



## Introduction

After the overwhelming success of DVD-lab Standard we are raising the bar again with all redesigned, new version of this popular home DVD authoring.

DVD-lab Studio is now based on the DVD-lab PRO compiling engine that is used by many professionals and smaller Hollywood studios. Thanks to its transparent AL, it has proved to create one of the most compatible and least resource hungry DVD's.

Most of the existing tools are either very expensive and hard to master or are limited in their implementation of the DVD-Video specifications. Many tools that are marketed as "advanced" or for "professional" use are often actually only more expensive consumer applications with pre-cooked DVD structure and questionable user interface.

Instead of insulting the users with an overdone flashy interface, DVD-lab Studio and DVD-lab PRO put strong emphasis on the usability of it. The Modern Windows GUI can be tweaked and reorganized to everybody's taste even across multiple monitors.

DVD-lab is also one of the very few applications on the market that grows with your requirements and knowledge. Users of other applications usually either outgrow them very soon or they need to study a long time before they are able to create even simple project. We put a lot of effort to the DVD-lab PRO so it offers benefits of both worlds. It is easy to start making simple DVDs but it doesn't stop there. As you continue to master the craft you will realize that DVD-lab PRO offers an unlimited range of design flexibility and delivers the goods even for most demanding designers.

### Multiple Audio and Subtitle Channel

Each title in DVD-lab Studio can have up to 2 audio channels: AC3, MPA, LPCM or DTS and also number of subtitle streams. You have the ability to add one subtitle channel, this can be created within DVD-lab or imported using popular formats. You can use customized graphic subtitles (imported from bitmaps).

### More Menu Effects

DVD-lab Studio builds on DVD-lab's available menu effects. You can use various Texture Fills and new Effects such as Metal Shine for new cool effects such as metal, gold, chrome, marble – and more!

### Play All, Play Lists

DVD-lab Studio has also ability to add a number of play lists. If you like to play your movies in an alternative order you don't have to add the files to DVD multiple times. All you need to do is to make one or more play lists.

### Multi-Aspect Widescreen menus

DVD-lab Studio can create widescreen menus that will play correctly on both widescreen and normal 4:3 aspect ratio televisions.

### Connection

The Connections window is the heart of your DVD structure even more now with the Studio version. You have additional ways to organize your objects where the Connections window allows for easier work with table view, split-view or snap-to-grid features. As well as the Title Button, you can now program the action to be taken when the player's remote control "Menu" button is pressed.

### DVD-lab features outline:

Features	Standard	Studio	PRO
Number Of Movies	99	99	99 on VTS**
Number of Menus	250	250	250 per VTS
Nr.Chapters per Title	99	99	99
	1	2	8

Number of Audio Streams			
Number of subtitle streams	X	1	8
Aspect Ratio <a href="#">more...</a>	4:3 or 16:9	4:3 or 16:9	4:3 + 16:9
TV System	NTSC, PAL	NTSC, PAL	NTSC, PAL
Motion/Audio Menu <a href="#">more...</a>	✓	✓	✓
AC-3, DTS support	✓	✓	✓
Integrated menu creation	✓	✓	✓
24fps support	✓	✓	✓
Menu Transitions <a href="#">more...</a>	✓	✓	✓
Multiaspect 16:9 menus <a href="#">more...</a>	X	✓	✓
Subtitle support	X	✓	✓
Return to last menu	X	✓	✓
Styles and Fills in menus	X	✓	✓
Play All support	X	✓	✓
Play List support <a href="#">more...</a>	X	✓	✓
Multiple VTS <a href="#">more...</a>	X	X	✓
Mix aspects on DVD	X	X	✓
Audio-Only Track <a href="#">more...</a>	X	X	✓
Chapter Branching <a href="#">more...</a>	X	X	✓
Menu Cloning <a href="#">more...</a>	X	X	✓
VM/Scripting support <a href="#">more...</a>	X	X	✓
For full comparison go <a href="#">here</a> .			
OS*	Windows 98/NT/2000/XP Linux (WINE)*		
Regular Price	\$99	\$129	\$199

\*A Windows 2000or XP is strongly recommended.

\* On Linux DVD-lab works under WINE

\*\* In practical terms you can have 99 titles on a DVD. However each title can be divided into smaller segments that can play as a separate movie which gives us maximum 9801 of such segments per DVD.

## System Requirements

DVD-lab is available for Microsoft Windows 98/NT/2000/XP (recommended 2000 and XP)

 **Note:** You will need at least a FAT32 disk file system on Windows '98 (which supports up to 4GB file size). However, a NTFS volume in Windows 2000 or XP is strongly recommended (no size restriction). The compile process takes about 200MB of RAM, but the designer can require much more – depending on the projects. It is recommended not to go under 500 MB of RAM.

## About Us

Mediachance is a privately-owned software company in Ottawa, Canada. We have years of experience in producing imaging and multimedia software.

Please visit our page [www.mediachance.com](http://www.mediachance.com) for more great software.

We all hope DVD-lab software will become popular for its power and low price. Many hours were spent on each detail (which is sort of our "trademark"). We are planning to reinvest all the money from sales into enhancing it much further. This is where you can help us.

The DVD-lab PRO has about 250 thousands lines of code.

## Basic Layout



- 1 – [Assets Window](#)
- 2 – [Project Window](#)
- 3 – [Movie Window](#)
- 4 – [Menu Window](#)
- 5 – [Connection Window](#)
- 6 – Preview Window

See the [Quick Tutorial](#) which will briefly explain how to work with each of these windows.

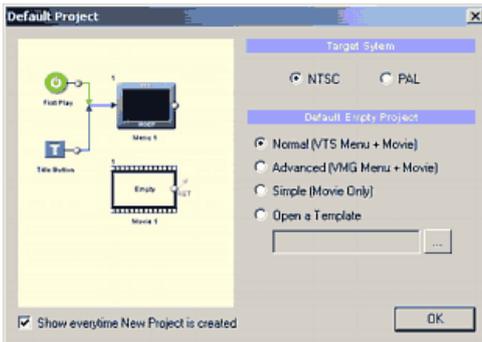
## Quick Tutorial

Here is a very basic quick tutorial on how to use DVD-lab. We will barely scratch the surface of the complete feature set of DVD-lab and DVD-lab PRO, but it will give you a basic overall idea how things are done.

DVD-lab supports elementary Video and Audio stream file types (mpv, m2v, mpa, m2a, ac3, dts, wav, aiff) or system files (an mpg file with both Video and Audio inside) also called a "Program Stream" for MPEG-2 files.

### New Project

After starting DVD-lab or when you press New button a Default Project window will appear.



▶ If this window doesn't show click on menu Project and select Set Default Properties item. Enable the checkbox "Show every time New Project is created".

Select a Normal (VTS Menu + Movie) project and your system, NTSC or PAL.

DVD-lab/DVD-lab PRO will create a simple, empty project for you.

### Import content into the Asset window

First, we need content. Import the Video and Audio files that you intend to use for the DVD into the Assets Bin. To do so, you can Drag & Drop files from Windows Explorer into the Assets Bin or Drag-and-Drop files from the built-in File viewer into the Project specific Asset – Video & Audio Bin.



In the [Asset](#) window, click the File Browser button

This will open the internal File Browser which displays only files that can be imported. Browse to the directory where your Video files are and either Drag-and-Drop them into the Asset Bin or double-click on them.



DVD-lab will quickly check the files and display any warnings. If you are importing a system or program stream, the file will be demultiplexed in the background. Demultiplexing means separating a combined file into its component Video and Audio element files as shown here.

File	Folder	Size	FPS	Ratio	Time	System	Status
scene0001.mpa	DVDSamples		48.0 KHz	224 Kbps		Stereo	OK
scene0001.mpv	DVDSamples	720x480	29.97	4:3	00:00:32	NTSC	OK

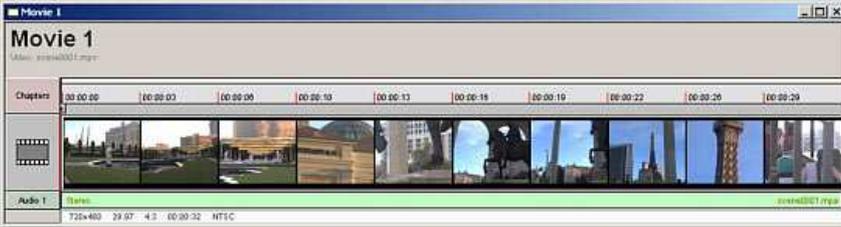
When everything is OK, you can continue building the DVD.

