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SECTION 3

VIDEOTEX SERVICE

Recommendation F.300

VIDEOTEX SERVICE

CONTENTS

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 CCITT 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

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.

2.3 *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 centain applications of a service, eg. 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 § 3 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 comands 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 within the service, according to implementation. From the user point of view they are selected by routing to or selecting an appropriate point in the Videotex service:

3.2.2.1 *Function V1*

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

3.2.2.2 *Function V2*

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

3.2.2.3 *Function V3*

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

3.2.2.4 *Function V4*

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

3.2.2.5 *Function V5*

Provide billing information.

3.2.2.6 *Function V6*

Leave the Videotex service (mandatory).

3.2.2.7 *Function V7*

Request service/application identification.

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 section 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 section 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/F.300.)

3.3.2.2 *Border area*

The part of the screen which is outside the defined display area. (See Figure 1/F.300.)

Figure 1/F.300, p.

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 | | 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 | | 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 local editing by the user. Any number of input fields may be defined.

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:

Steady

The graphic elements are displayed normally.

Flash rate

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

Flash phase

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

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 section are those specified in Recommendations T.100 and T.101.

Terminals must be able to display correctly the following formats:

31 columns 16 rows

40 columns 20 rows of Latin-based alphanumeric characters

40 columns 24 rows

Whereas the attributes and control functions defined in this section 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.

3.3.5.3 *Other control 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.

3.3.5.4 *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 above).

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 section 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 (§ 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 (§ 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 (§ 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 (§ 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 (§ 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 (§ 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 | s 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 (§ 3.3.7.3.6).

3.3.7.4.2 *Line*

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

3.3.7.4.3 *Arc/circle*

Arc/circle | rovides 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 | s used to draw a rectangular area of specified width and height.

3.3.7.4.5 *Polygon*

Polygon | s 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 | s used to draw a curved line through, or best fit to, more than three given point positions.

3.3.7.4.7 *Infill*

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

3.3.7.4.8 *Pixel array*

Pixel array | s 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. The logical pels 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 section 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 usefull 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, p.

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, p.

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.

Case 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.

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.

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.

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/F.300) may be transcoded at a Videotex-Teletex interworking facility.

H.T. [T1.300]

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

Table 1/F.300 [T1.300], p.

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/F.300).

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^{D}lF261^{6} but 10^{D}lF261^{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 occured.

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/F.300 below.

H.T. [T2.300]

TABLE 2/F.300

Configuration	{			
	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

Table 2/F.300 [T2.300], p.

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SECTION 4

TELEMATIC SERVICES, GENERAL

Recommendation F.350

APPLICATION OF SERIES T RECOMMENDATIONS

The CCITT,

considering

(a) that Study Group I defines the basic and optional features to be offered by the various telematic Services;

(b) that Study Group VIII defines the mandatory technical requirements for telematic equipment;

(c) that Study Group VIII defines also optional technical capabilities which may be included in telematic equipment;

(d) that there is a need to define how the mandatory and optional technical requirements should be applied;

unanimously agrees

that the Series T Recommendations shall be applied in accordance with this Recommendation.

1 CCITT recommended services defined in the Series F Recommendations, excluding Videotex

In order to ensure full end-to-end compatibility within a CCITT recommended service, equipment shall be capable of providing the mandatory technical requirements defined in the Series T Recommendations to which the Series F Service Recommendation refers.

2 Optional technical capabilities

Where optional technical capabilities are defined in CCITT Series T Recommendations, e.g. for use as national or regional options, the equipment shall be capable also of operating in the mandatory fallback mode. This mandatory fallback mode provides the basic features required by the relevant Series F Recommendation, and hence the mandatory technical requirements are met.

3 Non-standardized capabilities

These capabilities are not defined in CCITT Recommendations but are laid down by Administrations and/or individual manufacturers. Provision is made for the use of such non-standardized capabilities in the procedures detailed in the relevant Series T Recommendations.

Equipment shall be capable also of operating in the mandatory fallback mode which provides the basic features required by the relevant Series F Recommendation, and hence the mandatory technical requirements are met.

Note 1 — The term ‘‘mandatory technical requirements’’ covers the ‘‘basic functions’’ in Recommendation T.60, the ‘‘basic capabilities’’ in Recommendation T.62, the ‘‘recommended standards’’ in Recommendation T.4 and the ‘‘standard capabilities’’ in Recommendation T.30.

