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SERIES F: NON-TELEPHONE TELECOMMUNICATION SERVICES

Teleconference service

Basic narrow band videophone service in the ISDN

Reedition of CCITT Recommendation F.721 published in Blue Book, Fascicle II.5 (1989)

NOTES

1 CCITT Recommendation F.721 was published in Fascicle II.5 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation F.721

BASIC NARROW BAND VIDEOPHONE SERVICE IN THE ISDN [1)]

The CCITT,

considering

(a) that considerable efforts have been undertaken worldwide in order to develop videophone equipment based on rapid improvements in the quality of video codec algorithms;

(b) that videophones of some companies are already available on the market;

(c) that first trials of videophone have been performed nationally as well as internationally;

(d) that a number of countries intend to introduce the videophone service as soon as possible;

(e) that the ISDN will be an appropriate network for providing the narrowband videophone service;

(f) that ISDN trials are going on in a number of countries,

recognizes

the need for a standardized international videophone service, which will guarantee the compatibility of videophones on a worldwide basis and it therefore,

recommends

that the narrowband videophone service, where implemented, respect the requirements stated in this Recommendation.

1 Introduction

1.1 *Scope*

The narrowband videophone service is to be defined for networks providing 64 kbit/s channels. This Recommendation only deals with ISDN which is recognized as a strong candidate for providing this service.

1.2 *Bearer capabilities*

Videophone services requiring one or two 64 kbit/s channels are under study. If two rates are eventually standardized, it will become necessary to provide for basic intercommunication at the audiovisual qualities of the lower rate. Such basic intercommunication should be provided in the terminals.

2 Description of videophone service supported in the ISDN

2.1 *Definition*

The **videophone service** is a symmetrical, bidirectional, real-time, audiovisual teleservice in which speech and moving pictures are communicated; the picture information transmitted is sufficient for the adequate representation of fluid movements of persons.

2.2 *Service description*

The videophone service is likely to be used in much the same way as the telephone service for personal communication, the enhancement being in the visibility of the communication partners which implies a number of possible new applications.

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1) This Recommendation may require further consideration, alignment and completion in the next study period.

A redundancy and irrelevance reduction technique (codec) in the terminal allows moving pictures to be displayed continuously in colour, even if transmission takes place at the comparatively low bit rate of the narrowband ISDN.

The speech quality of this new service must be at least as good as that applicable to the telephone service in the 64 kbit/s ISDN using a bandwidth of 3.1 kHz up to 7 kHz.

The videophone service is a teleservice, i.e. a fully standardized service as defined in Recommendations I.210 and I.240.

The basic videophone service is characterized by the continuous transmission of moving pictures simultaneously with the speech of the persons involved in the call (generally two in the case of a point-to-point connection) via one or two 64 kbit/s channels.

An optional enhancement available in some terminals provides for transmission of images of documents or other objects alternate to face-to-face communication. Transfer of documents at higher resolution may be an optional feature. Further study is required.

Two different types of calls should be possible: point-to-point calls (basic requirement) and multipoint calls.

Note – For multipoint calls a central facility is required for mixing speech signals and switching and/or combining video signals. This facility is to be defined in another Recommendation.

Videophone terminals must also be capable of supporting the telephone service.

In some installations a videophone will be attached to a passive bus configuration (S interface) along with terminals for other services.

Note – Speech supported only by still picture transmission and/or telewriting is *not* considered as part of the videophone service.

2.3 *Applications of the videophone service*

The examples given below are not exhaustive. Other enhanced videophone applications may emerge.

Examples:

a) "Face-to-face" dialogues involving at least head-and-shoulder images.

b) Dialogues including interactive viewing of documents such as sketches, diagrams or charts.

c) Access of the user to a videoconference.

d) Participation in videophone conferences.

e) Audio-visual tele-education.

f) Remote health "visiting" (limitations for further study).

g) Deaf-and-dumb communication (limitations for further study).

2.4 *Necessary quality characteristics*

– Synchronism of speech and lip movement (lip synchronism)
(No subjectively discernible difference in the delay of the speech and video signal.)

– Sound quality
Speech quality as in the 64-kbit/s ISDN telephone service based on a 3.1 kHz or 7 kHz bandwidth.

– Optimization of the picture quality is under study, including the need for adequate representation of fluid movements.

The overall effect on quality by the delays introduced by video codecs and transmission facilities needs to be taken into account in the service. If satellite connections are used, then two or more hops are to be avoided, because increased delays may impair user acceptability. Further study is needed for establishing criteria for "acceptable" signal delays.