### Making a Movie object



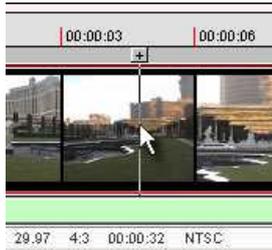
Open the Movie 1 if it is not already open by double-clicking on it in the Project window:

Now, drag a video file from the Asset Bin to the Movie 1 window and drop it into the video track. Next, drag the correct Audio file for that Video there as well, and drop it into the Audio 1 track immediately beneath the Movie.

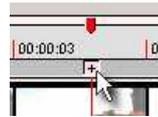


Now you have created your first Movie title. You can now click on the thumbnails in the Movie window and drag the Movie cursor along the length of the Movie. Watch the preview window to see where you are.

### Adding Chapter Points



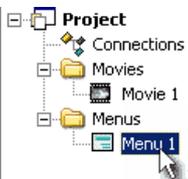
When you see a frame of the Video that you would like to use for a Chapter Point, you can stop and press the [+] button on top of the Movie Cursor. This will add a Chapter Point, shown by the red marker.



**Note:** you don't need to add a Chapter Point at the beginning of the movie, that's done automatically.

Now enter a few more Chapter Points this time by clicking the "Add Chapter Point" button found in the Preview window's toolsets.

### Building a Menu



Open the [Menu 1](#) by double-clicking on it in the Project window.

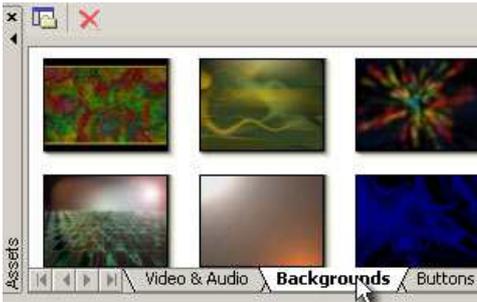
An empty Menu will appear.

You can zoom the screen in or out with the zoom buttons on the main toolbar:



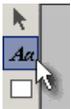
### Choose a Menu Background

In the Asset window, click the Backgrounds tab:



You will see a number of backgrounds available for use in your Menu. Pick one and drag it into the Menu window and drop it onto the Menu. This becomes that Menu's background graphic image.

Menu toolsets are found along the top and left side of the Menu editing window. From the left side toolset, select the text tool (Aa) and then click on the Menu screen in the position that a text item should be placed.



A text window will appear where you can type a title like "My Movie", for example. Now, click OK and place and resize the text to the desired position. Add another smaller text object like "Play Movie" and yet another "Scene Selection".



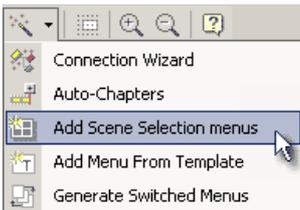
### Making a Linked Button

To add a link from the text to a Movie, simply drag the Movie 1 item from the Project window over the "Play Movie" text and release the mouse button. The link will be created automatically for you. Pretty easy, wasn't it?

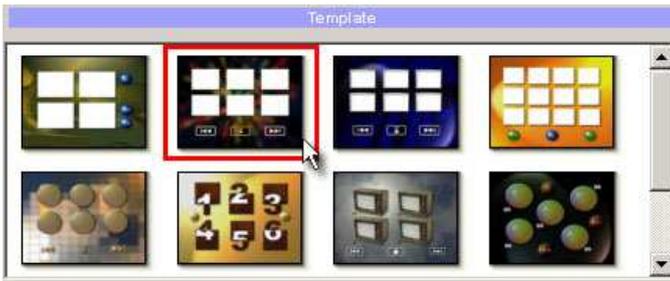


### Using Scene Selection

Now click on the Wizard button found on the Main toolbar and from the context menu select [Add Scene Selection](#) Menus, as shown here.



A Template window will open and from there pick a template you like for your scene selections.



DVD-lab will proceed to populate your template with buttons linked to the defined Chapter Points, creating a new, very complete Menu or Menus. Depending on how many Chapter Points you added, one or more new Menu will be created.



You can now open the new Menu by double-clicking on its name in the Project window. DVD-lab did a lot of the work for you already in building this Menu.



### Making a Menu link

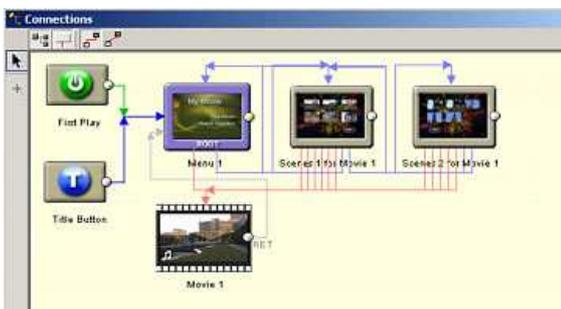
We are almost done, but remember; we don't yet have a link from the first Menu 1 to the selection Menus.

Open the Menu 1 item and from the Project window drag the **Scenes 1 for Movie 1** marker and drop it on top of the "Scene Selection" text.



### The design phase is now done!

You can open the [Connection](#) view by double-clicking on the Connection item in the Project window. This is your visual navigation layout of the DVD. The Connection view shows the relationships between items. We will get into more detail on this later. For now you don't have to change anything. DVD-lab has made all of these Connections for you.

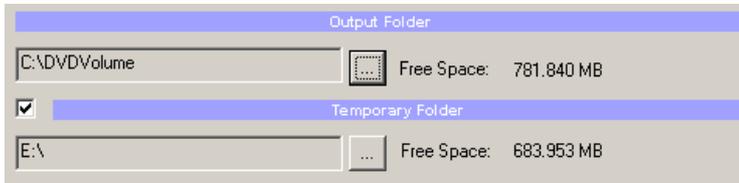


### Building the DVD

With the layout and design completed, you are now ready to build a DVD. Click the Compile DVD button found in the top DVD-lab toolbar.

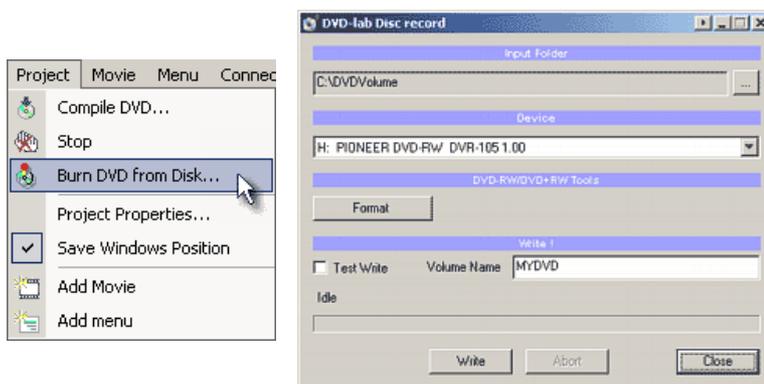


In the [Compile](#) window, select a destination folder and a temporary folder on your hard disk. You will benefit in speed of compile if you select two different disks. These folders should be on a drive – or drives – with plenty of free disk space.



Click the Start button and the DVD files will be created in the specified folder (ex: C:\DVDVolume).

You can now test the performance of your DVD Project with a software player such as PowerDVD, CinePlayer, WinDVD and others. Next, burn the Project to DVD media using the [Burn](#) DVD from disk command:



You can also use your favorite DVD recording application such as Nero, Gear or Roxio to burn the DVD as well.

