of alphanumeric text and pictorial characters. They include the functions given below:

a) moving the active position a distance equal to the inter-character spacing lying parallel to the character path in the direction opposite to the character path (i.e., 180° to the direction of the character path);

b) moving the active position a distance equal to the inter-character spacing lying parallel to the character path in the direction of the character path;

c) moving the active position a distance equal to the inter-row space in a direction perpendicular to the character path (relative –90°);

d) moving the active position a distance equal to the inter-row space lying perpendicular to the character path in a direction perpendicular to the character path (relative 90°);

e) moving the active position to the first character position within the active drawing area along the character path;

f) moving the active position to the home character position in the display area;

g) moving the active position to a given location in the display area;

h) moving the active position to the first character position on the next line (carriage return plus Line Feed).

3.3.5.3 Control and editing functions for alphanumeric text

3.3.5.3.1 Word wrap

This function causes the alphanumeric text to be buffered into words. A word is displayed on the current line only if the entire buffered word will fit into the space remaining on the current line within the display area. If the word does not fit into the space remaining on the current line, then the cursor is repositioned beginning at the first character position on the next line and the word is displayed. The space character should be omitted if the last word on the line is terminated with a space that does not fit on that line.

3.3.5.3.2 Functions that modify one or several characters

a) replace the character preceding the active position by an input request character: there is no effect on the initial format; the active position is one position backwards;

b) replace the character located under the active position by another character: there is no effect on the initial format; the active position is one position ahead;

c) delete the character located under the active position: all the characters following are moved one position to the left: the location of the active position is unchanged but the text is reformatted;

d) insert a character at the active position location: the active position is one position ahead and the text is reformatted;

e) delete all the characters of the current line: the active position is on the first character position of the former current line and the text is reformatted;

f) insert a line above the current line: the active position is on the first character position of the inserted line and the text is reformatted;

g) reinitialize all the fields with input request characters: the active position is on the first character position of the first field;

3.3.5.4 Dynamically redefinable character set (DRCS)

A DRCS is a set of characters whose shapes are sent from the service and down-loaded via the line. It may be used to represent alphanumeric characters, special symbols, or picture element symbols for constructing fine graphics. Once loaded, the DRCS is regarded as a member of a library.

Two types of DRCS have been identified. The first type is the basic DRCS. Only the shapes of the characters are down-loaded. Characters are displayed on the screen according to prevailing attributes.

The second type of DRCS is described in 3.3.6.4.

3.3.5.4.1 Define dynamically redefinable character sets

This function enables the definition of a dynamically redefinable character set (DRCS), identified by a name either by using any sequence of graphic elements, attributes and control functions or by using bit patterns defining the shape of the characters.

3.3.5.4.2 Select DRCS

This function determines which DRCS, already defined, will be used.

3.3.6 Display of pictorial characters

The attributes and control functions defined below are used specifically with pictorial characters such as mosaics. Many of the attributes and functions (including the format effectors) of alphanumeric text also apply to pictorial characters.

3.3.6.1 Attributes for pictorial characters

3.3.6.1.1 Contiguous/separated characters

This attribute allows a pictorial character to be displayed in either one of two styles:

a) contiguous: the characters adjoin one another;

b) separated: each character is surrounded and separated by a border of the background colour, the width of which may be specified.

3.3.6.1.2 Size of pictorial characters

This attribute specifies the size of a pictorial character either by means of normalized Cartesian coordinates or in terms of a predetermined default character size (as per 3.3.5.1.5).

3.3.6.2 Control function for pictorial characters

3.3.6.2.1 Select mosaic subrepertoire

This function determines which subsets of the mosaic repertoire will be used for constructing mosaic pictures.

3.3.6.3 Mosaic repertoire

The mosaic repertoire for this subclause is specified in Recommendations T.100 and T.101.

3.3.6.4 Pictorial DRCS

General considerations for DRCS are given in 3.3.5.4. In pictorial DRCS, the down-loaded characters are completely defined in foreground colours, i.e. all the dots of a character cell have a defined foreground colour, chosen from a number of colours.

