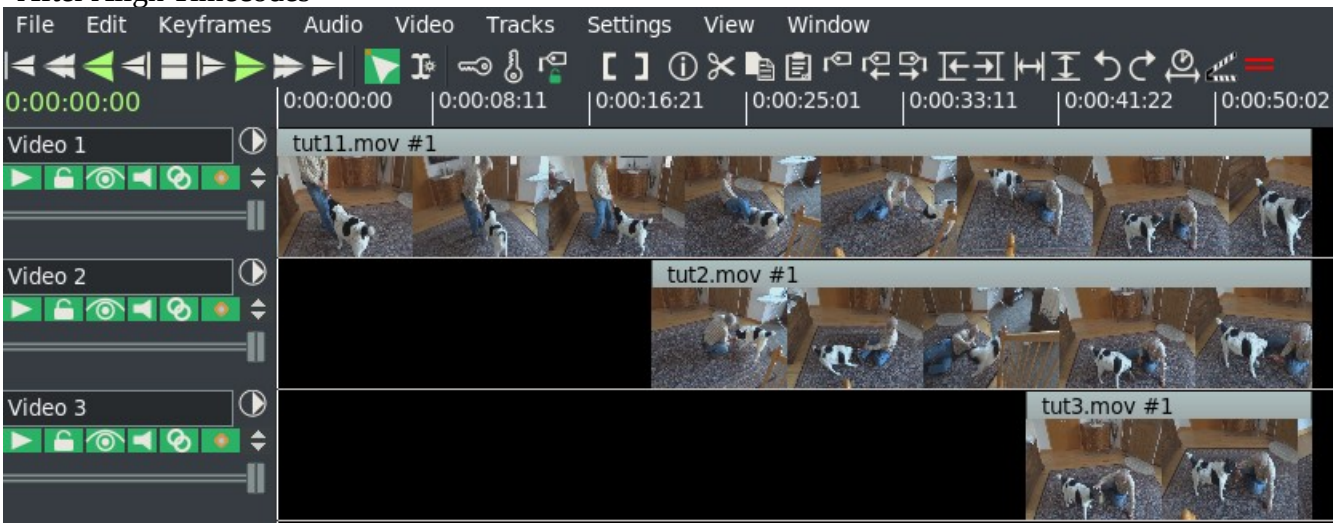
Align Timecodes - Timecode Synchronization

Timecode synchronization works in 2 steps. The first step is to locate the earliest timecode and the second step is to align the edits on the armed tracks using that time on the timeline.

Before Align Timecodes

After Align Timecodes



Timecode synchronization in CinelerraGG is based on the inclusion of an actual “timecode” saved in the media as can be seen using the ffprobe or mediainfo command line. Examples are shown here:

```
# ffprobe tut1.mov
        Metadata:
          handler_name    : VideoHandler
          timecode        : 00:00:20;01

# mediainfo mtb.mp4
        Time code of first frame    : 11:05:49:41
        Time code, striped          : Yes
        Title                       : GoPro AVC
```

Many newer cameras and media in a MOV container have valid timecodes often with SMPTE compliant start Timecode in Quicktime format, whereas others do not. Most low end cameras do not. When no timecode is present, various clock time values may be used to synchronize instead.

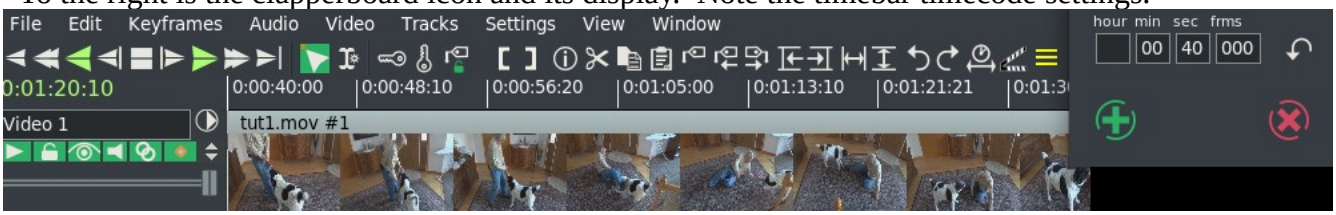
Because it is not clear which timecode in the file is the one to use, the precedence as described next is followed. The contexts, packets, streams, and data refer to the corresponding ffmpeg data or metadata objects.