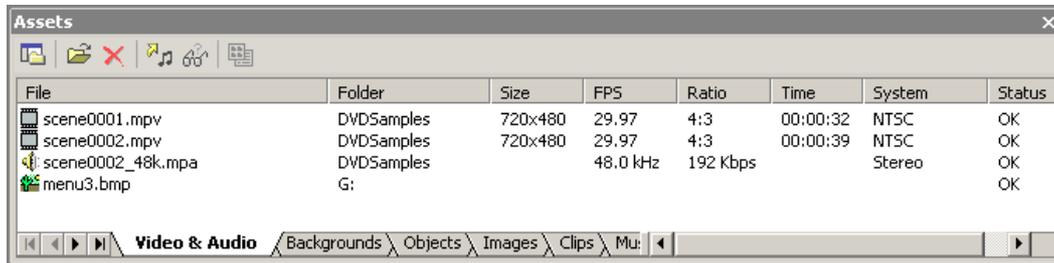
### What did you learn:

- First, you need to drag your content files to the Video & Audio Asset window for checking of the formats
- You learned how to add chapters
- You learned how to add links to the buttons on Menus
- You learned how to use the wizard to add Scene Selection Menus
- You learned that you need to first compile the DVD to hard disk and then record (burn) to DVD media

## Assets window

As described in the Quick Tutorial, the Assets window the place to starting creating your DVD project.

DVD-lab prefers the professional approach to DVD creation. This means that there is an expectation that the DVD author has taken care to insure that their source assets are of excellent quality and already DVD-compliant when brought into the DVD-lab Authoring environment. This has numerous advantages, principally that the compile process is quite fast, with much shorter compile times than for other products that need to constantly re-encode non-compliant files each time a change is made. The DVD-lab Author has the advantage of quickly testing the DVD files to confirm any changes they made.



The Assets window shown here has a selection of tabs displayed at the bottom of the window. Each tab selection represents a different Asset function enabling you to see or manage the Bins that contain the Project components.

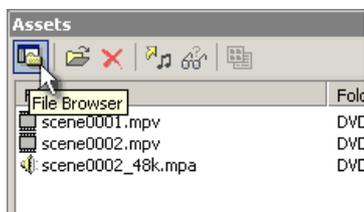
The **Video & Audio** Bin tab is the one you will use the most within the Assets window. Files dropped here are checked for validity and are project specific. You can also import an image to this Bin if you need to have the image listed just for this project.

You import files here by simply dragging the file into the Video & Audio Bin from within Windows Explorer or by using DVD-lab's built-in File Browser. The DVD-lab built-in File Browser has the advantage of listing only related files (video – mpg, mpeg, mp2, m2v, audio – mpa, m2a, ac3, dts, wav, aiff, pcm) and most of the image formats. With DVD-lab open on your desktop and the Assets / Video & Audio tab visible, open your Windows Explorer, find the file to import, then Drag & Drop that file into the Assets / Video & Audio window to include that file in your Project.

**Note:** The role of Video & Audio Bin is not only to collect project-related files but also check their validity. This is the time when the file may be accepted or rejected. The validity check is done by reading the file headers. If the headers are not exactly true (for example GOP timecode is off) some parameters such as Total Time or Average Bitrate will not show the correct value. This doesn't affect the compiled project in any way, it is only a quick display of information. If you want to know more precise values you can run [Bitrate Viewer](#) which will examine the file frame-by-frame and then calculate accurate values for the file's bitrate and total time. Also read more in [Frame Indexing](#).

### ► File Browser, Import files

To open DVD-lab's File Browser, press the File Browser button – the very first button on the Assets Bin toolbar. For the Open File dialog (which is faster) click the second button. With either function, the File Browser or the File Open dialog, you can select one or multiple files. Use Windows' standard multiple file selection methods like <Ctrl>Click for multiple individual files or <Shift>Click for a range of files.

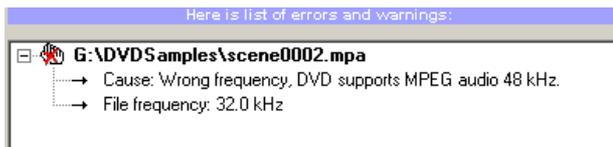


A File Browser behaves just like your standard Windows File Explorer from where you can drag-and-drop files directly into an Assets Bin.

**Tip:** A valuable shortcut within the DVD-lab File Browser is that you can double click on a file which will then be immediately added to the asset Bin for you.

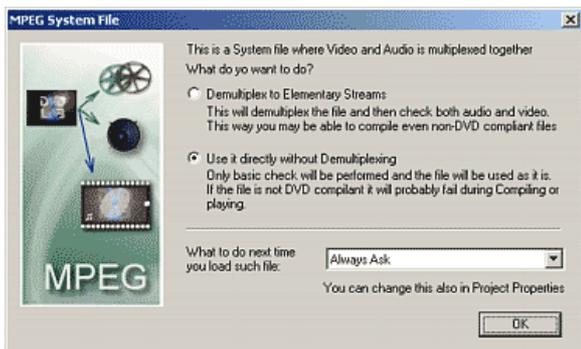
### Checking Files, Errors and Warnings

As soon as you drop a file into the Video & Audio Assets Bin, it will be checked for validity. If the file is not DVD-compliant, DVD-lab will display a Error Message and a Warnings window will appear descriBing the cause of the error.



### ► Demultiplexing files

Normally, DVD-lab expects to import elementary stream files (mpv, mpa, ac3, dts, ...). However, you may also import non-elementary streams such as MPEG or VOB files. When importing an MPEG or VOB file, you will be given a chance to decide what to do with them: Demultiplex them or use them as they are as the below dialog box shows.



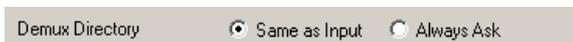
### Demultiplexing

This option results in the safest, most compatible asset files at the expense of a little time for DVD-lab to perform the automatic demultiplexing for you. Since the files are first demultiplexed and then re-multiplexed during the Compile process to DVD format, many potential packet related errors will be avoided by taking this option. The demultiplexing processing takes place independently as a background process, you can terminate the process by simply deleting the asset.

File	Folder	Size
! motionoverlay.mpg	DVDSamples	75%

After the files are demultiplexed, DVD-lab will automatically check them and add the new video and audio elementary stream files to your Assets / Video & Audio Bin.

**Note:** The resulting demultiplexed file(s) will be placed in the same directory where the source file currently is. Make sure you have enough disk space (you need at least the same free disk space as the file size). You can set the destination directory for Demuxed files to other directory by changing the Options in [Properties](#).



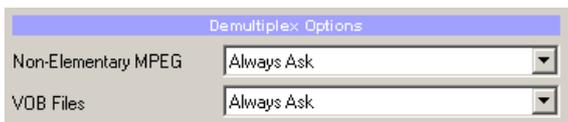
**Tip:** For those using an external software encoder for encoding DVD compliant MPEG-2 video from an AVI file or other source, it will save you time if you select not to multiplex video and audio and to simply output elementary stream files resulting in separate a video and audio file. It saves time in your encoder and also in DVD-lab.

### Use without Demultiplexing

This is a faster method of importing an Asset, but it requires the files are already DVD-compliant. The DVD Compiler is less forgiving when using non-elementary streams. If this option fails, then try Demultiplexing to elementary stream files.

### What to do next time

You can set automatic response next time an MPEG file or VOB file is imported by changing the Options in [Properties](#).



### ► Joining VOB files

When importing source VOB files, DVD-lab offers a third option. That is, for DVD-lab to join together source program VOB files into one rather large but continuous file. VOB files are divided into 1GB blocks for compatibility with older systems. For joining purposes, DVD-lab requires that your first selected file is the first of the VTS\_ named files such as VTS\_XX\_1.VOB. If

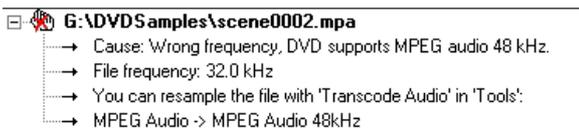
you were to then select file names: VTS\_XX\_1.VOB , VTS\_XX\_2.VOB, VTS\_XX3.VOB (etc.) and Drag & Drop these files into your Assets / Video & Audio Bin, DVD-lab will offer a third option to join all sequential VOBs. When this option is selected, a prompt appears for the disk location of the resulting **joined.VOB** file which will be a very large file. Consider going out to lunch when this process starts.