3.3.7 Display of geometric drawings

3.3.7.1 Normalized Cartesian coordinates

Geometric elements are defined within a two-dimensional space using normalized coordinates, that is, a Cartesian 0 to 1 numbering scheme (see 3.3.2.4).

3.3.7.2 Control functions of geometric drawings

3.3.7.2.1 Specify resolution

This function specifies the resolution of coordinate data, that is, the accuracy to which the X and Y coordinates are specified.

3.3.7.2.2 Define filling texture

This function is used to dynamically redefine filling textures in addition to the ones that are already predetermined. See the description of "texture pattern" attribute (see 3.3.7.3.3).

3.3.7.2.3 Define graphic object (segment)

This function provides the capability of grouping geometric elements, attributes for geometric elements, control functions of geometric elements and alphanumeric text into a named segment. The elements are stored in the display device. They can be displayed or not under control of the visibility attribute (see 3.3.7.3.5).

3.3.7.2.4 Insert graphic object

This function provides for the selection of an already defined named segment. Before the elements are processed the coordinate data within the elements are transformed using a transformation matrix (see 3.3.7.2.6).

3.3.7.2.5 Delete graphic object

This function deletes the named segment and its contents.

3.3.7.2.6 Define transformation matrix

This function allows the specification of a transformation matrix used during insertion of a graphic object (see 3.3.7.2.4).

3.3.7.2.7 Window

This function defines a rectangular part of the normalized coordinate space to be used.

3.3.7.2.8 Viewport

This function defines the rectangular region of display space to be used.

3.3.7.3 Attributes for geometric elements

3.3.7.3.1 Logical pel (brush)

This attribute is used to determine the size and shape of the logical pel (brush). Geometric elements are drawn by moving the logical pel (brush) around the screen. The size and shape of the logical pel (brush) therefore directly determines the line width of geometric elements. The logical pel (brush) size will correspond to at least one and possibly many display pixels. The shape of the logical pel (brush) can be of different types, e.g. square or circle. By choosing appropriate values for the width (dx) and the height (dy), these types can be formed into a rectangle or an ellipse.

3.3.7.3.2 Line texture

The line texture can be solid, dotted, dashed or dot-dashed. It is used for lines as well as outlines.

3.3.7.3.3 Texture pattern

Enclosed geometric elements may be filled by texture patterns. The texture pattern can be chosen from solid colour, hatched or patterned. The hatched textures can be chosen from vertical hatching, horizontal hatching, diagonal hatching (45° and –45°), vertical and horizontal crosshatching and diagonal crosshatching. Pattern textures can be dynamically defined (see 3.3.7.2.2).

3.3.7.3.4 Highlighting

Filled and enclosed geometric elements can be highlighted by drawing their perimeters in black, as a line in the background colour or in a manufacturer dependent way. This attribute applies either to segments or to individual elements.

3.3.7.3.5 Visibility

This attribute controls the display of elements during the creation of a named segment (see 3.3.7.2.3).

3.3.7.3.6 Marker representation

This attribute determines the size and the type of a marker to be used in the *marker (point)*. A marker representation may be chosen from a < . >, a < + >, a < * >, a < o > and a < x >, or other shape or be the default to the logical pel shape. The origin of the marker representation may be at its centre, or at other points of the marker representation.

3.3.7.4 Geometric elements

When drawing pictures with geometric elements the start location of each geometric element may be specified in either one of two ways:

a) as an absolute position (current drawing point position independent)

b) as a relative position with respect to the final drawing point position of the previously drawn geometric element (current drawing point position dependent).

Further coordinate positions may be specified in either an absolute, a relative or an incremental manner.

3.3.7.4.1 Marker (point)

Marker is used to perform the operation of writing a marker representation at specified positions. The size and type of the marker representation is controlled by the marker representation attribute (see 3.3.7.3.6).

3.3.7.4.2 Line

Line is used to draw a straight line between specified drawing positions using the current line texture.

