

WHITE PAPER

CINEVATOR SUBTITLE RECORDING • CREATING HIGH QUALITY 35MM SUBTITLED RELEASE PRINTS

INTRODUCTION

Subtitling is a vital tool in making a film more accessible to an international audience and hearing-impaired viewers. The work traditionally required to create release prints with subtitles is substantial and has involved many different fields of competence.

The cinema subtitling process begins with the translation of the spoken word and ends with the audience being presented human-readable text as subtitles on the cinema screen.

35mm film is traditionally distributed with 'hard' subtitles. Hard subtitles exist as an element of the release print's picture and are presented along with the background image using standard projection equipment. In recent years the industry has seen increasing use of 'soft' subtitles which remain separate from the background image until the movie is projected, at which point the text is added either as an optical overlay, as with the Dolby ScreenTalk system, or as a digitally rendered overlay in the case of Digital Cinema.

In this white paper we focus on traditional subtitle production and introduce a new method of hard-subtitling cinema release prints with higher quality and better cost efficiency than traditional techniques.

SUBTITLING WORKFLOW

At the beginning of the subtitle workflow the spoken word is translated into human readable text. The resulting subtitles will ideally convey the full meaning and intent of the original language, and just as importantly, their presence won't greatly distract from the images on screen. Just like a movie's soundtrack, subtitles can be a vital artistic and creative component of a film.

The translation process is generally decoupled from image and sound production. Subtitle information is communicated between individuals and facilities in the form of a 'spotting list' – a document containing both translated text and timing information, and at times additional metadata regarding layout and style of the text on screen.

The film subtitling workflow ends with the subtitles being added to a release print. Different techniques can be used to accomplish this task. What follows is a quick overview of the methods commonly used today:



Laser Engraving

A high-powered laser burns away the emulsion layer of a release print, where subtitles will appear as white characters when projected. The laser subtitling technique is commonly used for low volume work. It produces reasonable quality subtitles in a relatively fast way. The risk of having a release print destroyed by the laser has become low with modern laser subtitling systems. Laser subtitling services are usually offered by dedicated, specialist facilities.

Optical

A high-contrast negative film is produced containing only subtitles. Using an optical overlay printing technique, the subtitles are photographed into the release print as white characters. As subtitles are exposed simultaneous with the background image, optical subtitling techniques will usually provide faster turnaround than laser engraving and are commonly used for medium to high volume work.

Post-Production

Subtitles are rendered into the background image frame by frame using digital compositing tools. This process is time consuming, costly and increases the demand for on-line storage. Post-production subtitling methods provide an endless variety of fonts, character sets, layout options and subtitle styles. The process can be costly, but the final subtitle quality can be extremely high.

• CREATING SUBTITLED PRINTS

A NEW APPROACH

When the Cinevator®five real-time film printer was introduced to the market, the foundation of a new, alternative workflow was laid. The Cinevator's unique "Direct-to-Print" technology platform has brought new levels of film recorder performance and throughput to the industry. However, speed and efficiency are only half the story; new workflow opportunities born out of the Cinevator's speed have an impact on all facets of release print production, including the subtitling process.

For our discussion it is important to understand that the Cinevator is able to expose film in real-time, recording picture, sound and subtitles to 35mm print film in one pass, at 24 frames per second.

When recording subtitles, the Cinevator uses a compositing technique comparable to the 'Post-Production' method discussed above, in that subtitles are fully rendered into the background image. However, subtitle compositing is executed in real-time during the recording process, providing the same, excellent image quality as above, but without the significant storage requirements. The original image source material remains untouched, and one 'clean' master can be used to produce subtitled reels in multiple languages.

Preparation and Translation

At the beginning of the subtitling process, a translator / subtitler receives a working copy of the movie for which subtitles are required. Specialised software is used to help translate the spoken dialog into individual subtitles and to set the IN and OUT points for each of these titles in relation to a video reference. This process is commonly referred to as 'Spotting'.

Spotting List

At the end of the spotting process, the software creates a 'spotting list' containing the translated text, the start frame (IN-point) and the end frame (OUT-point) for each subtitle, as well as other annotations and metadata. A variety of open and proprietary file formats exist for these lists.

Information regarding subtitle layout and style (e.g. font, colour, positioning) is still to be defined at this point. Spotting lists for motion picture subtitling will not commonly include information on image format or recording resolution.

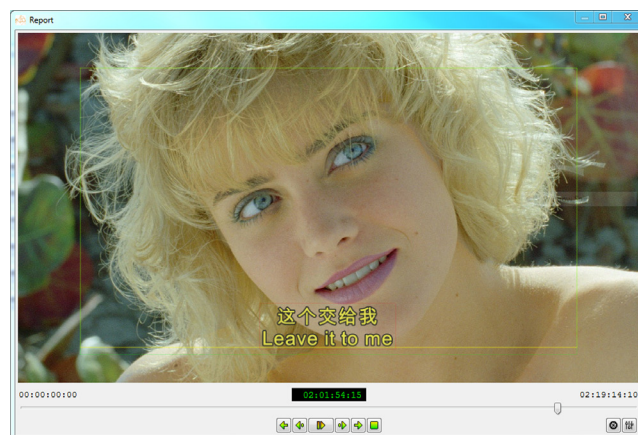
Subtitle Rendering

Once the spotting list has been approved and the subtitle parameters have been defined, subtitle generation can begin. With the CinevatorFive, this means rendering individual image files for each subtitle, which will be used during the printing session. We recommend the use of the Cinetitle® software application for this rendering process. Cinetitle has been specially developed for Cinevation, and generates high resolution, high quality subtitle images for film.

Cinetitle imports the spotting list and presents the user a broad range of options for the definition of the subtitle rendering style (font, colour, background, outline, shadow, etc.). In addition, the user defines the print format that is to be used in the final recording. Additional tools are provided to check for potential timing, layout or rendering issues in the project and to preview the subtitles over a reference video file. Dual-language subtitles can also be rendered, with separate style and layout settings being used for each language. The software will render subtitle image files in a format ready for use by the Cinevator and will create a script file containing timing and layout information for each image.

Prepare Print Job

The Cinevator records each project based on a user generated job description. Using Cinevation's "Image Job Editor" software, the print job is defined and the job parameters (stock type, image source, sound source, print format, etc.) are specified. The utility is also used to send subtitle image and script files to the Cinevator.



Preview component in Cinetitle user interface

Printing

At this stage, the Cinevator has all the information and data needed to run the subtitled recording. The operator loads the required stock onto the recorder; prepares the image source device with the correct image data, selects the print job within the Cinevator user interface and presses the "Start" button. The job, including sound and subtitles, are recorded to film at 24 frames per second.

CONCLUSION

We have presented a new method of creating subtitled cinema release prints. This method makes use of a live, real-time digital compositing engine and provides all the advantages of post-production compositing techniques, such as excellent image quality and powerful style and layout functionality. In addition, this new method is fast and efficient, and does not require the same massive storage as traditional subtitle compositing. The original image material remains untouched, allowing multiple release prints with different subtitle languages to be produced with incredible speed and efficiency.