Note 2 — The term ‘‘optional technical capabilities’’ covers the ‘‘standardized optional functions’’ in Recommendation T.60, the ‘‘non-basic standardized capabilities’’ in Recommendation T.62 and the ‘‘recognized options’’ in Recommendation T.4.

Note 3 — The term ‘‘non-standardized capabilities’’ covers the ‘‘optional functions’’ in Recommendation T.60, the ‘‘non-basic capabilities’’ and ‘‘private use’’ in Recommendation T.62 and the ‘‘non-standard capabilities’’ in Recommendation T.30.

Recommendation F.351

GENERAL PRINCIPLES ON THE PRESENTATION OF TERMINAL IDENTIFICATION

TO USERS OF THE TELEMATIC SERVICES

The CCITT,

considering

(a) that the terminal identification (TID) in the telematic services should provide the called subscriber not only with an unambiguous identification of the calling subscriber, but also with the essential information needed to establish a call to the former;

(b) that transfer of network addresses, terminal identifications and other session management functions are covered in Recommendations specific to individual networks and telematic services;

(c) that detailed provisions on TIDs and network addresses may be also found in specific Telematic service and network Recommendations and no modifications are necessary to the information carried by the communications protocol.

(d) that, from the operational viewpoint, it is acceptable for a subscriber to add selection digits to those presented in the TID,

recommends

that the following general principles on the identification of terminals in the telematic services (and, as appropriate, other terminals) should be applied to all new equipment, and to all existing equipment

1 The TID for telematic terminals on the PSTN shall precede the telephone country code with the escape code ‘‘9’’.

2 The TID for telematic terminals on the ISDN shall precede the country code with the escape code ‘‘0’’.

3 Table 1/F.351 shows examples of TIDs for telematic terminals on the CSPDN, PSPDN, PSTN and ISDN. The table also includes the dialling sequences from a terminal on one type of network to terminals on other types of networks.

It should be noted that it may be necessary to instruct users **NOT** to dial the escape code ‘‘9’’ for calls from PSTN and ISDN to PSTN, and ‘‘0’’ from PSTN and ISDN to ISDN.

The applicability of TID concept for existing G2/G3 terminals is not mandatory. In new G3 terminals the possibility to implement TID is to be encouraged.

H.T. [T1.351]

TABLE 1/F.351

Sink Source		Country B				
	Network	CSPDN (e.g. Canada)	PSPDN (e.g. Canada)	PSTN (e.g. France)	ISDN (e.g. France)	
Country A	{	+3029-1234567 (Note 1) PSPDN +33-1234567890 (Note 2)	+3028-1234567 +3029-1234567 ISDN	+933-1234567890 +3028-1234567 +3029-1234567	+033-1234567890 +933-1234567890 +3028-1234567	+033-1234567890 +33-1234567890 (Note 2)

Note 1 — The + signifies national escape digit(s) requirement.

Note 2 — On calls from PSTN to PSTN and ISDN, and from ISDN to PSTN and ISDN the escape codes ‘‘9’’ and ‘‘0’’ may not be acceptable to the national PSTN and ISDN.

Tableau 1/F.351 [T1.351], p. 6 (a l’italienne)

Recommendation F.353

PROVISION OF TELEMATIC AND DATA TRANSMISSION SERVICES
ON INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

The CCITT,

considering

(a) that the I-series of Recommendations apply to the general concept and to the network capabilities of an ISDN. Specifically, Recommendations I.210, I.211 and I.212 describe, in a general way, the principles of telecommunication services, the bearer services and the teleservices supported by an ISDN;

(b) that the F-series of Recommendations describe the operations and quality of Telematic services;

(c) that many countries wish to adopt a common strategy for introducing the non-voice Telematic services on ISDN;

(d) that there is a need to harmonize the service approach for Telematic services, specially the requirements for supplementary services;

(e) that intercommunication is required between the existing non-voice services on the dedicated networks and non-voice services in the ISDN;

(f) that there is a need to identify the priority for introducing non-voice Telematic services in the ISDN,

recommends

that the guidelines laid down in this Recommendation be followed in providing Telematic and data transmission services on ISDN.

