# DVDSubEdit User Manual.
Version 0.909 and above

1. Getting started: Viewing subpictures

1.1   Opening vob files.

This is very easy. You can either drag/drop vob files, or use the File menu. DVDSubEdit will start scanning the file(s) for subpicture packs in the background. As more subpicture units (SPUs) are found, the display is updated but you can start looking at the subpics before the scanning is entirely done.

- **Full title set:** To look at the subpictures for an entire video title set, select all the VOBs of the title domain (for example vts_01_1.vob vts_01_2.vob vts_01_3.vob) and drag/drop them on the DVDSubEdit window.
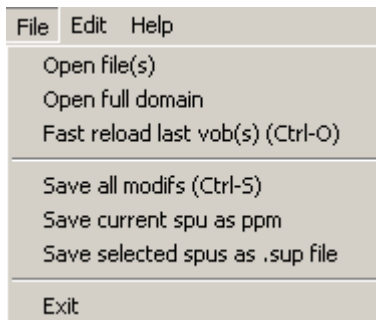

Alternately you can use **"Open full domain"** in the File menu to open all the files belonging to the same domain as the selected file. For example, selecting vts_01_2.vob will open the entire first video titleset.

- **Single vob:** You can look at only one of the vob file if you prefer (for example, dragging/dropping vts_01_2.vob) but it's possible that the first subpicture unit will not be detected properly (because part of it is located in the previous vob file). You can also use **"Open file"** in the File menu.

- **Menus:** You can also look at menus by dragging/dropping or opening a menu vob file, for example vts_01_0.vob or video_ts.vob. This will show you button highlights etc. However, because most button highlights are transparent by default (until a button is selected or activated), you probably will only see the background video and the button rectangles. To see the highlights, you can change the transparency using the transparency slider.

- **Fast Reload of last vob(s):** You can also select "Fast reload last vob(s)" or use the Ctrl-O shortcut to reload the last vob (or set of vobs) you loaded.

DVDSubEdit keeps a temporary file that includes all the information about spus for the last loaded files, so when this option is used the vob files do not need to be scanned and the operation is very quick.

1.2   Selecting subtitles to visualize or modify.

By default, DVDSubEdit shows you all the subpicture units that it finds. But you can filter them by stream ID (i.e., by language) or by the video cell (i.e., "chapter") they belong to. To do that, use the stream and VCID drop down selectors.
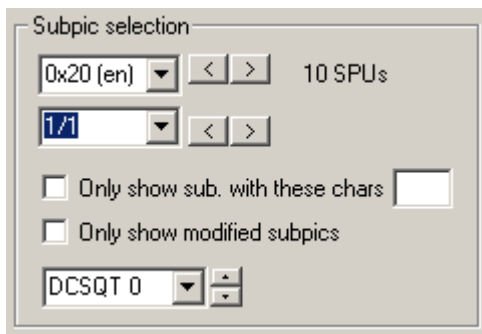
In this example, only the subpictures of stream 0x20 (which corresponds to the english subtitles according to the IFO files) are displayed, and only those that belong to the video cell 1/1 (i.e., with the VID 1 and CELLID 1).

By clicking "Show Mod." you can only show those subpictures that you have modified one way or another. If you haven't modified any, no subpicture will be displayed. The other options are explained further down in this manual.
Once you have selected which subpictures to look at, you can use the slider to quickly move through them or the arrow buttons to go from one to the next or previous one.

Normally the background video is displayed along with the subtitles but you can disable that by unchecking **"Show video frame"**. This can be useful if the subpicture is difficult to see against a "busy" background.


If you're opening a menu vob and buttons are present, DVDSubEdit will display button rectangles as in this example. However, you probably won't see any button highlight unless you modify the transparency using the transparency slider, because most button highlights are transparent by default, until a button is selected/activated.