3.3.7.4.3 Arc/circle

Arc/circle provides the capability of drawing a circle, or a segment of a circle using the current line texture. The arc is drawn from an initial drawing position to a final drawing position through an intermediate point on the arc.

A circle is drawn when the start and end points are coincident. For the definition of a circle, the intermediate point on the arc defines the diameter of the circle.

Alternatively a circle may be defined by the position of its centre and its radius.

A straight line is drawn if the three points are co-linear.

An arc and the chord joining the start and end points of the arc define an enclosed arc.

3.3.7.4.4 Rectangle

Rectangle is used to draw a rectangular area of specified width and height.

3.3.7.4.5 Polygon

Polygon is used to draw a polygon with the current line texture, from the initial drawing position, through a series of vertices, back to the initial drawing position. There is an implicit closure between the initial drawing position and the last vertex specified so that the final drawing position is identical with the initial drawing position.

3.3.7.4.6 Polycurve

Polycurve is used to draw a curved line through, or best fit to, more than three given point positions.

3.3.7.4.7 Infill

Infill is used to fill the surrounding area of the specified position with the current texture.

3.3.7.4.8 Pixel array

Pixel array is used to define a rectangle with *m* by *n* cells. In drawing the cells of this rectangle, all cells may have different colours.

3.3.8 Display of photographic pictures

3.3.8.1 Control functions for photographic pictures

3.3.8.1.1 Photographic image development mode

This function controls the sequence of development of the image on the display. Possible modes include:

a) successive display of horizontal lines of the height of the logical pel;

b) successive display of rectangular blocks;

c) progressive improvement of the spatial resolution over the whole active drawing area;

d) progressive improvement of colour resolution over the whole active drawing area.

3.3.8.2 Attributes of photographic elements

3.3.8.2.1 Logical pel size

This attribute is used to determine the width (dx) and height (dy) of the logical pel which is a rectangle whose orientation is fixed with respect to the Cartesian coordinate system. The logical pel size will correspond to at least one and possibly many display pixels. Photographic images are created by defining the colours of logical pels.

3.3.8.2.2 Colouring block size

This attribute determines the size of the rectangular colouring block. Such colouring block consists of one or more logical pels which, within each colouring block, may only take the foreground or background colour specified for that block.

3.3.9 Audio capability

Audio capability includes music, voice, and other sounds. This subclause also identifies possible enhancements.

3.3.9.1 Synthesized musical sounds

This function may be used to present synthesized musical sounds having various timbre. The musical tone coding system is employed to represent musical information. Musical information is transmitted to the user terminal, and sounds are reproduced in the user terminal, possibly with tone synthesizer techniques. Capabilities include the following.

3.3.9.1.1 Part

Multiple parts can be defined in a single tune. Each part may be defined separately; however, they could be reproduced simultaneously.

3.3.9.1.2 Timbre

The timbre of sounds may be defined by specifying a particular musical instrument. Each part may have a different timbre.

3.3.9.1.3 Pitch and duration

Every sound in a part may be reproduced by specifying the pitch and the duration of each musical tone.

3.3.9.1.4 Data transfer control

Start and end of the entire transfer of the musical definition or start and end of a part definition may be indicated. Start of reproduction may also be indicated.

3.3.9.1.5 Jump and repetition control

Jump and repetition in the reproduction of a tune may be defined. Labels may be defined to indicate a range of repetition or the destination of the jump.

3.3.9.1.6 Sound level control

Sound level in reproduction of a tune may be defined.

3.3.9.2 Other possible audio techniques

For further study.

3.3.9.2.1 Text and music synchronization

This function may be used to specify the visual and audible effects of synchronization.

3.3.9.2.2 Synthesized voice

This function is used to present human voice with the help of voice synthesis techniques. Coded voice parameters-to-voice conversion, and character coded text-to-voice conversion may be possible.

3.3.9.2.3 Arbitrary sounds

This function is used to reproduce any sounds including that of human voice and musical instruments.

3.3.10 Animation capability

This provides animation (movement) capability, and identifies possible enhancements.

