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LANGUAGE DUBBING - A VIDEO BASED SYSTEM

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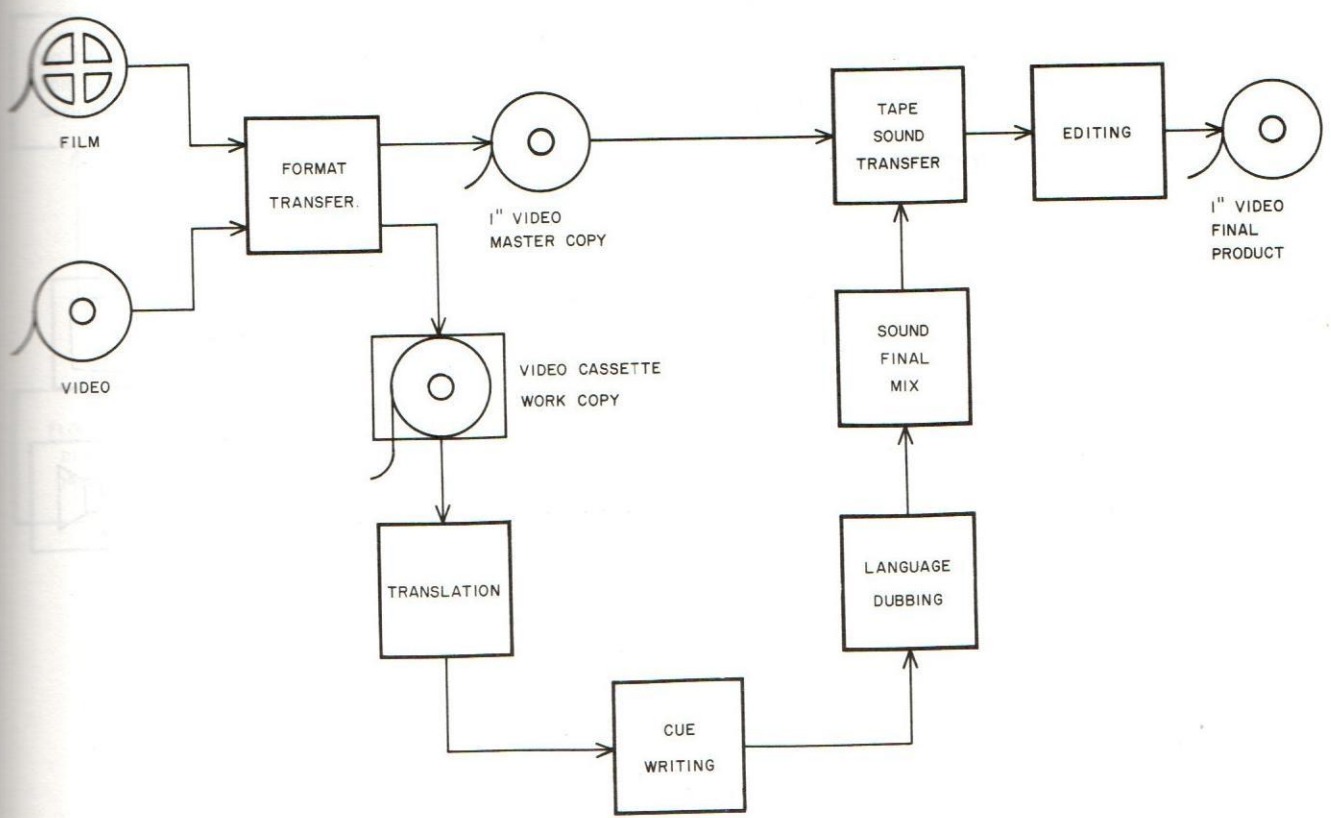
INTRODUCTION

Language dubbing, or the replacement of a sound track of one language with that of another, has been a film based system utilising film projectors, band or script projectors and numerous sprocketed magnetic tape machines. The final mix sound track produced is then married with the master video print and usually transferred to videotape after which the new titles and credits are edited on. This is a very time consuming and expensive process, each hour of language dubbed programme material consumes well in excess of a hundred man-hours.

The extensive use of language dubbing by the SABC prompted an investigation into the possibilities of producing a video based system which would provide an equally efficient, more flexible, simpler to operate and more cost effective solution. As a result a unique system was developed and put into use with very encouraging results at this, the early stages of being used.

GENERAL SYSTEM DESCRIPTION

The illustration shows the complete process flow diagram in a condensed form. Programme source material in virtually any form and format is transfered to a master one inch video copy as well as one or more work copies in video cassette form. In the transfer process all copies are provided with the same EBU time code. This is an important aspect since time code is used as a reference throughout the process. The work copy is used in the translation process where the original sound track is translated into the new language. This is done in such a manner that words and phrases are chosen and spaced to achieve lip synchronisation as far as possible. The final product out of this area is the new script where words are mated to time code where critical timing is necessary.