1.3   Understanding subtitle info

Subpicture information is mainly displayed in the left part of the display:

- In this example, we're looking at subpicture pack (spu) number 3.
- The **stream ID** is 0x20 (hexadecimal for stream 32).
- **LBA** (logical block address) tells you where the first sector of the first subpicture pack is for this spu.
- **V/CID** indicates which vob cell this spu belongs to, in this case vobid 1 and cellid 1.
- The **duration** shows that the second set of commands (DCSQT) which holds the Stop command is delayed by 3.52 seconds.
- The **DCSQTs** are the sets of commands for the spu. The first one has no delay, and comprises 6 commands: Set Color, Set Contrast, Set Display Area, Set Field Index, Start and End of commands.
- The second **DCSQT** only has a stop command.
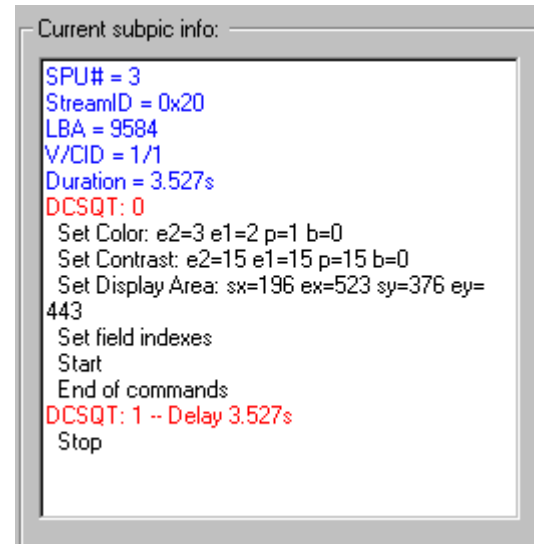
In addition, the selection drop down list indicates the **language of the subtitles** (English in this example). Note that the language is defined in the IFO files, and it can change from PGC to PGC. For example, the stream ID 0x20 might be declared as an English subtitle in one PGC, then as another language in another PGC.
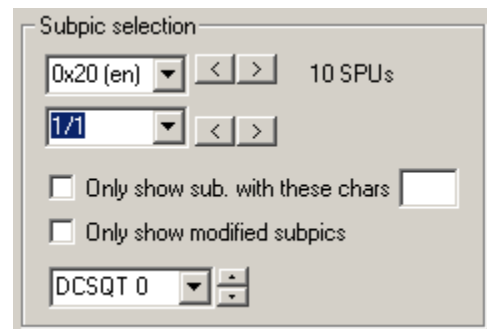
1.4   The Color Lookup Table (CLUT)

Subtitles colors are defined by the color lookup table (**CLUT**) used in the PGC in which the cell containing the subpicture pack is referenced. DVDSubEdit shows the 4 colors assigned to each pixel types ('b' for background, 'p' for pattern, 'e1' for emphasis 1, and 'e2' for emphasis 2).
The CLUT is read from the IFO file, and specifically from the first PGC that references the VCID cell the subpicture belongs to. Of course, this can change from cell to cell, so it's possible to see the CLUT change when you move the subpicture

selection slider. Checking "Ignore CLUT" can be useful if the CLUT defined in the IFO has four identical colors (in which case it's impossible to see the various pixels types). When the option is checked, DVDSubEdit uses a default CLUT with very different colors for each pixel types. You can click on each tile to adjust the color of the default CLUT. The default colors are saved in a preference file.
If the app shows "Now clut", either the IFO file could not be found or opened, or the cell in which the subpicture belongs in not referenced in any of the PGCs. In such case, the default CLUT is used. Checking "Automatic CLUT" makes DVDSubEdit use white for "text" pixels and black for all others. Text pixels are the pixels used for the body of the subtitle characters, and are identified when the file is loaded. This option is very useful when you don't have the IFO that corresponds to the VOB files, or when you're loading a .sup file.

1.5   Multiple sets of commands

If your subpicture data has multiple sets of commands (DCSQTs), you can select which one to visualize (and later modify) using the DSCQT drop-down selector. This will update the supicture display to reflect the commands and parameters used in the DCSQT.
NOTE: DVDSubEdit currently *only uses the first DCSQT* to position the subpicture. In other words, if one of the subsequent DCSQT has commands to move the subpicture, these commands will not be reflected in the subpicture display. Similarly, if you move the subpicture, only the first DCSQT parameters will be modified.