3.3.10.1 Colour manipulation

This function may be used to create simple animation effects by manipulating the flash and colour attributes.

3.3.10.2 Display position manipulation

This function may be used for a form of animated display by manipulating the relative display position with the help of multi-plane display capability.

3.3.10.3 Other possible animation techniques

For further study.

3.3.10.3.1 Timed execution of drawing an image

This function may be used for time-regulated drawing of coded pictorial information.

3.3.10.3.2 Successive overwriting of selected pictorial information

This function realizes animated or moving display of pictorial information through successive overwriting.

3.4 Session level

3.4.1 General

The purpose of the session is to establish and organize the dialogue(s) between the user and the data base. The Videotex session is an interactive session that may permit one or more steps of questions and answers.

3.4.2 Session establishment/closure

The basic function of the session is to establish the logical connection between the applications. It includes the facility to negotiate a set of capabilities that can be used at the beginning of the session. The renegotiation of those capabilities is for further study.

The function to close the logical connection is also performed by the session level either in an orderly manner or through an aborting mechanism.

3.4.3 Dialogue management

The session level provides the tools to establish the right of the user and the data base to send and receive data. In the case where one party has the need to send data without having the right for it, it provides a facility to obtain it.

3.5 Communication levels

To be defined.

4 Operation of the Videotex service

4.1 User information/directories

4.1.1 As far as possible a directory of information/application providers shall be made available by each Administration participating in the international Videotex service.

4.1.2 In addition, if an Administration is providing an international Videotex messaging service, a directory of subscribers of the messaging facility shall be made available by the Administration.

4.1.3 It is up to the Administration to determine in which cases the information/application providers can decide whether they want to be included in the directory.

Equally, the Administration determines the cases in which a subscriber to the international Videotex messaging service is free to decide whether or not to be included in the directory of messaging subscribers.

4.1.4 The directory of information/application providers shall include:

- information on how to use the directory;
- an ordered list of providers;
- method of access.

It is recommended that the following information should be made available:

- information/application provider's name;
- short description of the service/application;
- language of the service;
- costs for the service/application and charging method;
- availability of the service;
- application access information;
- access conditions;
- information/application provider's address and telephone;
- legal responsibility for the contents of the application;
- technical information eg. the service profile and additional equipment required.

4.1.5 The directory of international Videotex messaging subscribers shall include:

- information on how to use the directory,
- an alphabetic list of subscribers with messaging address.

4.1.6 In principle, directories can be made available in electronic or paper form. Dialogue procedures and character repertoire of electronic directories are determined by the Videotex service provider, consistent with the national Videotex service. The use of a full keyboard by the consulting user may be required. It may be useful to integrate the electronic directory as much as possible with the facility concerned (e.g. messaging, telex access).

4.2 User authorization and identification

There are two functions which the «local» Videotex service may provide to an application in the «remote» Videotex service.

1) Authorization: validating the user's entitlement to access the application.

2) Identification: providing the user's, name, address, telephone number, etc., in a standardized format.

NOTE – Some applications may require neither authorization nor identification of the user. Others may achieve this by interaction directly between the user and the application.

4.3 System fields

4.3.1 General

The system field facility is an optional function provided by a Videotex service and can be used to transfer preregistered user data to an application. The proposed fields (partly or completely filled) for such data are as follows:

1)	country code	3 char. num., telephone country code
1a)	national telephone number	12 char. num.
2)	subscriber no.	12 char. num.
2a)	co-user suffix	4 char. num.
2b)	user no. (2+2a)	16 char. num.
3)	subscriber title	5 char. alpha-num.
4)	subscriber name	30 char. alpha-num.
5)	additional name	30 char. alpha-num.
6)	street	30 char. alpha-num.
7)	town	30 char. alpha-num.
8)	postcode	7 char. alpha-num.
9)	date	8 char. DD.MM.YY, num.
10)	time	8 char. hh:mm:ss, num.
11)	date and time	17 char. DD.MM.YY hh:mm:ss, num.

NOTE – The field names and lengths are provisional pending harmonisation with other telematic services.

