



# Subtitle Preparation

## Introduction

Subtitle preparation is the process of creating subtitle text and timing information to match a video program.

Subtitle preparation is generally carried out by trained professional translators or subtitlers on dedicated PC based subtitle preparation workstations.

## Scope

This White Paper covers the process of authoring subtitles both for the hard of hearing and translation. It is suitable for broadcast professionals with no experience in subtitle preparation but some knowledge of video handling is assumed.

## Details

In simplistic terms the subtitle preparation process means producing a list of subtitles consisting of text and timing information. However the detail of the process is more involved.

### **Workflow.**

The basic subtitle preparation workflow consists of some of the following steps:

1. Receive source video material
2. Check time code reference on video
3. Import or capture video to workstation
4. Set subtitle style parameters
5. Translate source language to target language (if applicable)
6. Prepare subtitle text
7. Add timing cues (Some workflows reverse actions 6 and 7)
8. Review subtitles against video and audio
9. Produce preview output tape or file (optional)
10. Deliver subtitle file to transmission or post production process.

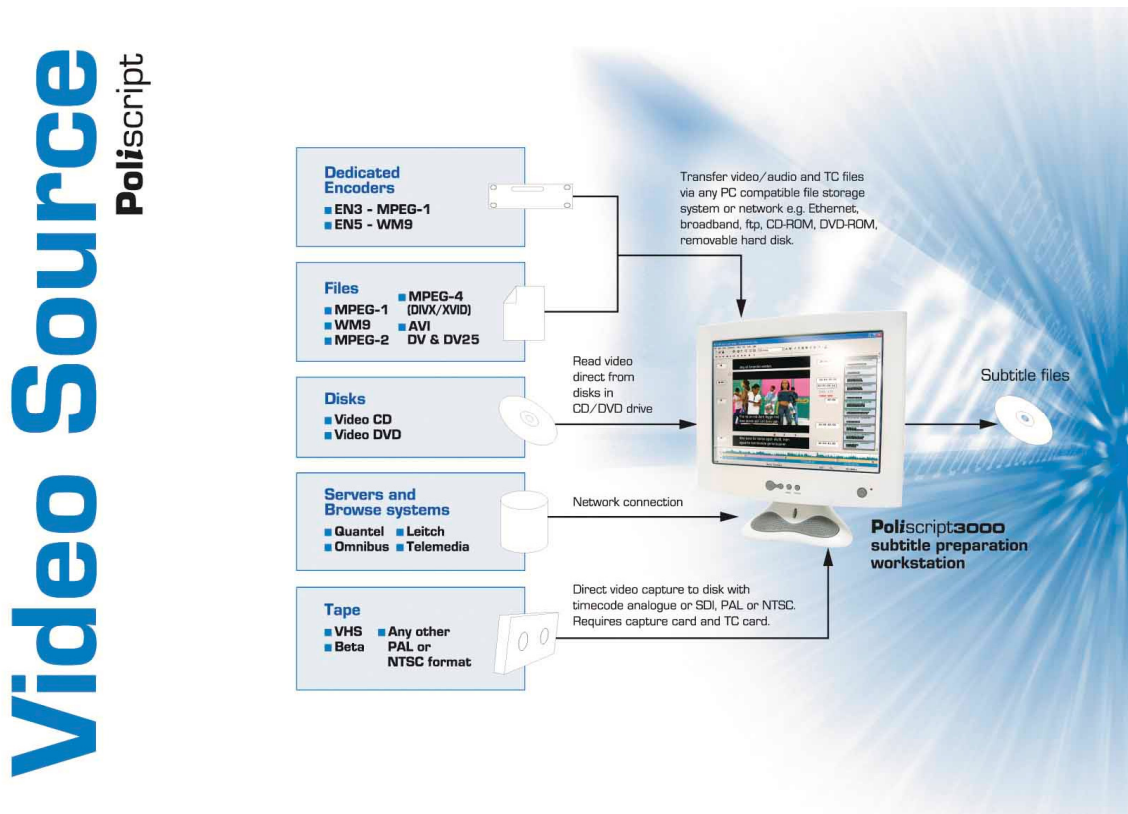


## How long does it take to create subtitles?

It is important to set a realistic timescale for generating subtitles. As a general rule it takes between 8 and 10 times the length of the video material to produce the subtitles. So a one hour video will take 8-10 hours work to subtitle and check.

## Video Handling

Historically all video material for subtitle preparation would have been delivered on tape, mostly VHS. Recently the move to all tapeless operations has made digital delivery of subtitling video more common. Regardless of the delivery format all subtitle preparation is now done with electronic video on a PC workstation.



One of the first steps in the workflow is to get the video onto the hard disk of the subtitle preparation workstation. The main options are:

- Capture from a tape source. This requires video and time code inputs and is a 'real time' process with one hour of video taking one hour to capture to disk. Some workstations allow the video to be viewed, stopped, stepped, etc. while the capture is taking place. This is a significant time saving.