2. Modifying subpictures

2.1 General: modifying 1 or many subpictures

Modifying an individual subpicture:
When you move a slider to modify your subtitles, only the subpicture currently displayed is modified. All other ones are left alone. Typically, when you're satisfied with your modifications, you can apply them to the rest of the subtitles by clicking the "**Apply to all selected**" button Apply to all selected .

Modifying a group of subpictures:
When you click "**Apply to all selected**", all the currently selected subtitles are modified in the same way the currently visible one was modified.
For example, if you have selected stream 0x20, belonging to VCID 1/3, only these subpictures will be modified. This makes it easy to modify only a given language (by selecting the appropriate stream) or a given chapter (by selecting the appropriate VCID). For example, to change the start command of all English subtitles, you would select the stream corresponding to the English language, then change the start command of one of the subtitles, then click the "**Apply to all selected**" button.
A small pop-up dialog then appears where you can select which of the modifications you have made to the current subpicture you would like to apply to the rest of them.
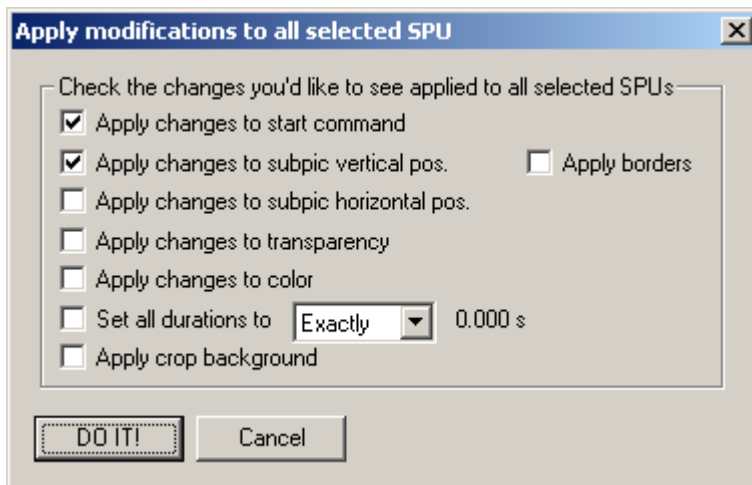
For example, if you've modified the start command and you've moved the subtitle, you can decide to only apply the change to the start command by only clicking that box.

Copying changes to another subpicture:

You can also modify the current subpicture then apply the same modifications to another subpicture by selecting "**Apply last modifs**" in the Edit menu (or using the Ctrl-V shortcut). Using the left and right keyboard arrows and the Ctrl-V shortcut is a good way to quickly modify a group of subtitles.
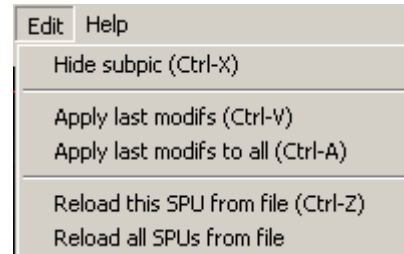
Undoing changes:
You can select "Reload this spu from file" in the Edit menu (or use the Ctrl-Z shortcut) to reload the currently viewed subpicture from the file, or "Reload all spus from file" to undo all your changes.

Saving your changes:
Once you're satisfied with your modifications, you can select "Save all modifs" (or use the Ctrl-S shortcut) in the File menu to save all your changes back into the vob files. *Note that there is **no undo** in that case!* Once the changes are saved to the vob files, there is no way to go back to the originals, unless you have kept a copy of the files in another directory.

