REPORT 1080-1

INTERNATIONAL EXCHANGE OF TELEVISION PROGRAMMES WITH DATA-ENCODED CAPTIONS (SUB-TITLES)

(Question 29/11, Study Programme 29G/11)

(1986-1990)

1. Introduction

This Report considers the methods used in the international exchange of television programmes which contain data-encoded captions (sub-titles).

These considerations relate to the work of Study Group 11 but methods of international exchange include television magnetic tape recording, satellite and long-distance transmission links. It will therefore be necessary to inform the CMTT and Study Group 10 of this work and, where necessary, refer questions to them. Such questions may include the choice of line numbers in the field-blanking interval for captions.

Further information on captions and teletext services can be found in Report 802 and on teletext systems in Recommendation 653.

Usually, the caption data is according to one of the teletext systems although in North America a low-speed method, using Line 21, developed by the Public Broadcasting Service (PBS) [Lentz *et al.*, 1978] is also in widespread use.

These "closed" captions are displayed, at the viewer's choice, with the picture by means of a special decoder associated with the receiver. Captions are usually in the language of the programme and intended as a service to persons with impaired hearing. Captions may be provided in languages other than the programme sound, or in the case of special educational programmes, explanatory text or graphics may be used. The use of captions is expected to increase, especially multi-language captions in the case of direct satellite broadcasting.

Captions are an integral part of the programme. Caption data can be broadcast in the field-blanking interval, either confined to certain lines or included within part of a total teletext package which contains other material not related to the programme.

Methods of caption exchange include the use of several different types of computer floppy discs. The caption data on these discs is related to the programme videotape using the SMPTE or EBU time-and-control code, details of which are available in Reports 630 and 963.

2. Data requirements

It has been reported that for most alphabetic writing systems, the peak data rate needed reaches 130 characters per second, for an unconstrained use of captions in a single language. This allows for the worst-case (infrequent) occurrence of a very long caption immediately succeeding very short captions. A lower data rate would suffice for the majority of captions and would be sufficient for all captions if the inter-caption time could be constrained [CCIR, 1982-86a]. For captions in a single language, one data line per field is more than adequate for any of the teletext systems.

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3. Current exchange methods

3.1 *Field-blanking interval data formats*

These methods use a teletext or specific data format in the field-blanking interval of the video signal, which can allow the captions to accompany the programme and be exchanged using videotape or international connection circuits.

The various current uses of the lines in the field-blanking interval are detailed in Reports 314 and 823.

When recording on videotape, consideration should be given to repeating the caption data to reduce the effects of tape drop-out.

3.1.1 *Data using dedicated lines*

According to some current practices, caption data is confined to (a) nominated line(s) and has an exclusive magazine number. The only data on the(se) line(s) is from the caption source. The data can be separated by a line-number-triggered selector or by the magazine number. If there is more than one language, each is identified by its assigned page number.

Use of an exclusive data line for national and international exchange of captioned programmes between Australia and New Zealand has been reported [CCIR, 1982-86b,c] and is described in Annex I. The system is used for satellite, long-distance links and videotape programme exchange. A "captioned" programme can be received through a link or replayed from a videotape and be broadcast independently of any local teletext system.

3.1.2 *Data using a dedicated teletext channel*

An alternative way of specifically identifying captioned material is through the use of a dedicated teletext data channel, magazine number or page number. This approach makes efficient use of the field-blanking interval in that captioned material can be multiplexed with other teletext data on any available line.

3.2 *Longitudinal track data formats*

Results of tests carried out on the longitudinal track of a 19 mm (3/4 inch) U-format videotape recorder suggest that a single language could be carried in the user bits of the SMPTE or EBU time-and-control code which normally occupies a single longitudinal sound track. With a higher data rate, additional languages could be carried [CCIR, 1982-86a].

These methods are useful for the exchange of television recordings for programme evaluation (see Recommendation 602) because smaller format VTRs and VCRs will not record teletext type data in the field-blanking interval.

4. Data format standards conversion

Standards conversion may be necessary between the various data formats, often in conjunction with video standards conversion. Experimental conversion between the PBS 0.5 Mbit/s Line 21 system and system B teletext has been reported [Lambourne *et al.*, 1984].

5. The need for standardization

Signals are likely to be partially or completely deleted when carried in arbitrarily assigned lines in the field-blanking period by television recording and distribution equipment. Deletion at points of international connection may also occur. Further problems may arise when new system designs using digital techniques are employed.

Standardization is therefore required to ensure the integrity of the caption data. The designation of lines that would not be subject to deletion, to be used for caption data would avoid this problem.

In addition, it may be desirable to establish preferred operating practices for use with particular systems.

As an example, Annex I describes the practices adopted by Australia and New Zealand.

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