SYSTEM FLOW DIAGRAM

The process following translation involves cue writing. A cue is defined as the exact point referenced to the program video where the replacement dialogue is to start. A floppy disc is produced with all the cue point information in the form of time code, together with actor identification for each cue point.

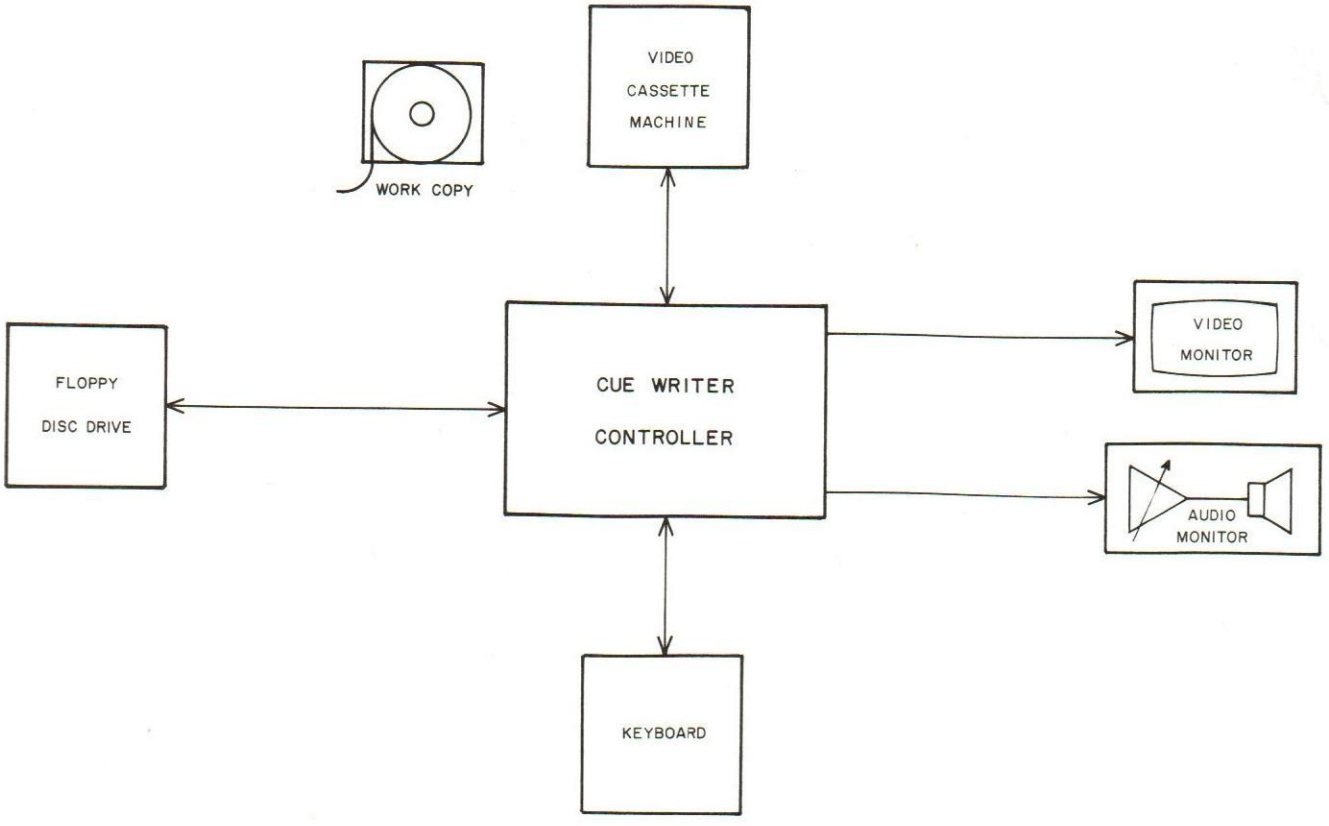
In the Language Dubbing area actors are used to produce the new sound track. The work copy video, cue point floppy disc and translated script are used to assist them and the new dialogue is recorded on a multitrack audio tape machine. Time code is used for reference and synchronisation purposes. Level adjustments, addition of echo and mix-down to one audio track is handled in the Sound Final Mix area. The new sound track is finally married to the 1 inch master copy at the Tape Sound Transfer facility, titles and credits are added and editing done to produce the final broadcast product. The only unconventional processes in this system are "cue writing" and "language dubbing" which will now be discussed in greater depth.