2.2   Changing the transparency
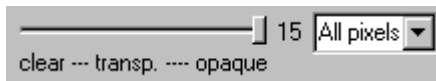
Changing the transparency of your subtitles can easily be done using the transparency slider. You must first chose which of the 4 pixel types you want this to be applied to.
Choosing 'b', 'p', 'e1' or 'e2' will select the background, pattern, emphasis 1 or 2 pixels for modification. The slider will then only change the transparency of the selected pixels.
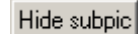You can choose "All pixels" to modify the transparency of all but the "true background" pixels. The background pixels are left alone so the background video can still be seen by transparency.

This is useful to reveal subpictures that are initially transparent, such as button highlights in menus. DVDSubEdit tries to be smart about identifying truly background pixels: Assuming that the 'b' pixels are indeed used for the background is a bad idea as this is certainly not mandatory and in many cases, they're not. DVDSubEdit assumes that the top left pixel in the subpicture is of the type used for the background.

2.3 Hiding subpictures

To hide subpictures you can click the "Hide subpic" button, which simply sets all transparencies to 0.

2.4 Changing the colors

Simply click on one of the tiles to select which color of the current CLUT will be used for a given pixel type. To adjust the "e1" pixel type, click on the e1 tile.
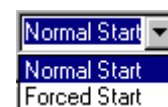
A dialog will pop up, allowing you to chose the color among the 16 offered by the CLUT. For your convenience, the dialog indicates which LU (if looking at a menu vob) and which PGC the CLUT is defined in.
NOTE: If you want to apply the color changes to the rest of the selected subpictures, you can apply the changes you made to all the pixels in one shot (unlike transparency, you do not have to apply to all after changing the color for each pixel).
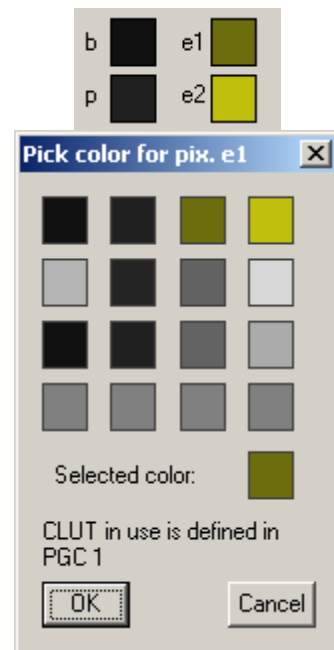
2.5 Modifying the "start" command

A drop-down list is available to select the subpicture start command. Subtitles normally use a **"Normal Start"** command, in which case the subtitles are only displayed if the corresponding subtitle stream is selected and the subtitles are turned on in the player.
A **"Forced Start"** command can be used instead, in which case the subtitles are displayed even if the subtitles are turned off in the player. **Forced subtitles** are often used when a character is speaking in a tongue that is foreign to the main language used in the movie, for example aliens in a sci-fi movie.
Menu highlights always use a forced start command.

2.6 Modifying the subtitle vertical positions by hand

Use the slider or the entry box to move the subpicture by the desired number of pixels.
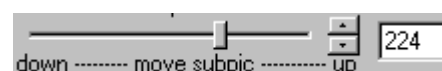
Note that subpictures can only be moved by an even number of pixels.

DVDSubEdit also limits the amount you can move subpictures so none of the "useful"pixels will disappear from the video frame. Once again, this applies to all but non "truly background" pixels (i.e. pixels that DVDSubEdit has determined are used as background). If you're using borders (see below) DVDSubEdit makes sure none of the useful pixels disappear from inside the selected borders.

2.7   Modifying the subtitle vertical positions using the borders

It is often easier and faster to define borders in which you want your subtitles to fall. This can be done using the border slider and the border selector.

Using the border slider:
The border slider can be used to adjust bottom and top borders (shown in red in the video display) which define an area where subtitles will be confined.
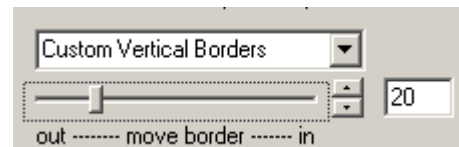
The currently viewed subtitle is moved up or down until it fits entirely inside the "safe" area defined by the two red lines. This can be very useful to automatically move all the subtitles within a given area of the screen: adjust the borders to the appropriate position, then click "Apply to All Selected" to apply the modification to all selected subtitltes.

