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TERMINAL EQUIPMENTS AND PROTOCOLS FOR TELEMATIC SERVICES

FRAMEWORK OF VIDEOTEX TERMINAL PROTOCOLS

ITU-T Recommendation T.106

(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 T.106 was prepared by the ITU-T Study Group VIII (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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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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FRAMEWORK OF VIDEOTEX TERMINAL PROTOCOLS

(Helsinki, 1993)

1 Scope

Videotex is a public access information system which allows for the connection of a variety of terminal equipment to databases of information (servers) or to other terminals over widely available public telecommunications facilities. initially terminals were connected to information servers over the conventional public switched telephone network (PSTN). This was accomplished using low cost modems: typically at 1200/75 or 1200/1200 bits/s. With the introduction of ISDN and improved modem facilities a number of other optional configurations are becoming viable for the connection of videotex terminals to server systems. These include higher speed conventional modems at 2400 or 4800 bits/s, much higher speed modems such as 9600 bit/s (see Recommendations V.29 [10] and V.32 [11]) or 14 400 bit/s (see Recommendation V.17 [9]) and ISDN connections using packet mode on a B or D channel and circuit switched mode.

A number of videotex communications configurations are possible using these new communications facilities. This Recommendation describes the method by which these facilities shall be used in videotex.

This Recommendation describes the application layer and lower layer protocols which shall be used for terminal to videotex systems operating over various types of networks. This includes:

- ISDN 64 kilobit/s circuit mode;
- ISDN 64 kilobit/s packet mode;
- ISDN D channel packet mode;
- PSTN packet mode operation using V-Series modems.

In addition the existing PSTN based videotex services are identified, which primarily make use of relatively low speed modems over the PSTN or equivalent networks.

This Recommendation also identifies. the data syntaxes used in the various configurations within the various regions of the world, together with the common data syntaxes for audio and photographic information. The relationships between the various Recommendations applicable to videotex are defined.

2 Normative references

[1] CCITT Recommendation T.101, *International interworking for videotex services.*

[2] CCITT Recommendation T.102, *Syntax-Based End-to-end Protocols for the Circuit mode ISDN.*

[3] CCITT Recommendation T.103, *Syntax-Based End-to-end Protocols using the Packet Mode ISDN.*

[4] CCITT Recommendation T.104, *Packet Mode access for Syntax-Based Videotex via PSTN.*

[5] CCITT Recommendation T.105, *Syntax-based videotex application layer protocol.*

[6] CCITT Recommendation F.300, *Videotex service.*

[7] ISO 2022, *Information Processing – ISO 7-bit and 8-bit coded character sets – Code extension techniques.*

[8] ISO/IEC 9281, *Information technology – Picture coding methods.*

[9] CCITT Recommendation V.17 (1990), *Recommendation for a 2-wire modem for facsimile applications with: rates up to 14 400 bit/s.*

[10] CCITT Recommendation V.29 (1988), *9600 bits/s modem standardized for use on point to point 4 wire leased telephone type circuits.*

[11] CCITT Recommendation V.32 (1988), *A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone type circuits.*

3 Overall structure of protocols in various environments

As identified in Recommendation F.300 [6] various configurations are permitted for the structure of a videotex system. A terminal can be connected to a host server:

- directly by a telecommunication network;
- via a Packet Assembler Disassembler (PAD);
- via a Videotex Access Point (VAP); or
- via a Videotex Service Center (VSC) which may also act as a videotex host.

All of these configurations are currently in use. In all of the identified configurations listed above there exists an access function which is located either in the host or in the VAP or in the VSC.

With the development of new types of networks and progress m modem technology it is necessary to define the protocol between the terminal and the access function. For this reason a series of Recommendations have been developed addressing the protocol aspects between the terminal and the access function of the videotex service.

Recommendations have been defined identifying the access protocols for three different types of networks.

The relationships between these standards, including the videotex syntax Recommendation are illustrated in Figure 1.