1 Existing services provided on ISDN

When Telematic and data services are provided on ISDN, it is necessary to refer to the Recommendation of each service for service description:

F.160 General operational provisions for the international facsimile services

F.162 Operational requirements of an international store-and-forward facsimile switching service (COMFAX)

F.170 Operational provisions for the international public facsimile service between public bureaux (bureaufax)

F.180 General operational provisions for the international public facsimile service between subscribers' stations

F.184 Operational provisions for the international public facsimile service between subscribers stations with Group 4 facsimile machines (Telefax 4) (formerly Recommendation F.161)

F.190 Operational provisions for the international facsimile service between public bureaux and subscriber station and vice versa (Bureaufax-Telefax and vice versa)

F.200 Teletex service

F.201 Interworking between the Teletex service and the telex service — General principles

F.202 Interworking between the telex service and the Teletex service — General procedures and operational requirements for the international interconnection of telex/Teletex conversion facilities.

F.203	Network based storage for the Teletex service
F.220	Service requirements unique to the processable mode number one (PM1) used within the Teletex service
F.230	Service requirements unique to the mixed mode (MM) used within the Teletex service
F.300	Videotex service
F.400	Message Handling System and Service overview
F.500	International public directory services

Existing services that may be provided on ISDN have to intercommunicate with the same services on existing networks including existing conversion facilities (see Table 1/F.353).

H.T. [T1.353]

TABLE 1/F.353

Existing services on ISDN	Services on existing networks
Teletex Teletex (PSTN, CSPDN, PSPDN) Telex }	{
Telex (see Note 1) Telex Teletex (PSTN, CSPDN, PSPDN) }	{
Telefax 2/3	Telefax 2/3 (PSTN)
Videotex	Videotex (PSTN, PSPDN)
MHS services	MHS S (PSTN, CSPDN, PSPDN)
Data transmission Data transmission (PSTN, CSPDN, PSPDN) }	{
ISDN	Integrated Services Digital Network
PSTN	Public Switched Telephone Network
CSPDN	Circuit Switched Public Data Network
PSPDN	Packet Switched Public Data Network
MHSS	Message Handling System Services

Note 1 — Telex on the ISDN.

Note 2 — The migration from non-ISDN terminals to ISDN is a national matter.

Note 3 — If existing terminals migrate to ISDN, their compatibility with terminals on existing networks shall not be degraded.

Note 4 — Compatibility between ISDN terminals and existing terminals must be retained.

Table 1/F.353 [T1.353], p.

Where administrations offer the telex service on the ISDN, the following principles should be followed:

i) Operational procedures should be in accordance with Recommendation F.60.

ii) The telex terminal on the ISDN should be addressable, from international telex networks, by the F.69 telex destination code and a national telex number. The maximum length of the national telex number should be in accordance with the telex signalling requirements of the CCITT U-series of Recommendations.

2 New services provided on ISDN

New services that may be provided on ISDN with intercommunication requirements with other services on ISDN and on existing networks (see Table 2/F.353).

3 Teleservices classification

3.1 *General principles*

A new service is one that is not yet generally available on existing networks.

Teleservices classification allows structured approach of the compatibility problem between terminals of the Telematic services.

To ensure stability of the classification in the future, the list has been divided into major categories.

Each category contains a limited representative set of ISDN teleservices. The subsequent development of this list will take into account the new Telematic services which could be defined by the CCITT.

H.T. [T2.353]
TABLE 2/F.353

New services on ISDN	Services on ISDN and existing networks
Teletex with mixed mode	Teletex (PSTN, CSPDN, PSPDN, ISDN) Telefax 4 (ISDN, CSPON) Telex
Teletex with processable mode (PM1)	Teletex (PSTN, CSPDN, PSPDN, ISDN) Telefax 4 (ISDN, CSPDN) (Class II, III) Telex
Telefax 4 Class I	Telefax 3 (PSTN) Telefax 4 (CSPDN)
Telefax 4 Class II	Telefax 3 (PSTN) Telefax 4 (CSPDN) Teletex (PSTN, CSPDN, PSPDN, ISDN)
Telefax 4 Class III	Telefax 3 Telefax 4 Teletex (PSTN, CSPDN, PSPDN, ISDN)
Videotex 64 (see Note 1)	Videotex (PSTN, PSPDN, ISDN)

Note 1 — Videotex service using the full capacity of the 64 kbit/s B-channel of the ISDN access.

Note 2 — Additional intercommunication requirements may be identified subsequently.

Table 2/F.353 [T2.353], p.

A Telematic service is defined by its specific operational rules, by the list of supported standardized functionalities (applications or modes) and by the relevant communication protocols.