Using pre-selected borders:
The drop-down list lets you pick from pre-selected borders:
* **4:3 safe area** cuts about 16% of the total image height (8% at the top and 8% at the bottom) to account for the television overscan.
* **16:9 already letterboxed** is useful for widescreen movies that are authored as 4:3 letterboxed DVDs (i.e. 4:3 movies with the top and bottom black bars). Selecting this ensure the subtitles fall within the actual widescreen video (and not in the black bars). This can be useful if you intend to zoom to get rid of the black bars during playback.
* **16:9 already letterboxed safe** adds a safe area to make sure your television overscan does not cut into the subtitles.

NOTE: **The border option is disabled if the subpicture corresponds to a menu** (more specifically, if the VOBU the spu falls within has buttons). In addition, when you click "Apply to all selected", subpics containing button highlights will not be moved. This prevents inadvertently moving button highlights in button-over-video situations (e.g. the rabbit in the matrix movies).

2.8   Changing the subtitle horizontal position

Use the slider to change the horizontal position of your subpics. This is only possible, however, if the subpicture background does not occupy the entire screen.
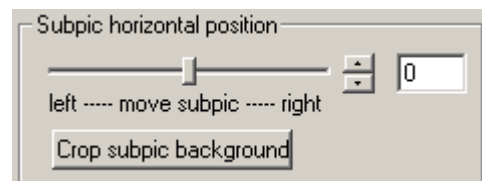
If the slider is not enabled, your subpicture background is the size of the entire screen and DVDSubEdit cannot move the subpicture unless the background is cropped. This can be done by clicking the "Crop subpic background" button. DVDSubEdit then decode the subpicture data, crops the background to the minimum size that still encloses the useful part of the subpicture (the text), and then re-encode the data. Once this is done, the slider is enabled. To crop all selected subpictures, simply press Ctrl-A (or select "Apply last modifs to all" in the Edit menu).

2.9   Changing the subtitle duration

Use the slider or the entry box to change the length of time during which the subpicture is displayed.
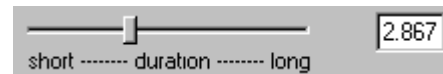
The slider will only allow valid durations: for example, you cannot display a subpicture past the start time of the next subpicture (in the same stream). Similarly, you cannot set the duration to 0 (because two DCSQT normally can't have the same delay value).
The slider simply alters the delay value of the last DCSQT (which normally holds the "stop" command). You cannot change the delay of an individual DCSQT (yet). When you chose Apply To All, you will have a choice to apply this exact duration to all selected subpics, or to make sure they last at least that long, or at most that long. In the example below, the durations are adjusted to be at least 1.820 seconds
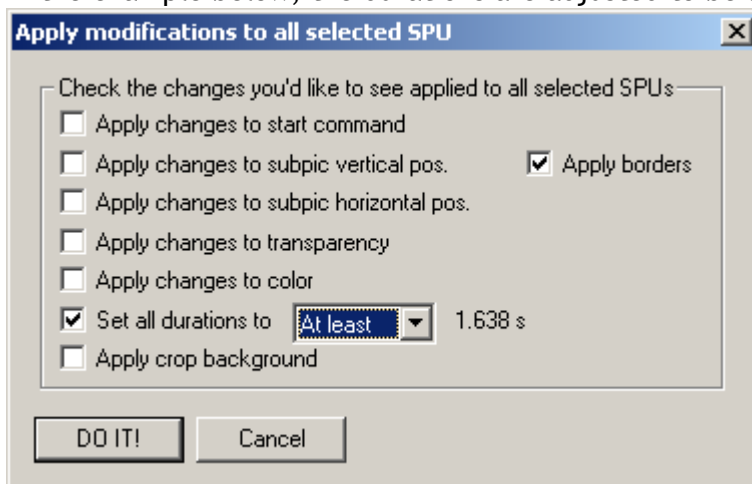
2.10   If you have multiple sets of commands

If you have multiple sets of commands (DCSQTs) use the drop-down selector to chose which one to modify before you apply any modification. At this point, the only data you can modify in DCSQTs other than the first one is the transparency. If you move the subpicture, only the first DCSQT is modified.