4.3.2 It is up to the Administrations to decide to set up or not the system field facility.

4.3.3 The implementation and use of the above system fields in international connections may be subject to legal restrictions (e.g., consumer privacy) that may be in effect nationally or internationally.

4.3.4 Services which do not support the system field facility will ignore all the associated protocol items and consider all the system fields as normal data collection fields.

4.3.5 The international availability of this data or parts of it may be subject to legal restrictions or restrictions imposed by users or Administrations.

5 International interworking of Videotex service

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

5.2 Different services operate with different service profiles ie. use different data syntaxes and support different application and service functions.

5.2.1 In order to facilitate interworking the data syntax and/or application and service functions may need to be transcoded or, the terminal or application adapted.

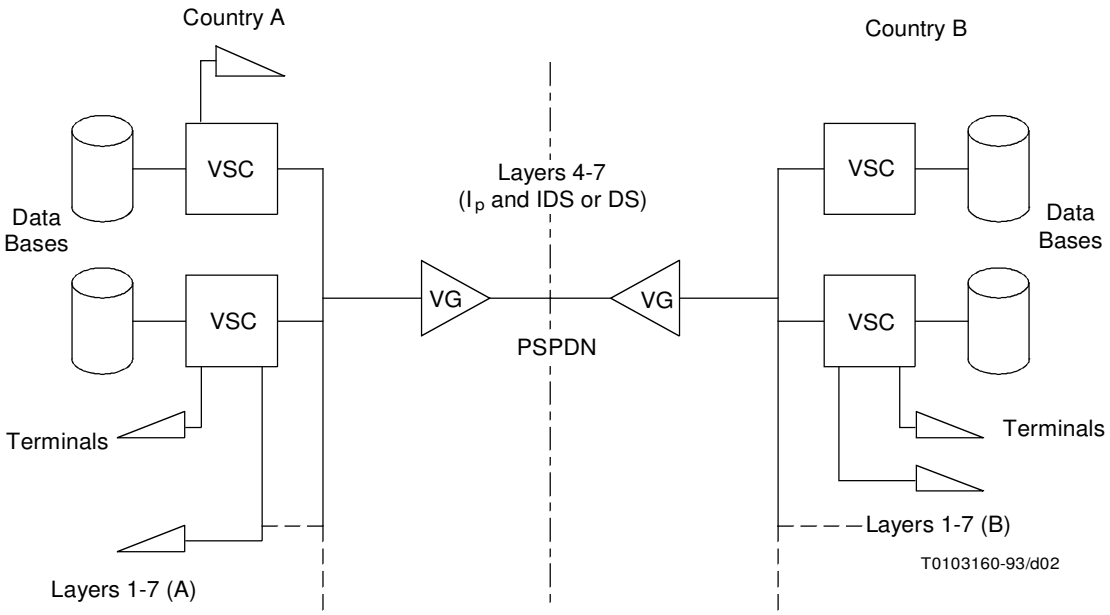
5.2.2 What transcoding or adaptation is necessary and where this takes place may be predefined for a set of service profiles or may be negotiated during the session.

5.2.3 It is the responsibility of the Administrations involved to jointly decide upon the configuration of the international Videotex service to be implemented, and the service profiles to be supported.

5.2.4 When the service profiles in two countries differ it may be necessary to use the set of international interworking protocols and the interworking data syntax to be defined in Recommendation T.101. If the interworking data syntax is not required or does not exist then any of the data syntaxes defined in T.101 may be used.