CUE WRITER

The Cue Writer Control system is a flexible, software based system. Referring to the illustration, a remote keyboard carries all functions, also remote control for the video cassette machine. The normal transport controls can be exercised as well as a "search" mode where forward and reverse speeds of 2X, 1X, 1/5 X, 1/20 X and stop can be selected using a rotary control. This feature facilities the easy finding of cue points. The control panel displays time code and actor selected, and a simple keystroke sequence stores the cue point time code and actor selection in RAM. The cue point entry can also be done on-the-fly using real-time time code, or manually by entering the desired time code via the keyboard.

The system can accommodate up to six actors, labelled A through F, cue points can be changed or deleted and are automatically sorted in ascending time code order. A scroll function enables the user to quickly scroll through the cue point list. Cues are stored from RAM onto floppy disc. This disc is formatted with its own unique identification number which is used as a password to prevent accidental or illegal erasures or changes to the cue list.

Real-time checking of the cue point accuracy is achieved by playing the video material back through the controller where video cue wipes are keyed into the material and displayed on the monitor. The actor indication, or video cue wipe, is in the form of a thin vertical, full height coloured bar which moves



CUE WRITER

across the screen from left to right. On the extreme righthand side of the monitor screen a thin, white marker line is also keyed in. The cue point corresponds to the coincidence of the moving coloured bar and stationary white marker line. The time taken for the bar to move across the screen is programmable between one and five seconds. In addition the vertical bar can be changed to a horizontal bar moving from left to right across the screen. Six colours are used to identify each actor uniquely.

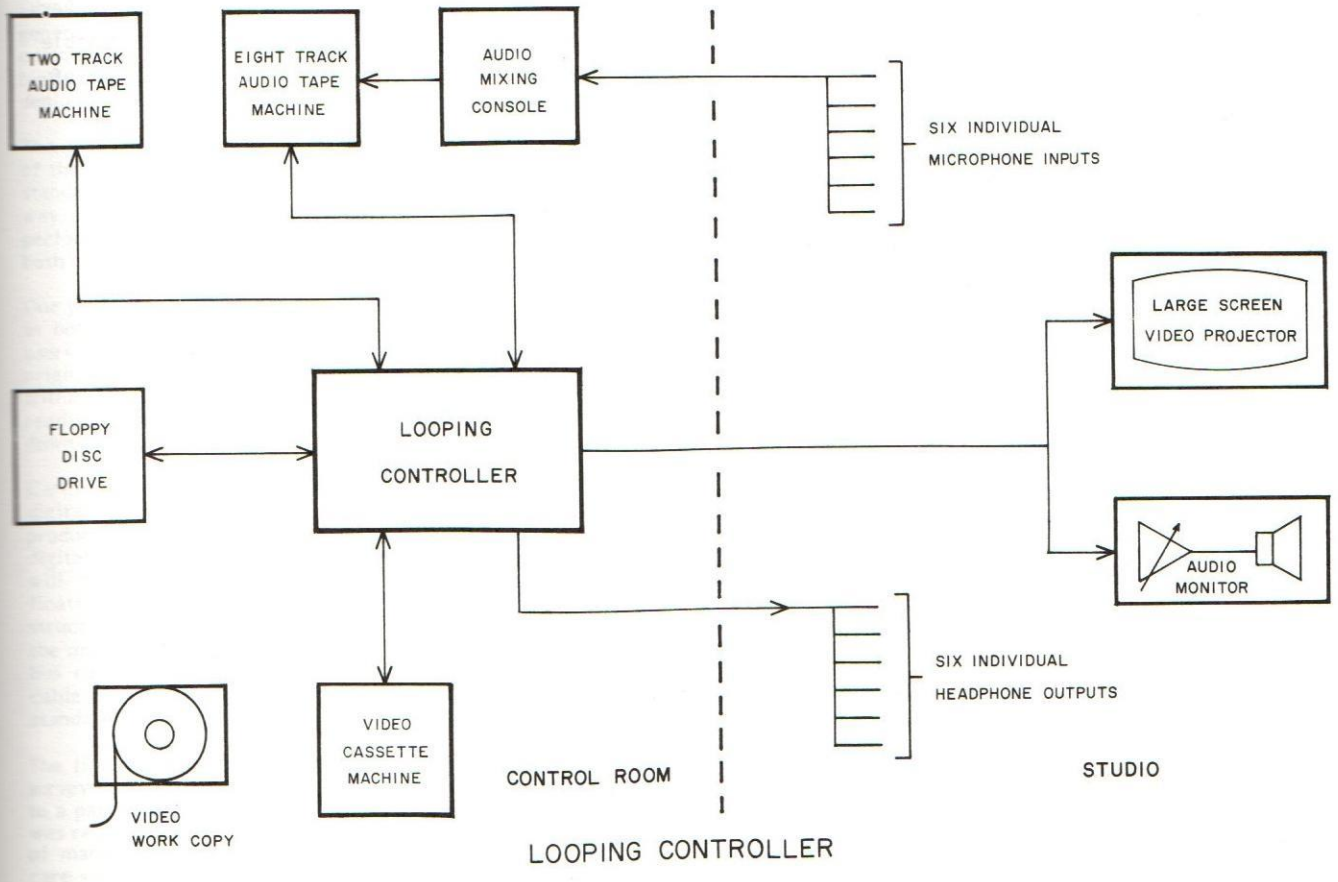
Coupled to the video cue wipe is a three pip audio cue sequence, the third and final pip is timed to occur at the instant the video cue bar reaches the marker, i.e. the cue point. A hard-copy printer can be coupled to the controller to provide a backup for the floppy disc containing all the cue points and actor information.