3. Re-timing subtitles

3.1 Changing the timing of a single subtitle

In some rare cases, you need to move a subtitle from one location to another one, because this specific subtitle is out of sync with the video.

To do that, *make sure that you load the full title* domain (by opening the files with the "Open Full Domain" menu, or making sure you're dropping all the VOB files of the VTS in question – but excluding the menu of course, for example vts_01_0.vob). DVDSubEdit will refuse to re-time subpics if you're in the menu domain, or if you omitted one of the vob files. Then click the "Retime this SPU" button. A small dialog will popup allowing you to specify either an absolute PTS (presentation time) where the subtitle should be displayed, or a value by which to move the subtitle. The PTS values are in seconds. In practice, it's best to search for the target location of your subtitle using the preview before applying the move. Note the PTS of the image you'd like the subtitle to be synchronous with, and use this new PTS when you use the re-timing function.

Because of the way DVDSubEdit works, if you need to move the subtitle by more than 3 to 5 seconds, it's a good idea to do it in two steps, moving it first to an intermediate location then to the accurate target location. It's also a good idea to check with a software player that the subtitle is displayed at the right time, and readjust if needed.

Note that *there is no undo for this operation*. The vob files are modified as the operation completes, along with the corresponding IFO file. There is no need to subsequently save the subpics (they've already been saved).

3.2 Re-timing all the subtitles

In some cases, the entire subtitle track is out of sync with the video, either appearing too early or too late. DVDSubEdit lets you resynchronize the subtitles by moving them as a whole by a fixed positive or negative delay. Again, make sure you load the full domain and click the "Retime selected SPUs" button. A small dialog will popup where you can specify by how much the selected subtitles should be moved. Positive values (for example +1s) will make the subtitles appear later than they currently do. Negative values will make them appear before they currently do. Since this is a lengthy operation (requiring the modification of many packs in the vob files), it's best to have a fairly good idea of how much the subtitles should be moved by.

The operation takes more time when moving by a larger amount. Adding or subtracting a small delay (less than 1 second) is relatively fast, but moving by more than 3-4 seconds can become quite lengthy.

Note that *there is no undo for this operation*. The vob files are modified as the operation completes, along with the corresponding IFO file. There is no need to subsequently save the subpics (they've already been saved).

Re-timing subtitles in place (i.e. directly inside the vob file, without demuxing/remuxing) is tricky. DVDSubEdit tries to do the best job it can, but you can still run into problems.

- *Subpicture collisions* happen when one of the subpics you're re-timing will end up in the same vobu as another one belonging to the same stream. While this isn't illegal, it poses additional problems or subpicture ordering. For this reason, DVDSubEdit currently refuses to re-time a subtitle if it will collide with another one. You can run into that problem when re-timing an individual subtitle, and this is an indication that there's already a subtitle that will be displayed around the same PTS. The solution is to make sure you're not trying to display two subtitles at the same time. Sometimes, you will run into the problem when trying to move an entire subpicture track (for example if the track has a large number of subpics, close to each other, as in Spiderman R1 for example).
- *Angles*: Re-timing subtitles in multi-angle movies poses additional problems that DVDSubEdit isn't currently able to handle. As a result, re-timing subtitles is forbidden in such cases.
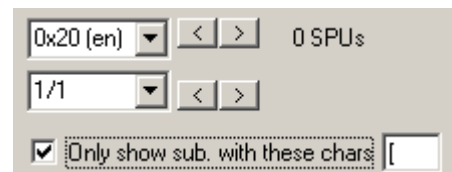
4. OCR (Optical Character Recognition)

DVDSubEdit includes the GOCR code by Joerg Schulenburg, which works quite well on most subtitles (but not on all, unfortunately). OCR allows you to search subtitles for a specific word, or to filter your selection to only select subtitles that include one or several specific characters. This is convenient, for example, to select subtitles that include hearing-impaired text such as [footsteps] etc...