When joining is completed. you will notice a **joined .VOB** file in your Assets / Video & Audio Bin. To make this **joined .VOB** file into compliant elementary stream files, first remove it from your Assets / Video & Audio Bin with the red **X (Remove Asset)**. Recall that this removal just takes the file out of your Bin but does not delete the file from your disk. Next, open the DVD-lab File Manager, find the **joined .VOB** file and double-click it to start the demultiplexing dialog as above.

### ▶ Audio Transcode

The DVD specs are quite picky and specific about the nature of audio files. While many formats are "legal", we may encounter WAV or MPA files that work on our local computer, but are not DVD-compliant. Typically, the culprit is the sampling rate. An audio CD is 16bit/44.1 kHz whereas DVD requires 48 kHz for most formats.

If you import an audio file which is not 48 kHz, then you will be prompted to transcode the file.



You can also Audio Transcode a file at any time by clicking the Audio Transcode button in Assets bar.



In special cases you may wind up with audio content in the format of a PCM file (Pulse Code Modulation). While a WAV file is technically a PCM type file, this PCM format is not DVD-compliant or usable in most audio editors. This PCM file then needs to be converted to WAV format (use add WAV header). To accomplish this, DVD-lab provides a built-in PCM->WAV tool for your conversion convenience.

See more in [Tools](#).

### ▶ Previewing files in the Asset Bin.

You may want to preview a file that is in your Assets / Video & Audio Bin to see what it contains. To do that quickly for a video file, you can simply drag-and-drop it into the Preview window or simply double-click the file.



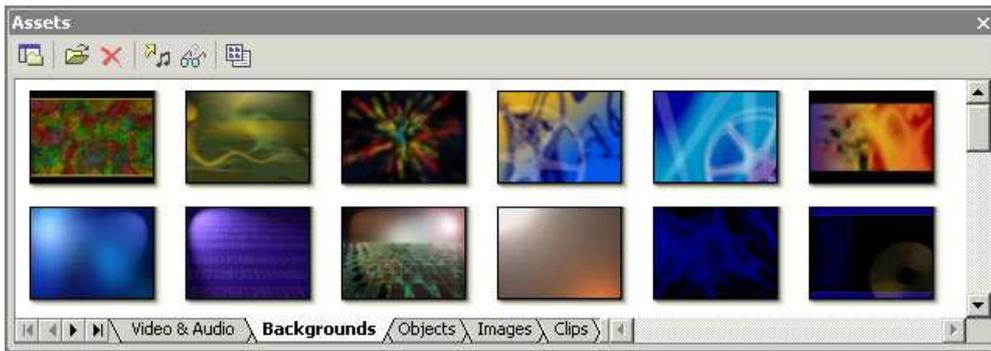
The Preview window shows video content. For audio content, DVD-lab passes the audio file to whatever application the Operating System thinks is associated with that file type (WAV, AC3, MPA). Whatever plays that file on your system outside of DVD-lab gets called when a preview of that audio file type is requested.

### ▶ The Library Bins

There are other Bins available to you in the Assets windows besides just Video & Audio. These are Permanent Bins. That means the files in these Bins are available for all projects. You may think of them as your library. See the tabs at the bottom of the Assets window. When DVD-lab was installed, it created a series of folders within whatever folder the DVD-lab program was installed into. These obviously named folders contain the files that represent the Library Bins. You can add you own files into the folders as needed.

## Backgrounds Bin

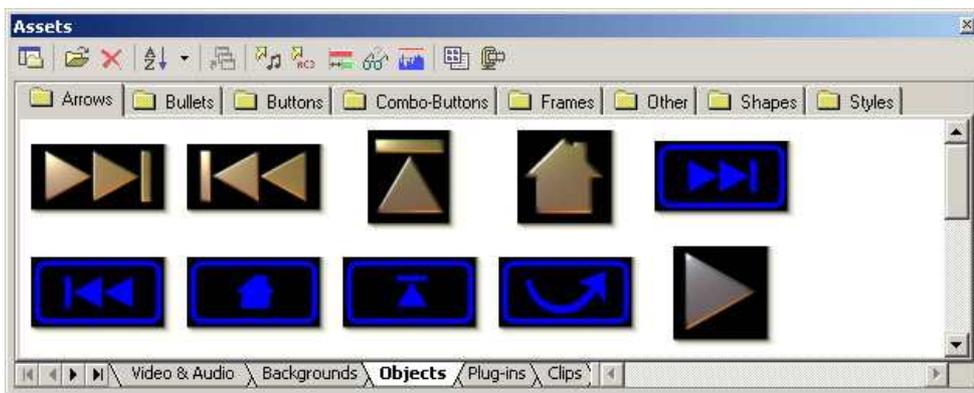
Here DVD-lab displays files that are in the Backgrounds folder. Any file dragged from Backgrounds Bin onto a menu window will fill the menu background. You already have a quite large set of professional backgrounds supplied with the DVD-lab installation. These (.BKG) background image files reside on your disk in a folder named Backgrounds within whatever folder the DVD-lab program was installed into.



To add more backgrounds images to this library from your own image files, simply drag-and-drop that image file from the Windows Explorer into the Assets / Backgrounds Bin. That image file will then be physically copied into the Backgrounds folder. When creating your own images, note that menu backgrounds are 720 x 480 pixels, 24 bit color in PNG format.

## Objects Bin

Next Bin is for buttons, frames and other elements for use in building menus. These Objects are transparent PNG format files so they perfectly blend into the background.



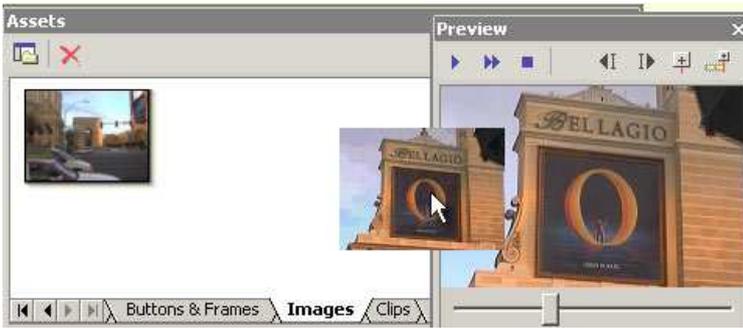
You can create more buttons and frames with software such as Mediachance Real-Draw Pro (In fact all the files you see there were originally created in Real-Draw Pro). The Objects are organized into a few sub-Bins. These sub-Bins are representations of sub-directories within the Objects directory. You can create your own sub-Bins by simply creating a new folder in Explorer. The next time you open DVD-lab you will notice that new sub-Bin.

A special case is a "Styles" sub-bin. Here are stored often used object styles such as color, textures etc. You can apply the style by dragging it over any menu object.



## Images Bin

This is a tab library for other types of images such as video-stills. It is initially empty. You can easily add video-stills by dragging them from Preview window.



These files dragged here will be again physically copied to the Images folder.

### Clips Bin

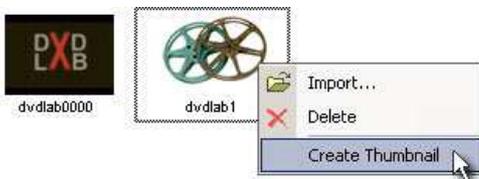
A Bin for permanent video clips such as various short splash screens used before main feature, etc.



**Note:** The clips dragged here will be permanently copied to the Clips library, as it's a folder available to all Projects. That means you shouldn't copy anything into here that is too big. The main feature video should be dragged to the Assets / Video & Audio Bin which represents a reference only to the actual asset file on disk.

**Note2:** The files copied here will not be checked for DVD-compliance. It is your responsibility to add only compliant files. You can always check it first by dropping a file into the Assets / Video & Audio Bin.

Initially, when you add a new clip to the Clips Bin it will have a default thumbnail. You can easily associate a new thumbnail with the clip if you first drag the clip to the preview, scroll to the frame you like and then right-click on the clip in the Bin and select Create Thumbnail. Whatever is currently visible in Preview will become a new thumbnail for that clip.



