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.

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.

REFERENCES

DRAKE, D. [September, 1983] Current developments in broadcast teletext in Australia. Conference Digest 613-615, IREECON 83, Sydney, Australia.

LAMBOURNE, A. D., HUTT, P. R. and DAY, S. [21-25 September, 1984] International exchange of television closed captions. IEE Conf. Publ. No. 240, 161-164. Tenth International Broadcasting Convention (IBC 84), Brighton, UK.

LENTZ, et al., [June, 1978] Television captioning for the deaf, signal and display specifications. Public Broadcasting Service Engineering Report No. 7709C.

CCIR Documents

[1982-86]: a. 11/330 (EBU); b. 11/366 (Australia); c. CMTT/209 (Australia).

ANNEX I

OPERATING PRACTICE FOR THE EXCHANGE
OF CAPTIONED PROGRAMMES USING SYSTEM B TELETEXT
BETWEEN AUSTRALIA AND NEW ZEALAND

The following information is provided to facilitate the international exchange of captioned programmes by a variety of methods including videotape and international transmission circuits.

1.   Lines 21 and 334 in the television field-blanking interval should be used and other information on these lines should be avoided.

2.   Appropriate operating practices should be exercised during editing and replay of videotape to ensure the data is not blanked, clipped or shifted to another line by time base correction or video processing.

3.   To overcome corruption due to tape drop-out effects and for the improvement of marginal reception conditions, the data of each sub-title page should be repeated.

4.   If data regeneration is used then the data should not be corrupted, line shifted or delayed by more than one TV frame.

5.   The data and "control bits" should be set as follows:

5.1   The teletext caption signal is assigned to magazine 8, with page numbering [CCIR, 1986-90] as follows:

Page 800   reserved for an index of programmes and pages;

Page 801   sub-titles for adult deaf and hearing impaired at 120 words per minute;

Page 802-8xx   future allocations for alternate languages and other reading speeds and reading levels. These would be used for special applications such as ESL (English as a second language) and remedial reading. Page 888 is not specifically allocated at present.

5.2   Caption page is selected (C6 set to 1).

5.3   An update indicator is sent on each page (C8 set to 1).

5.4   Parallel magazine mode is selected (C11 set to 0). This should present few difficulties where national systems operate in serial mode as the caption data attached to the incoming/outgoing programme will necessarily need to be redirected into/out of the local teletext system where the mode aspect can be reset.

5.5   Care should be taken to overcome special operational problems such as "sticking captions" at the conclusion of a programme segment. A header row with an erase page command (C4 set to 1) sent about a second before the end of the programme would correct this problem. Additionally, as a clock would be irrelevant in the case of tape relay, the word "CAPTIONS" could be included in the last eight character positions of the header row for convenient user checking.

REFERENCES

CCIR Documents

[1986-90]: 11/109 (Australia).

REPORT 1208

TELESOFTWARE SERVICES

1.   INTRODUCTION   (1990)

The name "telesoftware" was first used at the time of the pioneering transmissions in the UK from Independent Television in 1977 to describe transmissions of coded data and computer programs.

Telesoftware is now one of the data broadcasting services recognized by the CCIR (Report 802-2) and it complies with the definition of the broadcasting service as given in Article 36 of the Radio Regulation.

The activities described in this Report relate to the following definition of "telesoftware": the provision, via telecommunications or broadcast networks, of software and associated data files intended to be acquired and then executed or used by terminals subject, when appropriate, to certain conditions governing access and payment.

Section 2 of this Report presents a survey of existing operational or experimental telesoftware services within broadcasting organizations. Section 3 summarizes the technical aspects of telesoftware. More detailed information about these technical aspects is given in the Annex. Section 4 identifies potential areas of standardization in the telesoftware domain.

2.   TELESOFTWARE SERVICES WITHIN BROADCASTING ORGANIZATIONS

2.1   Current situation and future projects in the UK

2.1.1   Broadcast software by teletext (BBC)

The BBC Telesoftware Service was launched as a regular public service on 22 September 1983. It enjoys the same status as radio, television and teletext, although with lower priority and smaller budgets and audience. Three years after the launch, there were about 12 000 teletext adaptors for the BBC microcomputer in use, the only generally available method of receiving telesoftware by teletext.

The BBC Telesoftware Service is a part of the teletext service (Ceefax) under the control of the Manager, teletext. The day-to-day editorial control of the telesoftware output is with the Telesoftware Editor, who is also responsible for the commissioning and control of software for transmission. Rigorous standards are applied to ensure that the software performs as expected even in the hands of the inexperienced user.