Each application or mode handles presentation schemes based on the user of one medium or several media which can by synchronized. A medium conveys the characteristics of information presented to the user.

The simplest and the most discriminant form of classification has to consider the media as the basic elements based upon which the categories are elaborated.

3.2 *Teleservices list*

The following list will be completed progressively taking into account the new services as they will appear in the next years.

Audio services

— Telephony

— Audio conference

— . | | (other audio service)

Text and data services

— Telex

— Teletex

— Telefax 3

— Telefax 4

— Videotex

— Telewriting

— Data transmission

— MHS

— . | | (other text and data service)

Video services (see Note)

— Videophone

— Video conference

— . | | (other video service)

Multimedia services

— Audiovideography

— Audiography

— Telematic audio conference

— Telematic video conference

— Teleaction

— . | | (other multimedia service)

Note — In this category, the sound is always and implicitly included.

4 Interworking requirements

4.1 *General*

Interworking of Telematic terminals with compatible terminals on ISDN is mandatory.

In order to maintain the defined quality of service, suitable selection mechanisms have to be implemented to guarantee access to compatible terminal.

4.2 *Interworking with the Teletex service*

Interworking between all terminals connected to different networks must be possible.

Real-time connection between Teletex terminals operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving terminal to the sending terminal within the call.

The procedures for call set-up to terminals connected to different networks should be as similar as possible.

Interworking with international telex is mandatory.

4.3 *Interworking within the Telefax 4 service*

Interworking between all terminals connected to different types of networks must be possible.

Real-time connection between Telefax 4 terminals operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving terminal to the sending terminal within the call.

The procedures for call set-up to terminals connected to different networks should be as similar as possible.

4.4 *Interworking from Telefax 4 to Telefax 3*

Interworking between Telefax 4 terminals and Telefax 3 terminals should be possible even if they are connected to different types of networks. The preferred method of interworking is to be provided by the inclusion of a Group 3 capability in the Group 4 terminal.

Real-time connection between Telefax terminals (Group 3 and Group 4) operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving terminal to the sending terminal within the call. Interworking between Group 4 only terminals and Group 3 terminals could be resolved by using network units (store-and-forward or MH system). Further study on this is needed.

The procedure for call set-up to terminals connected to different networks shall be as similar as possible.

4.5 *Additional interworking configurations*

Other interworking configurations are for further study.

5 Assignment of priorities

The current assignment of priorities to the future work is:

a) Priority for non-voice teleservices:

1) existing Telematic services on ISDN,

2) new non-voice Teleservices.

b) Priority for bearer services:

1) new bearer services on ISDN,

2) use of bearer services of ISDN by existing terminals.

6 Introductional strategy guideline

These are strategic guidelines for the introduction of existing services on ISDN. The implementation is strictly a national matter; however, a measure of co-ordination is necessary internationally in order to provide users worldwide with attractive telecommunication services, appropriate intercommunication possibilities, and thereby to ensure financial success for the service providers.

Any existing service introduced on ISDN should have immediate access to the same service on existing networks.

There should be minimum changes in the user access procedures.

Any transition from existing to future international tariffs and accounting should be orderly.

The suggested provisional list of priorities for the implementation of existing services on ISDN is:

1) Teletex, Telefax, Videotex;

2) Data transmission;

3) Message Handling System Services;

4) Telex.

It is stressed once again that the priority of implementation is a national matter but it has significant international relevance.

Simultaneous implementation of existing services on ISDN in all countries is deemed desirable and efforts should be made to achieve this goal.

7 Bearer services for non-voice communications

Recommendation I.211 decribes and defines a recommended set of bearer services and their bearer capabilities to be supported by an ISDN as a basis for defining the network capabilities required.

The purpose of this chapter is to indicate the recommended bearer services associated to non-voice Telematic teleservices:

7.1 *Circuit mode bearer services*

— 64 kbit/s unrestricted,

— 64 kbit/s (usable for speech information transfer),

— 64 kbit/s (usable for 3.1 kHz audio information transfer),

— 384 kbit/s unrestricted,

— 1536 kbit/s unrestricted,

— 1920 kbit/s unrestricted,

— 2×64 kbit/s unrestricted.

7.2 *Packet-mode bearer services*

— Virtual call and permanent virtual circuit (B or D channel);

— Connectionless packet bearer service on a D channel (further study needed);

— User signalling bearer service on a D channel (further study needed).