### Music Bin

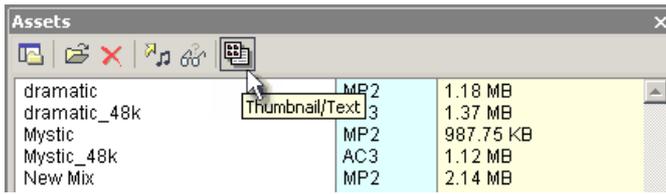
A permanent asset Bin library for short audio clips in mpa or ac3 format. These music clips may be then used for menu audio backgrounds. A normal length of these clips is about 1 min.



 **Note:** The files copied here will be not checked for DVD compliancy. It is your responsibility to add only compliant files. You can always check it first by dropping a file into the Assets / Video & Audio Bin.

### ► Display Files

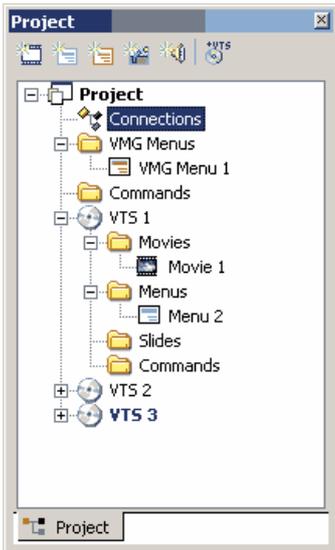
You can switch the permanent assets to display files instead of thumbnails with the Thumbnail/Text button.



This concludes the explanation of the Assets. As with many other things in DVD-lab, you use the Assets by dragging them out onto a Movie or a Menu window.

## Project window

A Project window displays the items that make up your Project, in a well-organized manner. The items in a Project represent what the contents and elements are that will comprise your DVD when Compiled. They also represents a window which can be opened on the workspace. These items are Movies, Menus, Slideshows and the Connections between them. While you can add many Movies and Menus and Slideshows, there is only one Connections item for each Project.



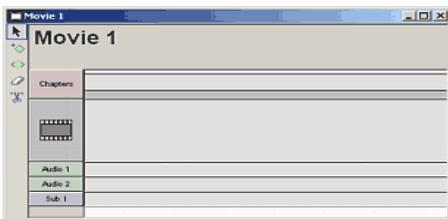
The Project window logically group the object into separate types.

### Open an Item window.

For example: To open a **Movie 1** window to add Video and Audio, double-click on the **Movie 1** item in the Project window. The opened Items will be also indicated on the workspace tab:



You can open or close these Items as you like. If you close a particular item, for example a Movie 1, it will still remain in the Project, though the window will be hidden

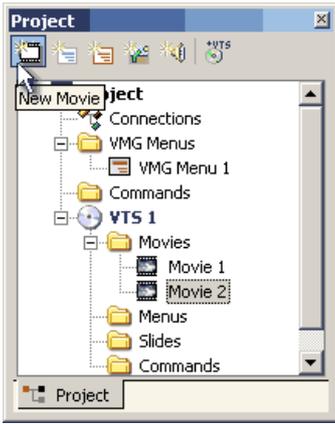


### Deleting an Item

You can delete an Item from the Project by selecting it in the Project window and pressing the Delete key on the keyboard. You can also delete Movie or Menu or Slideshow items, you can't delete the Project Connections.

### Adding Item

You can add another Movie or Menu item by clicking at the buttons right above the Project tree.



Every Video on the DVD needs to have its own Movie object, even a short clip. At least one Movie object with a Video clip must be present in order to compile the DVD.

A DVD doesn't need to have a Menu. It could just start playing movie as you insert the DVD into the player. See [Connections](#).

### Adding new VTS (PRO).

DVD-lab PRO is a multi-VTS authoring system. A VTS (Video Title Set) is a group of movies and menus that share similar properties. If, for example, you need to include a 16:9 movie and a 4:3 movie to your DVD project, then each of these movies must be contained within its own VTS.

To add VTS simply press Add new VTS button.



A new VTS will be created and also an empty movie object will be placed there. (Each VTS has to have at least one movie object)

To delete VTS simply select it in the Project and press Del key.



### VMG and VTS Menus (PRO)

In multi-VTS application there are two types of menus VMG (a kind of top level menu) and VTS menu (menu that is attached to VTS). Each has its own purpose. You may start using normal Menu if you are not sure about the technical details but once you add another VTS you will soon see the need for a top level menu (VMG). For a more detailed description and further information, please see [here](#).

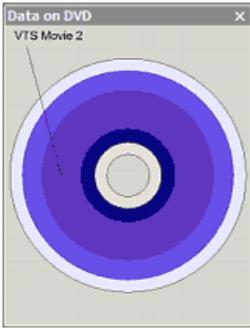
To add normal VTS menu, press the Add menu button (cyan)

To add VMG menu, press the Add VMG menu button (red)

### ► DVD Topology.



You can view a simple overview of the data as they would be physically written on the DVD.



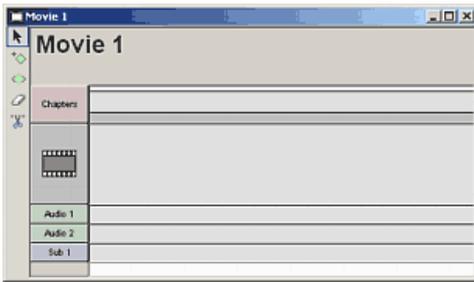
As you select an object in Project, it will be also be highlighted in the DVD Topology window as a ring which represents the physical position of this data on the DVD disc.

**Note:** The place near the DVD edge are the best candidates for scratches. It is then wise to add there less important data. That means, when you are adding movies start with most important ones.

The physical view will also help you determine how far the DVD laser needs to jump if you connect two movies together.

## Movie window

A Movie window is the place where you add a single video clip and its audio stream(s). You can have many video clips on DVD, but you need a separate Movie window container for each of them.



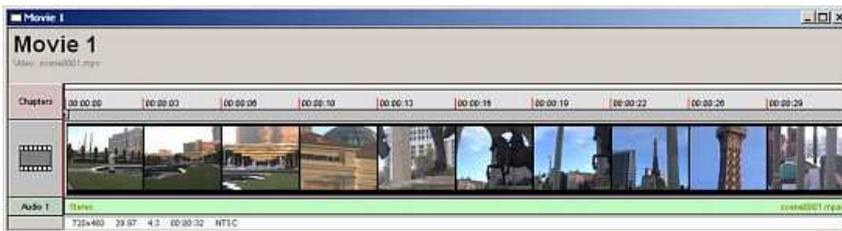
A Movie window has a place (a track) to put a video clip, audio file and a way to enter Chapter Points.

### Add Video

To add video, drag the video elementary stream file from the Assets Bin and drop it onto the Movie video track. Thumbnails of the video will be quickly generated over the entire length of the video.

### Add Audio

To add audio, drag the audio stream file from the Asset Bin and drop it onto the Movie audio track.



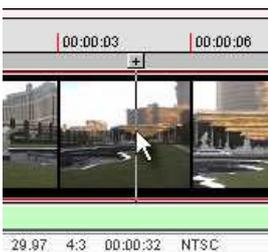
As you add one audio track a new empty track will appear. In DVD-lab PRO you can include up to 8 audio tracks for each Movie.

### To delete Audio or Video

Select the item on the Movie window which you want to delete and press the Delete key on your keyboard.

### Scrolling through the video

Click on the Video represented by a series of thumbnails and drag the video cursor. Watch the preview window as you drag the cursor.



You can slow scroll by I-frames with keyboard arrow keys: left and right. Alternatively, you can use an external jog/shuttle controller such as Power mate (above, right) or any other controller device which can be assigned to the arrow keys.

You can also use I-Frame buttons on the Preview Window.



### Zoom

You can zoom in or out of the screen with the zoom buttons found on the main toolbar:



Click either the zoom in (+) or zoom out (-) tool, then click in the Movie area to zoom in or out of depending on the tool you selected. Zooming in will enable you to more precisely set the Chapter Points in a long movie.