- Open or import a video file. There are many compressed video file formats but most can be used for subtitle preparation. Some formats are not suitable for non linear playback (stepping, reversing etc.) and some workstations will convert to a more suitable format. The video file can be accessed using any file system supported by the workstation including DVD-ROM, CD-ROM, Network, VPN, FTP, removable hard disk drive etc.
- Access a browse copy of the video from a media asset management system. Many broadcasters now have video management systems that store the master video and a lower resolution or browse copy. Often it is possible to access the browse copy directly for subtitle preparation.

### *Video and Audio Quality*

The quality of the video displayed on a subtitle preparation workstation is a trade off between file size, PC processing speed, image quality and security against piracy. In general quarter resolution (352x288 for PAL) is adequate for subtitle preparation and MPEG-1 or Windows Media 9 (WM9) formats are a good compromise between file size and image quality.

In some cases lower quality or spoilers (time code, logos, black and white only) are used to make the video less desirable to pirates.

In general the quality of the audio is more important for subtitle preparation so that the dialogue is clear.

The main criteria for good subtitle preparation video are:

- Adequate video quality
- Good audio quality
- No missing frames
- Audio and video is in sync
- Time code – preferably with no discontinuities (See the Subtitle Timing White Paper for more details on time code).



## Subtitle Style Formats

When preparing subtitles there are limitations on the layouts and styles that can be used that depend on the output format to be employed. These restrictions are imposed by the equipment or standards used to broadcast and display subtitles. The following list is an indication of the areas that need to be considered but is not meant to be exhaustive.

### *Output Type*

- Line 21 Closed Caption (EIA 608B):
  - Fixed character set
  - Limited line length
  - Slow data transfer rate
  - Limited screen positioning options
  - Limited style options
- Teletext:
  - Fixed character set
  - Limited line length
  - Limited style and colour options
  - Limited screen positioning options
- DVB Bitmapped (ETS 300-743):
  - Limited total bitmap size
  - Limited colour depth (in 2 and 4 bit modes)
- Imitext (Screen proprietary bitmapped format):
  - No support for colour
- Open (burnt –in)
  - Few limitations; will depend on character generator or keyer used.
- DVD
  - Limited colour depth
  - Limited character quality



It is vital that the subtitle style parameters are set to match the transmission format. There is no point in producing a file with 40 characters per line and trying to transmit it on a closed caption system as the lines will be truncated to 32 characters.

Where font styles can be chosen it is important that the same font be used at the preparation stage and the transmission stage. This has to be agreed between the broadcaster and the subtitle supplier.

### **Subtitle Reading Speeds**

When preparing subtitles it is important that the subtitles remain visible for long enough that the average viewer has time to read them but not so long as to be irritating. Reading speeds can be configured in either words per minute or characters per second and the setting will vary from language to language and between different target audiences.

The reading speed in characters per second is very different for English as compared to Japanese, while adult audiences will want a faster reading speed than that for a children's show.

Most subtitle preparation software has a configurable reading speed indicator that will show the ideal and actual reading speed for each subtitle.

### **Subtitle Timing**

During the subtitle preparation process each subtitle is timed to appear at a specific point in the video to match the dialog. The time code of the first frame during which the subtitle is displayed is the in-cue time.

Generally, subtitles should be presented on-screen only when required, and should stay visible for long enough to ensure the viewing audience can read and understand them. It is good practice to attempt to match the subtitle presentation timing with the spoken dialogue, but in certain cases that can be difficult to achieve. Furthermore, an existing subtitle should not remain on-screen once there have been considerable changes to the content of the program material, such as a shot change or cut.

There are many methods of setting the in and out cue times either in real time or by stepping through the video a frame at a time. One very useful tool is audio scrubbing which is where a slowed down audio signal is used when the video is single stepped or played slowly. Ideally this should work when going in forwards or reverse. This is a good method of accurately matching the subtitle to the dialogue. Graphical audio waveform displays are another useful tool.



## **Review Procedures**

Once the subtitles have been authored some form of quality control (QC) process is performed. This is often done on the subtitle workstation by playing the video and displaying the subtitles over the video in a sub window. However if a preview copy is required then it is often simpler to produce a tape with the subtitles in vision. With a VHS tape there is no need for the reviewer to have special software to view the tape. A more recent innovation is to produce a compressed (WM9) video file with the subtitles in vision as this can be faster to produce than a tape and may be transferred electronically. As the file format is standard and the subtitles are in vision the file can be played in Windows Media Player on a standard PC.

## **Subtitle File Formats**

When delivering the final output file there may be a requirement to provide a specific subtitle file format. There are a very large number of formats in the market and some of them are specific to certain transmission formats like EIA 608B closed captions. Others are more generic but are limited in the styling information they can carry (colour, fonts etc.)

Just a few common file formats include:

- .STL. EBU open format mostly used for Teletext.
- .PAC. Screen Subtitling proprietary format. Supports all subtitling styles
- .CAP. Closed caption format.