5.3 International interworking configurations

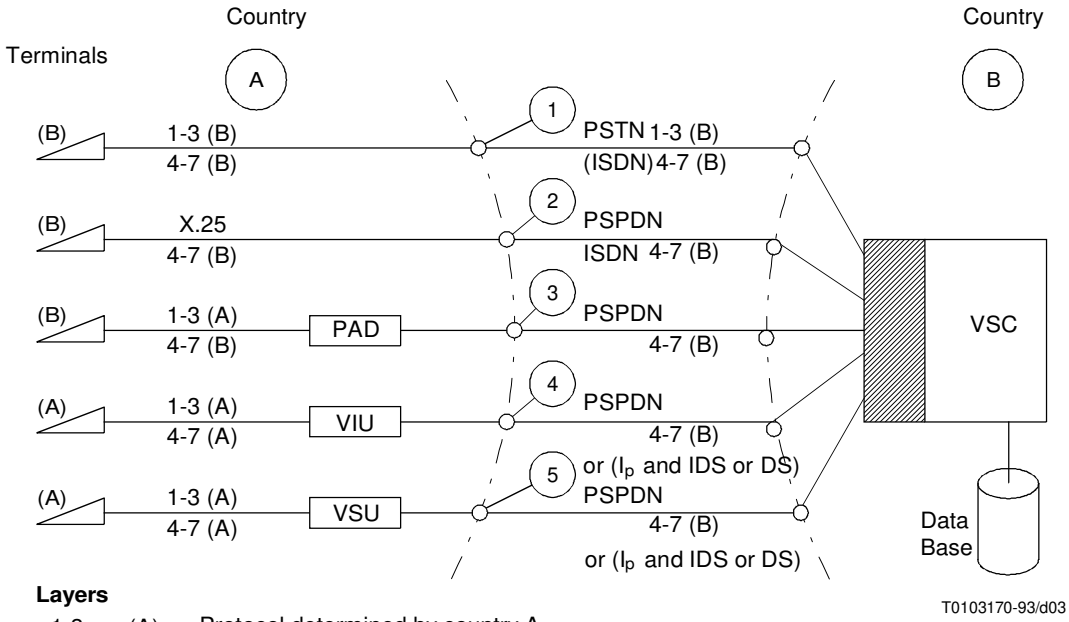
Configuration 1



VG Videotex gateway
VSC Videotex service centre
(A) Protocol and data syntax determined by country A
(B) Protocol and data syntax determined by country B
(Ip) International interworking protocol defined in T.101
IDS Interworking data syntax defined in T.101
DS Data syntax I or II or III defined in T.101

The gateways are connected via the PSPDN, dedicated lines or others, but using CCITT Protocols on the layers 1-3. The international protocols, layers 4-7, are to be defined in Recommendation T.101.

Configuration 2



Layers

1-3	(A)	Protocol determined by country A
1-3	(B)	Protocol determined by country B
	(I_P)	International interworking protocol defined in T.101
	VIU	Videotex interface unit
	VSU	Videotex service unit
4-7	(A)	Protocol and data syntax determined by country A
4-7	(B)	Protocol and data syntax determined by country B
	IDS	Interworking data syntax defined in T.101
	DS	Data syntax of country B defined in T.101 (DS I, or DS II or DS III)

5.3.1 Case 2.1

A terminal in country A is connected to a Videotex service in country B directly over the international PSTN (or ISDN bearer services). The protocols and data syntax used are those determined by the Videotex service in country B.

5.3.2 Cas 2.2

A terminal in country A is connected to a Videotex service in country B via the PSPDN (or ISDN bearer services). The protocols and data syntax used are those determined by the Videotex service in country B.

5.3.3 Case 2.3

A terminal in country A is connected via a PAD in country A and the international PSPDN to a Videotex service in country B. On the international PSPDN the protocols used are X.75 and X.29 and the data syntax of country B.

In cases 2.1, 2.2 and 2.3 of configuration 2, where a terminal in country A is directly accessing a remote VSC in country B via standard telecommunications networks (PSTN, ISDN or PDN), the “videotex service” offered to the user and the “protocols” to be used are defined by the telecommunications networks and by the remote VSC.

5.3.4 Case 2.4

A terminal in country A is connected via a VIU in country A and the international PSPDN to a service in country B. On the international link the protocols used can be either the international interworking protocols to be specified in T.101 (preferred solution) or the protocols determined by the service in country B. The VIU will provide the necessary conversion of these protocols to support the terminal in country A.