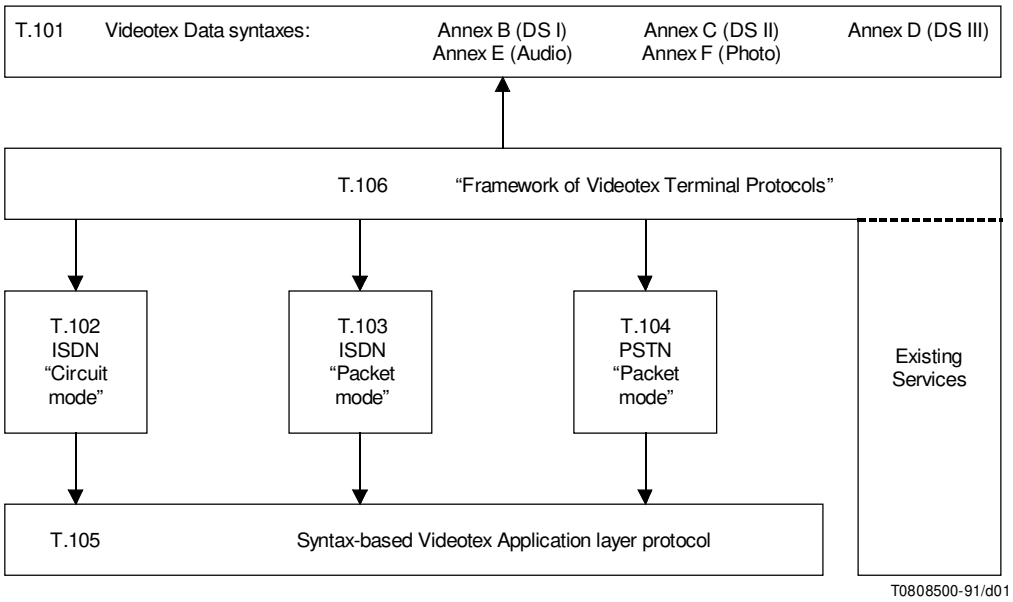

FIGURE 1/T.106

Relationships between videotex Recommendations

3.1 Data Syntaxes Applicable to Videotex Terminals

The representation of application data elements in syntax based videotex systems is accomplished by the use of a number of defined data syntaxes. Videotex services have been implemented in different countries/regions making use of different data syntaxes referred as Data Syntax I, Data Syntax II and Data Syntax III, which have an equal status.

These data syntaxes are described in Annexes B/T.101, C/T.101 and D/T.101 [1], respectively. Any of these data syntaxes may be used with the protocols given below (see 3.2 to 3.4). In combination with any of these three base data syntaxes, two common enhancements are defined addressing audio and photographic capabilities (see Annexes E/T.101 and F/T.101 [1], respectively).

The Terminal Facility Identifier (TFI), defining the mechanism for allowing a videotex service to recognize the possibilities of a terminal, is described in clause 9/T.101 [1].

The switching mechanism between the data syntaxes is based on ISO 2022 [7] and ISO/IEC 9281 [8] as described in clause 9/T.101 [1]. The ESC 2/5 F mechanism to introduce a complete coding environment may be used to select the base data syntaxes (DS I, DS II, DS III). The ISO/IEC 9281 picture coding environment switching technique based on ESC 7/0 CMI LI is used to establish the common audio and photo extensions.

3.2 ISDN circuit mode

Recommendation T.102 [2] describes the lower layers (1-3) applicable to ISDN circuit mode of operation. It describes the additional aspects of the End-to-end protocol for ISDN circuit mode, making reference to Recommendation T.105 [5] for the relevant common aspects of the End-to-end protocol.

3.3 ISDN packet mode

Recommendation T.103 [3] describes the lower layers (1-3) for ISDN packet mode operation on the B channel and the D channel. It also describes the additional aspects of the End-to-end protocol applicable to ISDN packet mode, making reference to Recommendation T.105 [5] for the relevant common aspects of the End-to-end protocol.

3.4 PSTN packet mode

Recommendation T.104 [4] describes the lower layers for packet mode operation on the PSTN. It also describes the additional aspects of the End-to-end, protocols operation, making references to Recommendation T.105 [5] for the relevant common aspects of the End-to-end protocol.

4 Syntax-based Videotex Application layer protocol

Recommendation T.105 [5] describes the application layer protocol common to all Syntax based Videotex Recommendations. This Recommendation consists of the description of service, protocol and coding applicable to Syntax-based Videotex.

5 Existing protocols of SPTN circuit switched mode

A number of different application and lower layer protocols are in use throughout the world. These services are primarily regionally or nationally defined. In these protocols both 7 and 8-bit channels are used as well as a number of different V-Series modems.

These existing base videotex systems are in wide use. In order to introduce functionalities in a compatible manner, PSTN based systems may be upgraded using higher speed modems without modifying the lower layers already in use. When introducing enhancements to the existing system (e.g. the use of higher speed modems), the lower layer and application layer protocols used are those defined in the existing services.