For the convenience of the user visual user guidance between the videophone system and the user should be preferably provided with the aid of alphanumeric display.

3 Intercommunication

– Intercommunication with the telephone service is essential.

– Intercommunication with the videoconference service and other audio and visual services is necessary (but for further study).

– Intercommunication between videophone services based on different bit rates is required.

3.1 *Intercommunication with telephony*

Considering the fact that at the beginning of the introduction of the videophone service the number of videophone subscribers compared to the number of telephone subscribers will be negligible, a fundamental requirement must be fulfilled in order to avoid that videophone subscribers could only communicate in a kind of a closed user group. It is *essential* that every videophone subscriber is able to reach from his videophone terminal every telephone subscriber. This condition must be met regardless of the technology (analogue, digital, ISDN) applied in the local exchange to which the other telephone subscriber is connected.

If in case of intercommunication a videophone connection cannot be provided, a telephone call should be immediately initiated. If then no connection results, an appropriate cause indication shall be given.

On the other hand, every telephone terminal must be able to reach every videophone terminal. (The videophone terminal will be a multiservice terminal, i.e. appropriate for videophone calls as well as for telephone calls.)

3.2 *Intercommunication between different videophone services*

Basic intercommunication between videophone services based on different bit rates will be provided at the audiovisual qualities of the lower bit order.

3.3 *Intercommunication with other audiovisual and audiographic services*

For further study.

4 Service operation

4.1 *Call set-up*

Two possibilities are required:

– Call set-up starting directly as videophone service.

– Call set-up by means of a service change, starting from the telephone service.

Several service changes between telephony and videophony must be possible during a single call.

4.1.1 *Point-to-point videophone call*

The call set-up procedure from the user's point of view must be as simple as possible in order to achieve a good acceptability.

Call set-up procedure from the user's point of view:

Case 1 – Videophone service from the very beginning

e.g.: – going off-hook

– dialling tone

– initialization of videocommunication

– keying in the number of the called subscriber

– videophone call

Case 2 – Telephone service first

e.g.: – going off-hook

– dialling tone

– keying in the number of the called subscriber

– telephone call

– initialization of videocommunication

– videophone call

Note – Interruption of the audio connection recognizable for the users should be avoided when changing between the telephone call and the videophone call.

4.1.2 *Multipoint videophone call*

The multipoint videophone call is in other terms the supplementary service "Conference videophone call". Conference facilities (three-party service, conference call) within the videophone service should be optionally provided. Appropriate support (network or user premises equipment) is necessary.

The procedure for operation of those conference calls is for further study.

4.2 *Call release*

In general, the release of a videophone call should be similar to the release of a telephone call; picture and sound are released simultaneously.

4.3 *Change of service*

– A service change will be controlled via the D-channel; thus several service changes are possible during a call provided an end-to-end 64 kbit/s transparent channel is available.

– Service change to and from videophony must be possible to other services which need a single B-channel or two B-channels.

Note – Details are for further study.

4.4 *Addressing of terminals*

Additional call set-up functions such as terminal selection on a passive bus, using multiple subscriber number may be offered. This is under study.

5 Controls and indications

5.1 *User guidance*

User guidance plays a major role in the acceptance of the videophone service by the subscriber. User guidance may take place in the form of a dialogue between the system and the user.

Information concerning the status of the call will be displayed on the screens or on other displays of the calling and the called users. Some standardization of icons is required.

The audible call progress signals used in the videophone service should comply to those of the telephone service.

User guidance may be based on the display of alphanumeric characters, e.g. on the screen, or by other visual means, and/or on audible announcements.

It must be possible for the sending user (calling as well as called user) to switch on and off the facility "suppressing the outgoing picture".

In the case that one communication partner does not want to send his own picture to the other, a substitutional image or a suitable pictogram should be transmitted and displayed at the remote terminal.

Call set-up and user contact procedures may need harmonization with those used for voice services. This point is for further study.

5.2 *Additional items*

– The display of the called and calling subscribers' pictures on the screen should be possible, not necessarily simultaneously.

– The subscriber's own picture should be switchable on and off, as required.

– Hands-free communication and loudspeaking should be optionally possible.

6 Supplementary services

– Same as for telephony (including conference call). Further study required.

– Other supplementary services, e.g. “change of service including change of connection” have to be studied.

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