 **Note:** Video is the main stream in a Movie container. Normally, the video and audio of ordinary video clips are of the same length. However, if the audio is longer than the video (for example: you add a background music clip to your splash clip) the audio will be cut to the length of the video stream. If the audio is shorter than the video, then the movie will be silent after the end of the audio.

A Movie doesn't have to have audio.

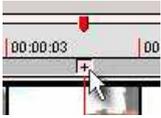
See next [Chapter Points](#)

## Chapter Points

Chapter Points are used for quick navigation through the movie using the Next/Prev chapter buttons on the viewer's DVD player remote control. Adding a Chapter Point to a movie creates an internal marker available to DVD-lab that a number of features can then reference. You can have a Menu button jump to this place in the movie for example.

### ► Add Chapter Point

To add chapter point press the [+] button on top of the movie cursor



or press *Spacebar* or use action from the jog/shuttle controller assigned to the space bar.

Alternative way:



Select the add chapter point button, Click on a movie and while holding mouse cursor drag to the required position. (Watch the preview window). When position is correct, release mouse button and the Chapter Point will be added.

A Chapter Point is indicated by a red arrow. If you click on the red arrow, it becomes selected and its timecode will be displayed above its marker.



A Chapter Point may also be indicated by a green diamond.



This is in case if a movie has [frame index](#).

 **Note:** You don't have to add a Chapter Point at the beginning of the movie because this is done automatically. The chapter time is always displayed in non-Drop format (NDF) for NTSC.

### ► Delete Chapter Point

Select the Chapter Point you want to delete by clicking on it and press Delete on your keyboard or press the minus sign on the movie cursor below the chapter.



Alternative way:



Use the Erase Chapter tool and erase over the Chapter Point or Points you want to remove.

### ► Move Chapter Point

You can move existing Chapter Point with the Move Chapter tool



Select the Move Chapter tool and then click on a Chapter Point and hold the mouse button down. Then move the chapter left or right. Release the mouse at new position. A thumbnail associated with the chapter (later used in scene selection for example) will be also changed.

### ► Move Chapter to Previous/Next I-frame (Only for [Frame Indexed](#) chapters)

You can move selected Chapter Point left or right in I-frame steps. (The smallest possible step where chapter can exist on DVD)



This will move the chapter itself, but the original thumbnail associated with the chapter (later used in scene selection for example) is **not** changed.

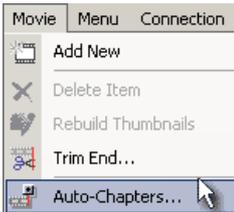
**Tip:** You can first select a visually good frame, add chapter, then move it to previous or next I-frame for exact chapter placement. You need to have Frame index for this function.

**Technical note:** As you are adding chapters or moving them you will discover you can't always add chapter to an exact spot you would like. DVD specifications require that each chapter point be on an I-frame which occurs approximately every 15 frames. 15 frames is about 0.5 sec of playback. Therefore Chapter Points can only be placed on these spots which occur approximately every half-second.

This limitation is often solved in professional practice by encoding the MPEG-2 stream such that – if necessary – extra I-frames will be generated at specific times to allow for accurate placement of Chapter Points (such as a scene change or transition).

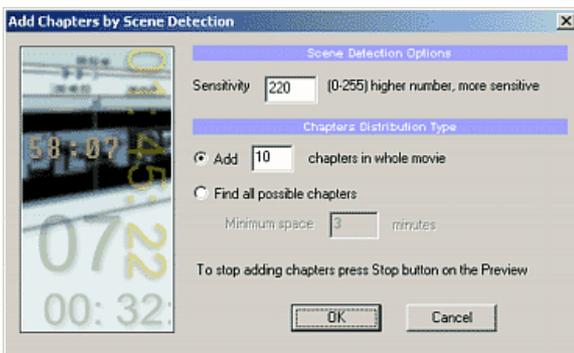
### ► Add Chapter points by Scene Detection

DVD-lab provides professional level tool to analyze and find Chapter Points for you automatically by using scene detection. *See Movie – Auto-Chapters*



You can also click on the Auto-Chapters button on the Preview window.

The Scene Detection tool will look through the video trying to find cut scenes or scene changes, setting Chapter Points there as it finds them. Rather than manually marking Chapter Point ourselves, we can ask DVD-lab automation to help us by marking Chapter Points where it thinks the scene changes.



**Sensitivity:** This sets how much the Scene Detection tool is sensitive to scene changes. A higher number means higher sensitivity, which also means more Chapter Points will be found. If you set this value too high, say at 250, then every new frame will be considered as a scene change. If you set the number too low, the scene detection tool may not find any scene changes. A value about 220 seems to work best.

### Chapter Distribution

This sets how many Chapter Points the software locates optionally the minimum length of a chapter.

### Add X chapters in whole movie.

The movie will be divided to X blocks, then from each block the Scene Detection will try to find next closest scene cut. This is the fastest way of adding chapters because the movie doesn't have to be scanned frame by frame. The resulting chapters will be not

equally spaced and there may be less than X chapters added if there were not enough cut scenes.

**Tip:** If you want to equally space the chapters enter a high number for sensitivity : 250

### Find all possible chapters + Minimum space X min

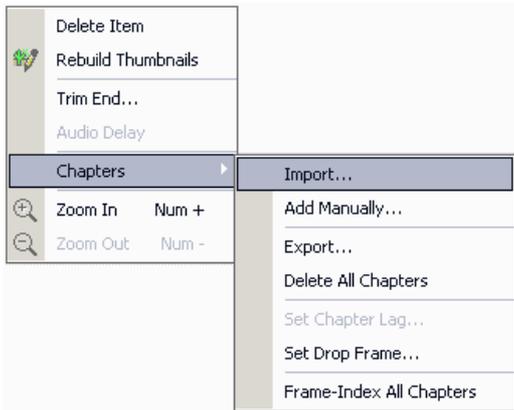
This will scan the whole movie and add the chapters when it finds a cut scene. It will also not add another chapter until the minimum space of X minutes is allowed between them.

**Note:** The scene detection works by analyzing the image. This however depends on the source – if your camera is shaky then the cut scenes will be placed quite randomly. You may try to tweak the sensitivity for best result or simply add chapters manually.

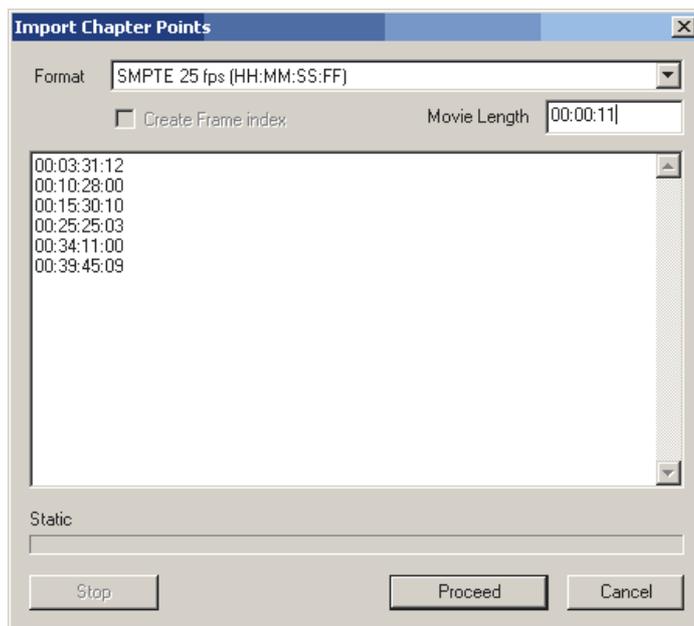
The Chapter Points may be then used for adding a Scene Selection menu.

### Import Chapters

To import chapters from external file, right-click on the movie and select *Chapters – Import Chapters* from the context menu.



You will be prompted to select the chapters file from the disk. You may either select the chapter text file or press Cancel to add chapters manually. Almost any time-based chapter file format is supported. Smart parsing will extract the timecode from any common text file formats and list them in the edit box:



When you click Proceed a searching algorithm will start looking for the frames in the video file to match the entered timecode. This may take couple of minutes for very large files.