To enable OCR-based functions, you'll need to first run the OCR on the selected subpics by clicking the "Run OCR" button. This will run the OCR in the background. When this is done, you can use the search box to find occurrences of a word (case insensitive) in the selected subpictures
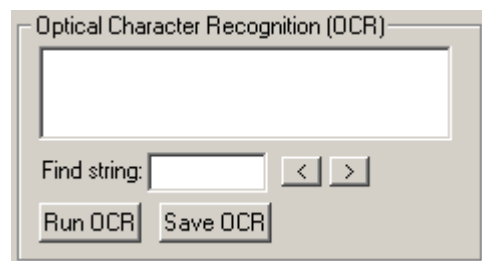
In the Subpicture Selection area, you can type a set of characters ('[' in the example on the right) and DVDSubEdit will only show subtitles that include any of these characters (case insensitive).
This feature is useful for example to **remove subtitles for the hearing impaired**, which are usually enclosed between brackets "[" or parentheses "(". You can prune such subtitles using the OCR function, and quickly hide them if you don't want them to appear in the final DVD.

You can also export the output of the OCR as a text file by clicking the "Save OCR Output" button. This will save the subtitle text for each subtitle, including the stream ID, the sector of the first subpicture pack and the presentation time (PTS).

The GOCR code works quite well on many subtitles, and does not require any preliminary "training". However, it sometimes has problems with italicized text, and does not recognize some characters (such as music notes).
Also note that DVDSubEdit does not try to run OCR on subpics that seem to contain button highlights (i.e., spus located in VOBUs where buttons are defined, and which are turned on by a forced start).

5. Working with sup files and other topics

DVDSubEdit lets you open and save .sup files. Sup files are created for example by VobEdit, or PgcDemux, and can be remuxed for example by using muxman.

Loading: You can load a .sup file, either by drag/dropping it on the main dialog, or by using "Open .sup file" in the File menu. When working on a .sup file, no video is available (of course), and the CLUT is not available either. This means you will have to adjust the default CLUT so it looks good on your subpics, or check the "Auto CLUT" check box so the subpicture colors are adjusted to show the text (white for the character body, and black for all other pixels). In addition, you won't be able to re-time subpics, or reload an individual spu. This being said, all other modifications are available, and can be saved back to a .sup file for later muxing into a vob.
Saving: Whether you opened a VOB file or a sup file, you can save the selected spus as a .sup file, using the "Save selected spus as .sup file" in the "File" menu. Note that you must have selected a specific stream for this to work. The output file can then be used to remux the subpics into a new VOB, for example using the equally excellent freeware "muxman". Note that DVDSubEdit does not keep track of discontinuous PTS. If the PTS resets at one point in the vob, the PTS associated with the spus after the reset point will also reset in the .sup file.

DVDSubEdit also allows you to save the current subpicture as a **ppm** file using the "Save current spu as ppm" option in the "File" menu. This is useful to save a picture of the current subpicture. You can convert the .ppm file to any desired format using the very excellent freeware "IrfanView".

6. Appendices

6.1   Keyboard shortcuts

- **Ctrl-0**   Fast-reloads the last opened set of vobs.
- **Ctrl-S**   Saves modifications back to the vob files.
- **Ctrl-V**   Applies previous modifications to the current subpicture.
- **Ctrl-Z**   Reloads the current subpicture from file (undo changes)
- **Ctrl-A**   Applies previous modifications to all selected subpictures.

- **Ctrl-E**   Crop background of this subpicture.
- **Ctrl-T**   Runs the OCR on the currently viewed subtitle.
- **Ctrl-U**   Open a .sup file.

6.2   Known problems and limitations

- You can't change subpicture positions in DCSQTs other than the first one.
- You can't change the delay of an individual DCSQT
- The OCR code sometimes has problems with italics, and can fail to detect spaces between words.

6.3   Index

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