5.3.5 Case 2.5

A terminal in country A is connected via a VSU in country A and the international PSPDN to a Videotex service in country B. On the international link the protocols used can be either the international interworking protocols specified in T.101 (preferred solution) or the protocols determined by the service in country B. The VSU will provide the necessary conversion for these protocols to support the terminal in country A and in addition will support application charging and accounting and may also provide user authentification and/or identification.

6 Intercommunication with other telematic services

6.1 Videotex-telex

Videotex-telex interworking may be provided to enable users to send messages by means of a Videotex service to terminals connected to the telex network.

6.1.1 In order to minimize telex network holding times and to enhance the service to the user, messages may be handled on a store-and-forward basis.

6.1.2 Only the graphic characters of the Videotex graphic character repertoire corresponding to International Telegraph Alphabet No. 2 can be included in messages transmitted to the telex network.

6.1.3 The message format may be limited by the Videotex display format.

6.2 Telex-Videotex

Two distinct facilities may be provided by means of telex-Videotex interworking.

6.2.1 Telex-Videotex message handling

This facility may be provided to enable users to send messages from terminals connected to the telex network to terminals accessing a Videotex service.

6.2.1.1 Since Videotex terminals may not be capable of auto-answer operation this facility may be provided on a store-and-retrieve basis. The possibilities of store-and-forward or real-time communication are for further study.

6.2.1.2 The format of messages transmitted from telex terminals cannot be preserved unless the sender restricts the message format to the width of the Videotex display.

6.2.2 Telex-Videotex data base access

This facility may be provided to enable users to access the Videotex service by means of terminals connected to the telex network.

6.2.2.1 The facility available to telex users will be severely limited by the character repertoire, the lack of any Videotex attributes and the transmission speed of telex.

6.2.2.2 The telex character repertoire does not include the * and # characters used to form user commands in many Videotex services.

6.3 Videotex-Teletex

Videotex-Teletex interworking may be provided to enable users to send messages by means of a Videotex service to Teletex terminals.

6.3.1 In order to comply with the operational characteristics of Teletex it will probably be necessary to handle messages on a store-and-forward basis.

6.3.2 The Teletex and Videotex graphic repertoires are largely identical. The following fallback representations of Videotex characters (Table 1) may be transcoded at a Videotex-Teletex interworking facility.

TABLE 1/F.300

Identifier	Videotex character	Fallback representation	
SM 30	←	<	SA 03
SM 31	→	>	SA 05
SM 32	↑	¡	SP 03
SM 33	↓	!	SP 02
SP 19	‘	′	SP 05
SP 20	’	′	SP 05
SP 21	“	″	SP 04
SP 22	”	″	SP 04
SM 12	—	–	SP 10
MG 01 to MG 63	Block graphics	/	SP 12

6.3.3 For Teletex terminals having the ability to present the Videotex character repertoire in its entirety the need for fallback representation disappears. Therefore on initial call establishment the terminal display/printing capabilities must be determined.

6.3.4 Possible conversion of the Videotex attribute control functions is for further study.

6.3.5 The message format may be limited by the Videotex display format.

6.4 Teletex-Videotex

Two distinct facilities may be provided by means of Teletex-Videotex interworking:

6.4.1 Teletex-Videotex message handling

This facility may be provided to enable users to send messages from Teletex terminals to terminals accessing a Videotex service.

6.4.1.1 Since Videotex terminals may not be capable of auto-answer operation this facility may be provided on a store-and-retrieve basis. The possibilities of store-and-forward or of real-time communication are for further study.

6.4.1.2 An interworking facility will need to transcode Teletex characters and control functions which are not in the Videotex repertoire.

6.4.1.3 The format of messages transmitted from Teletex terminals cannot be preserved unless the sender restricts the message format to the width of the Videotex display.

6.4.2 Teletex-Videotex data base access

This facility may be provided to enable users to access the Videotex service by means of Teletex terminals.

6.4.2.1 The facility available to Teletex users will be limited by the inability of basic Teletex to represent many of the attributes and graphic elements (e.g. DRCS, geometric) of Videotex. Some alphanumeric characters will have to be transmitted to Teletex terminals in a fall-back form (Table 1).