### Timecode or Frame

A standard way is to enter timecode which is often in form of SMPTE

HH:MM:SS:FF

H – hour, M – minute, S – sec, F – frames

 **Note:** For NTSC timecode can be in Non-Drop Frame or Drop Frame Format.

However you may wish to directly use frame number, for example 33134 (which corresponds to the 00:18:24:46). In this case select Frame Number in the Format combo box. Entering the Frame is the most exact way of adding chapters. You should consider to have the movie Frame Indexed prior using Import or the chapter thumbnails may be shown incorrect. (However the chapter position in compilation would be ok, the chapters will be placed at the closest I frame number in any case)

For NTSC/PAL you have to choose the format in which the chapters are written. It could be either HH:MM:SS:FF, HH:MM:SS:CCC or frames. For NTSC you need to also select if the chapters are written in NDF or DF time format.



The chapter time will be in DVD-lab interface displayed in Non-Drop Frame (NDF). If you enter chapters using Drop Frame, they will be converted to Non-Drop Frame so you will see different number in chapter.

To avoid confusion, you may consider entering the chapter time in NDF format (so the number displayed in chapter will correspond to the number you imported)

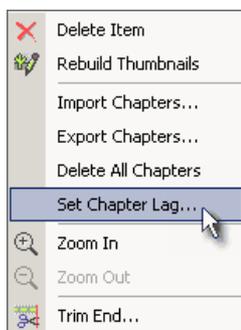
#### ▶ Chapter Lag (Only for Non-[Frame Indexed](#) chapters)

 **Note:** We assume that in normal project the chapters will be always placed with Frame Index accuracy. You either create frame index manually prior compiling or let DVD-lab create frame index during compiling.

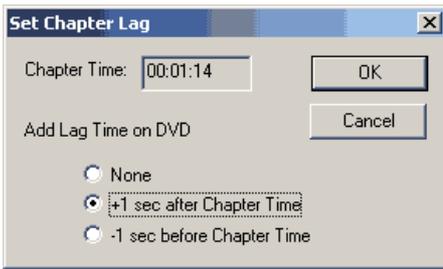
Therefore the text below will not apply. It apply **ONLY** if you disallow creating/using frame index for whatever reason.

Since the chapters from the Movie will be on MPEG I-frame markers rather than time based, it may have happened that the Chapter Point starts a just a bit too early (displays a bit from previous scene) when played on a DVD player. Instead of moving the chapter one second later you can use the Chapter Lag option to make corrections to these time points.

First, select the Chapter Point on the Movie which you want to correct and then right-click to show this context menu. Select the Set Chapter Lag option.



You will be prompted with a dialog where you can set the lag (when to play the chapter) to be +1 second after the Chapter Point or -1 second before Chapter Point or None if needed.



We set it to play 1 second after the Chapter Time. A Chapter Point that has had a Chapter Lag parameter set will be displayed as having a (+1) or (-1) sign after it's time value, as shown here.



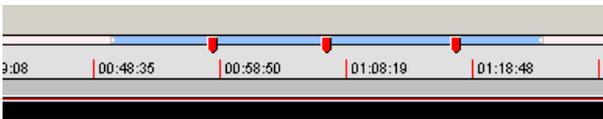
In this case, the chapter will start playing 1 sec after the Chapter Point.

### Movie Branching

Chapters allow you to use a branch object that can play the chapters in any sequence or play only some of the chapters. For more see [Advanced objects](#).

### Layer Break Range

If you have project that is larger than DVD-5 you may see a Layer Break Range area as a blue or cyan bar behind the chapters.



This indicates the area of possible [layer break](#) on the DVD.

### Shortkeys:

Action	Shortcut	Description
Insert Chapter	SPACE	Insert chapter at the cursor point
Remove Chapter	Del or Shift+Del	Chapter point must be selected. Del is used also for removing the video, audio or subtitle tracks. Shift+Del can be used only for deleting Chapters.
Next Chapter	Page Up	Select next chapter (right of cursor)
Previous Chapter	Page Down	Select previous chapter (left of cursor)

## Chapters – Frame Indexing

(Optional step)

To speed-up the pre-authoring process, DVD-lab displays the MPEG GOP (Group of Pictures) timecode in the Chapter Points area and in the preview. However DVD-lab will always remember the **exact** chapter placement and then during compiling it can automatically create *Frame Index* and match the desired position of chapters to the correct frame number.

### Chapters accuracy

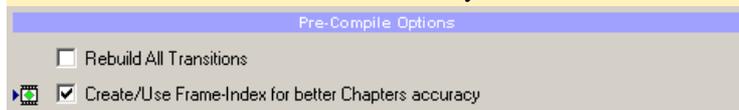
The usual error for chapter placement is about +/- 0.25 second. This is the best DVD can offer since Chapter Points must be on an MPEG I-frame marker which comes every 15 frames or so. When you are adding chapters to movie manually (using the cursor and plus sign) DVD-lab will stick to closest I-frame.

The Frame-Indexing will make sure the chapters will be placed within this accuracy.

### ▶ All you need to know

If you don't want to read any further, then all you need to know is this:

In order to use Frame-Index you have to check "Create/Use Frame-Index ..." in the Compile window.



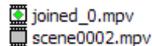
This option will **make sure** that the Chapters will be added with frame accuracy and therefore they are not dependent on the GOP timecode. If the Frame-Index has not yet been created for the Movie, it will be generated just before the compile process starts and all your chapters will be translated to frames.

You can stop just here or read further if you need more information.

### More reading about Frame-Index

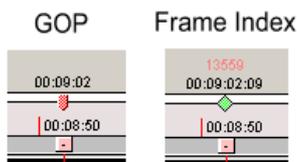
#### ▶ Movie with existing index

A movie which has been indexed will show a Green diamond in the small icon in Assets when loaded. A new movie will not yet have an index, so it will not show this Green diamond flag.



#### ▶ Adding chapters

It doesn't matter if you add chapters with index available or not. DVD-lab is built so that you can Frame-Index a movie anytime without re-creating chapters. So you can add chapters the same way as before and then let DVD-lab create an index afterwards, for example during DVD compilation. Once Chapter Points have frame information, they will show a green diamond instead of red chapter point as shown here.

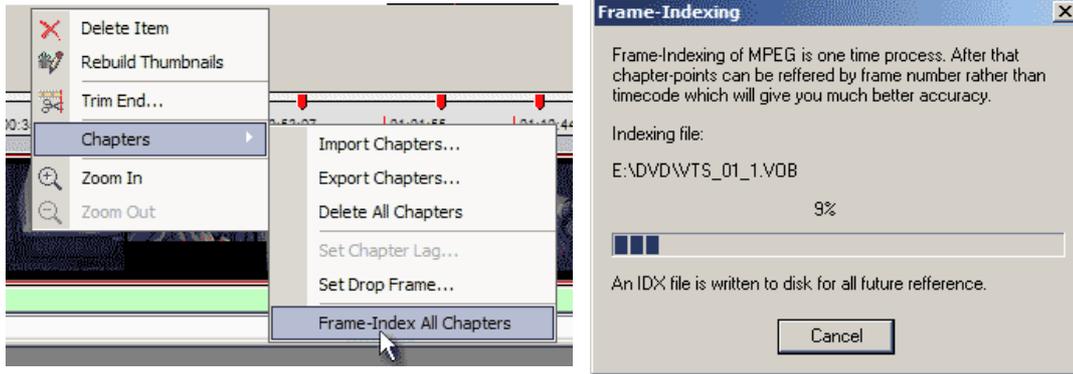


While the GOP timecode is in format **HH:MM:SS** the Frame based timecode is **HH:MM:SS:FF** where the FF are frames. Also, the frame number of the Chapter Point will be shown above in red. For NTSC users the time is shown in Non-Drop Frame format.