1) if the format context has a timecode use: fmt_ctx->timecode - 0
2) if the layer/channel has a timecode use: st->timecode - (start_time-nudge)
3) find the first program stream with video stream, and if the video stream has a timecode use:
   st->timecode - (start_time-nudge)
4) find timecode in any stream use: st→timecode
5) read 100 packets, save ofs=pkt.pts*st->time_base - st->nudge:
   - decode frame for video stream of the first program
   - if frame->timecode has a timecode use: frame->timecode - ofs
   - if side_data has gop (group of pictures) timecode use: gop->timecode - ofs
   - if side_data has smpte timecode use: smpte->timecode - ofs
6) if the filename/url scans *date_time.ext use: date_time (yr, month, day, hr, min, sec, nanosecond)
7) if stat (display file status) works on the filename/url use: mtime (modification time)
8) finally, if none of the above are usable, then return failure

Operation of Align Timecodes includes the following options to help in your setup and review.

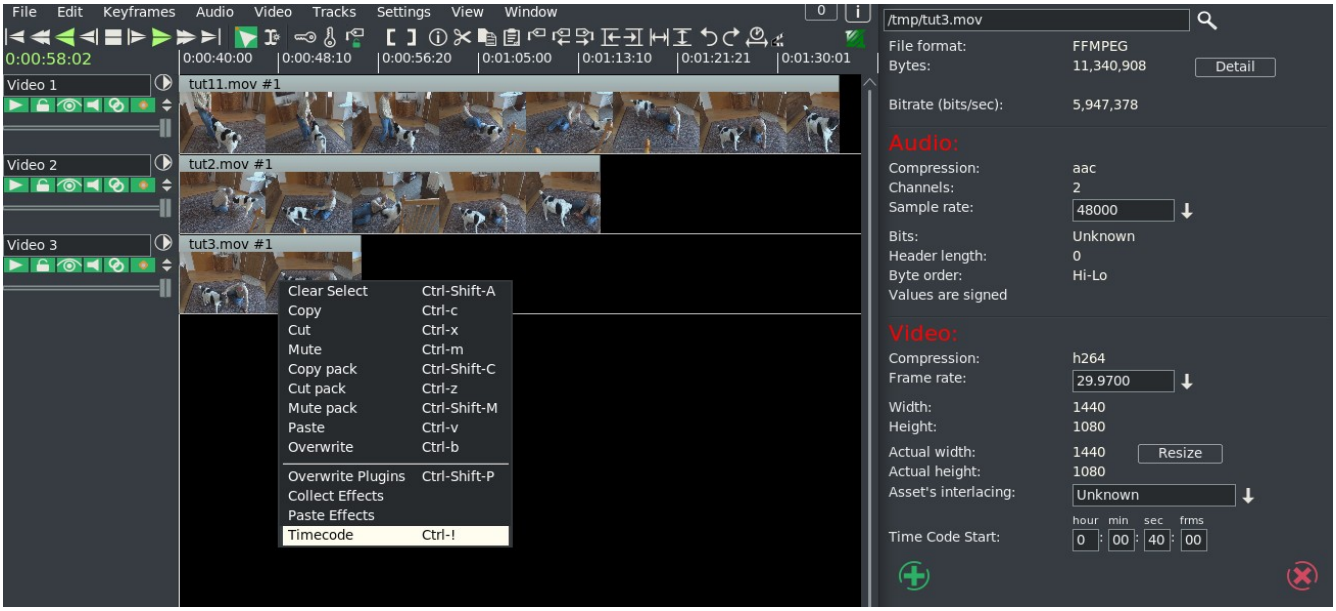
- Align Timecodes under the Tracks pulldown.
- Clapperboard icon on the main timeline to set a timecode.
- Timecode option added to timebar choices (in timecode hh:mm:ss:ff) with use of the session frame rate as a time standard.

To the right is the clapperboard icon and its display. Note the timebar timecode settings.



- Time Code Start in the Resources window on the bottom of Info for the media if the timecode for that asset has been scanned and is known. You can scan the asset's Timecode by using the middle mouse button on its track which then displays the timecode for that on the timebar.

Shown here is the “Timecode” option for tut3.mov set to 40:00 on the timebar and its “Info”.



Notes:

- Align Timecodes is a good first step to quickly sync media up either perfectly or roughly.
- Currently this is not known to function for syncing audio recorded on a separate audio device, because no test material was provided to ensure that this works.
- Disarmed tracks will not be affected by using “Align Timecodes”.
- No edits or sections will get cut off on the left or elsewhere, unless the moved edits overlap.
- You can add a timecode to video using an ffmpeg command if you want to align a particular video which has no timecode to ones that do. For example:

ffmpeg -i originalfile.mp4 -metadata timecode="14:36:08:29" -c copy newfile.mp4

where “i” is followed by the input filename
where “-metadata timecode” is followed by the timecode key
“-c copy” just copies the video/audio to the following output filename