6.5 Videotex-facsimile and facsimile-Videotex

For further study.

7 Quality of service

7.1 Provision, alteration, cessation and recovery of service

Due to the differences between national policies for Videotex service provision, the definition of this parameter seems premature.

7.2 Availability

7.2.1 Availability of service

Service should preferably be available 24 hours per day. When a service is unavailable (e.g. scheduled closure or temporary failure), then the user should be informed of this and when the service will be (or is expected to be) available. This information should preferably be free of charge.

Administrations should provide a sufficient number of international access ports to accommodate the demand for international sessions, with a failure probability in the same range as for national service. This implies appropriate calibration of international links.

7.2.2 Availability of applications

Applications accessible via the international link should preferably be available 24 hours/day. Applications which are not available all the time should indicate their hours of availability. The user should be informed of these hours. This information should be also reported in the directory.

7.3 Call establishment

The time between the user request for a foreign service and the reception of the first response from this foreign service should typically be not more than 10 seconds.

NOTE – Further investigation is needed to insure that this value is compatible with the call establishment delay for international virtual circuits on PSPDN.

When the call cannot be established, the reason should be reported to the user in an understandable manner (e.g., foreign service not operating, temporary saturation, etc.). This should give guidance to the user about action to be taken (retry immediately, retry later, see network operator, etc.).

7.4 Call retention

The international session should not time-out in the event of a remote application not responding to a user's input in less than 10 minutes. This does not preclude local time-out for user's inactivity detection according to national practises.

All cases of accidental break of the international communication should be reported to the user, indicating the nature of the fault as far as possible.

7.5 Information transfer

7.5.1 Transmission characteristics

For all configurations the bit error rate above transport layer should be better than 10^{-6} but 10^{-8} should be aimed for (end to end). The statistical delays due to network errors should be in the range of 5-10 seconds.

In the case of transmission failure the user should be appropriately advised.

7.5.2 Response times

The median response time during the session should typically be less than 3 seconds for information retrieval and typically not more than 10 seconds in case of transactions. The response times in all cases include the network transmission delays. If conversion is provided then longer response times would be acceptable. Applications which take more than 10 seconds to respond should preferably send reassurance messages.

7.5.3 Data integrity

When interworking between two Videotex services using different data syntaxes, there could be some unavoidable degradation of the display quality due to the data syntax conversion process, but care must be taken to minimize loss of essential information. Textual information is considered to be essential information. Textual information limited to the following repertoire of characters and control functions will always be transcoded without suffering loss of information:

i) characters of the basic 7 bit table of T.50, with the dollar sign ($), but without "low-line";

ii) common subset of the control functions as contained in Data Syntaxes I, II and III of Recommendation T.101.

When loss of textual information takes place in the conversion process, then some indication of this loss should be presented to the user. In the data syntax conversion process, there might be possible loss of time dynamic effects and the effects of timing controls such as "WAIT" command.

However, these may be legal, regulatory or commercial restrictions which lead to the supression, addition or alteration of information. The user should be informed when this has occurred.

8 Tariffing implications

An international Videotex service would give rise to the following components of the charges. All components do not necessarily need to exist in all international Videotex service configurations:

a) Communication Charge (e.g. PSPDN) (layers 1 to 3);

b) Service Operating Charge;

c) Protocol and Data Syntax Conversion Charge (layers 4 to 7);

d) Application Charge.

Depending on the configurations used, these charges are collected by either country A or country B. In the case of Configuration 1, all charges are collected by country A. In the case of Configuration 2, the parties responsible for collecting the charges are indicated in Table 2

TABLE 2/F.300

Configuration	Country responsible for collecting charges			Application
	Communication	Service operation	Conversion (if required)	
2.1	A	B	B	B
2.2	A	B	B	B
2.3 (PAD)	A	B	B	B
2.4 (VIU)	A	B	A	B
2.5 (VSU)	A	A	A	A or B