LANGUAGE DUBBING

The area where the actual replacement of dialogue takes place consists of a studio and a control room. The studio contains a large screen video projector and the microphones and headsets for the actors. The control room hosts the rest of the equipment. Here the work copy cassette is played on the video cassette machine through the Looping Controller where the video cues are regenerated and displayed with the programme video on the large screen projector in the studio. Each actor is allocated an individual audio track on the eight track audio tape machine, one track is spare and the other is used for time code. One track on the two track audio machine contains the music and effects track and the other track time code. The video cassette machine acts as a master and the two audio slave machines are locked to it by virtue of the time code on each.

The Looping Controller has four primary modes of operation, viz CUE, PREVIEW, RECORD and REVIEW. At the start of a dubbing session a start point, or loop in point, for the video programme material will be determined and entered as time code in the controller. An end point, or loop-out point, is likewise determined and entered, if necessary, the idea being that dialogue replacement takes place in relatively short loops.

On entering the CUE mode, all assigned tape machines will non-synchronously search to the loop-in point and park. Individual pre-roll times are software programmable. When all machines are cued an indicator light to that effect is illuminated on the keyboard for operator convenience. PREVIEW mode causes the system to perform a cue sequence if it has not



already been done, and all assigned machines then begin synchronised playback. When synchronisation is achieved a "sync" light illuminates on the keyboard and video and audio cues are performed. Loss of synchronisation, or failure to achieve synchronisation results in a flashing "sync" light. At the loop-out point, if defined, all machines will enter the STOP mode. At any stage an exit can be made from the PREVIEW mode or it can be re-initiated. The PREVIEW mode is intended as a practise session for the actors and no recording is done. Some of the refinements on the system include the ability to offset the time code on individual audio tape machines for exact video to audio synchronisation. This can be necessary when time code has not been recorded accurately, magnetic tape has stretched or for any other irregularity. The timing of the coloured cue bars and audio pips can be offset against the true cue point by plus-minus 99 video frames in one frame steps to allow for actor reaction time. All these adjustments can be done for individual actors and are software programmable. In addition the Looping Controller contains all the functions found on the Cue Writer Control System so that it can double up in that role also.

If practise makes perfect, the RECORD mode can be entered. This follows the PREVIEW mode with the difference that dialogue recordings are made on the eight track audio machine. Tracks are assigned indirectly by assigning actors. Therefore, if only one actor is being used at a given session, one track only will ever be recorded on, thereby preventing tracks belonging to other actors being contaminated. An actor only hears the cue pips associated with his cue points on his headset. A tally output is provided in the RECORD mode. The RECORD mode can be re-initiated or aborted at any time in the sequence.

In the REVIEW mode a cue sequence is once more performed and all machines will then enter the synchronised playback mode. No cues are generated and the new dialogue is presented with the video material so that actors and producer can assess their performance virtually seconds after the recording.

The looping processes as described enable small portions to be dubbed at a time, thereby enabling the final product to be compiled by division into multiple loops.

CONCLUSION

A vast amount of work has gone into the development of the software based systems to make them user friendly. Single button commands and explicit error messages help to achieve this. Foolproof operation has been obtained to a large extent in that the software will check whether all peripherals are on-line, powered-up, loaded and operational, illegal or non-valid commands are ignored with the display of an error message. In this way operator convenience and confidence are achieved.

On the engineering and maintenance side a complete diagnostics package was implemented and the engineer can talk directly to the CPU in machine language by coupling a data terminal to the controller. ROM and RAM checks can be performed effortlessly, and faults and errors localised down to integrated circuit level. A possible shortcoming of the Looping Controller resides in the fact that an actor has to either learn his script by heart or rely on a typewritten copy from which he can read. This is now being investigated and a possible solution would be to insert running script on the bottom of the monitor screen or on another monitor directly underneath or above the large screen projector.

The new language dubbing system is now being introduced into service and first results have been very encouraging. We feel confident that this flexible system will also be exploited in other sectors of the broadcast industry.