#### ▶ Indexing the movie

**Automatic** – DVD-lab does this for you. That's easy. When you go to Compile, enable Frame-Index Chapters.

**Manual** – Right-click on the movie and select Chapters-Frame-Index All Chapters



Manually create Frame-Index

If the index file for this mpeg is not found it will be created

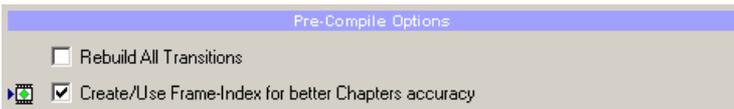
When a Frame Index is created all previous chapters will be switched to Frame mode (green diamond):



**Note:** If you change the movie file in any way (transcode, re-encode, cut etc...) you have to also delete or manually generate the Frame index again. Using a frame index that was created for different file will place all chapters to wrong location.

### ► Compilation

If you like to use Frame-Index for Chapter Points you will have to enable "**Create/Use Frame-Index ...**" in the compile window. If you don't enable it, a GOP timecode will be used even if you have index created.



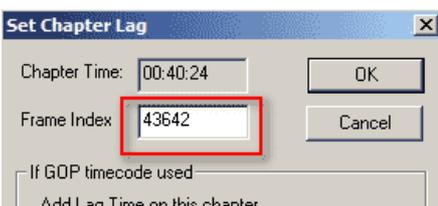
### ► Time calculation

Normally the GOP timecode and the displayed Frame timecode should be close, but sometimes there may be a slight discrepancy of a few seconds or so if the MPEG is in drop-frame format – this is nothing to worry about. The Frame displayed timecode is calculated from the frame number, frame-rate and pulldown. In rare cases, the GOP timecode and the Frame-Index based timecode may differ by more than a few seconds. The Frame-Index based timecode is the accurate one.



### ► Manually adjusting the frame number.

In most cases the Chapter Points using Frame Code will occur exactly where you want them. Sometimes, especially if you use automatic Chapter Points, some Chapter Points may be placed one I-frame early or later than desired. In GOP timecode you may adjust time lag by +/- 1second, but this doesn't work for Frame Code. You can either delete the Chapter Point and try to create a new one 1 I-frame back (or forward as needed) or you can also directly adjust the frame index in the Set Chapter Lag dialog. An I-frame is usually 15 or 18 frames apart.



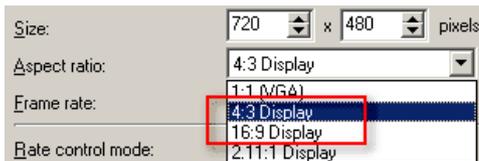
## Aspect Ratio

There are two aspect ratios supported by DVD: 4:3 (also called "Normal" or "Full Size") and 16:9 ("Wide Screen"). Both aspect ratios use the same picture size, however the 16:9 (widescreen anamorphic) image is horizontally compressed on DVD and then stretched by the DVD player when viewing.



4:3 is the aspect ratio of a normal TV (Image 1). 16:9 is the aspect ratio of a widescreen TV (Image 2). A 16:9 feature will be letterboxed on 4:3 TV (Image 3) or Pan & Scan (Image 1).

An MPEG file carries within it a parameter for the aspect ratio information and is a flag set by the encoder. Most encoders provide an option to set this flag: for an example, see the following screenshot from the TMPGEnc encoder:



Of course, in order to have widescreen image, your source video **must be widescreen**. If your source is a miniDV camera then it is probably always 4:3. Some consumer miniDV cameras feature a "widescreen" option, but this is a feature with no benefit. It has no value since what it does is to simply mask out the bottom and top of the image, while the image itself is still 4:3. So instead of the image being made wider, this method is in fact a crop from 4:3 so you are actually losing angle of view!

You can however make a widescreen movie with almost any miniDV camera by using a special 16:9 Widescreen Converter (for example by OPTEX or Century Optics) which optically compress the image in the horizontal direction. These lenses cost about half of a normal miniDV camera. When using one of these converters, you will use 16:9 settings in your encoder, since the picture is really 16:9 squeezed into the 4:3 format.

Some high-level consumer cameras now offer a more "real" 16:9. This is thanks to a large imaging chip which doesn't use all of it's pixels for the 4:3 mode. When you switch such a camera to widescreen mode, the full set of horizontal pixels will then be used. In this manner, the camera indeed captures more pixels in 16:9 mode than it would in 4:3 mode. Some of these high-level cameras even allow you to record the movie as anamorphic to tape, thereby creating a real 16:9 movie.

### ▶ If you want author a 16:9 movie

First, be sure to enable the 16:9 flag during encoding of your MPEG video file, before bringing that video file into DVD-lab as an Asset. Within your DVD-lab Project, you can setup in Project Properties how the player should play the 16:9 on a 4:3 TV. In the Project Properties window, under the heading "16:9 Display Mode" are pull-down selections for: **Automatic – Player Decide** (*the default*), **Pan & Scan** and **LetterBox**. For most situations, the default **Automatic – Player Decide** is probably best. **Pan & Scan** mode will show the movie on a 4:3 TV in Pan-Scan mode (crop the left and right side to fit to the 4:3) whilst the **LetterBox** mode will add black bars above and below the movie frame.

*What follows applies to DVD-lab (Studio) only. (DVD-lab PRO is able to produce multi-VTS DVDs so you can include both 4:3 and 16:9 aspect ratio movies on a single Volume.)*

Also in the Project Properties window, under the heading "Menu Aspect", we have a choice of either **16:9 Widescreen** or **4:3 Regular (All Compatible)**. This Menu Aspect setting will be consistent throughout the Project.

### ▶ Mixing 4:3 and 16:9 modes on one disc

DVD-lab Studio is a single VTS authoring tool. VTS is DVD-speak for Video Title Set. Each complete movie project is a Video Title Set. The DVD spec allows for multiple VTSs on a single DVD disc. A DVD-lab VTS can have multiple movies, however each of the movies will play in the same format as the first movie. That means you can't mix 16:9 and 4:3 modes on one DVD, unless you use a trick (*see below*) or upgrade to DVD-lab PRO.

### ▶ If you really, really must: The trick to mix 16:9 and 4:3 on one DVD

If you are in the business of making multi-aspect DVDs, you likely need a multi-VTS DVD tool such as DVD-lab PRO or Scenarist (*at \$25,000US*). To some extent, you can do multi-aspect DVDs in DVD-lab which is a single VTS tool.

The trick is to use your 16:9 mode video content as Movies (probably your main feature) and then use all your 4:3 mode video clips as Motion Menus. You simply drag the 4:3 video to an empty Menu window, without adding any button to that Menu. If there is audio content to go with the video, then drop that audio into the Menu audio track as well. In this sense, it's not truly a Menu, we are just taking advantage of the fact a Menu can have it's own video/audio background as a Motion Menu. It now becomes foreground really, as the intended content.

One disadvantage of this trick is that for the 4:3 video clip dropped into a Menu, you can't add Chapter Points for that video content. Fortunately, in a mixed aspect DVD the 4:3 video contents are often supplemental or bonus material where chapter points may not be needed. Also be aware that when the viewer presses a menu button on their remote while playing this Motion Menu, that menu's video contents will start playing again from the beginning.

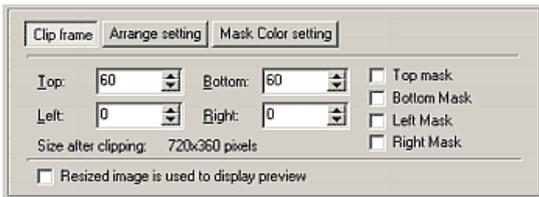
#### ► **Cheating Trick: Create 16:9 movie from a 4:3 source.**

Taking a 4:3 source and cropping it to a 16:9 aspect ratio means that you will be losing field of view. That would not make much sense unless it's just for artistic purpose. A neat trick may be to add a wide conversion lens (0.7 or so) to the camera to enlarge the field of view of the original source video. In this case if you crop the image you will still get a larger horizontal field of view than without the conversion lens.

In many cases this is actually the best way to produce a 16:9 movie with your ordinary 4:3 miniDV camera. Use a wide conversion lens on the camera in the recording phase and then crop the image during DV to mpeg-2 encoding. You may use the letterboxing (widescreen option) on your miniDV just to make sure you shoot within the black bars on frame. You are going to crop out these bars anyway.

#### **Here is how to set the encoding in TMPGenc Plus software encoder:**

Start with an NTSC DVD template which creates 720x480 MPEG-2 video. On the Video setting screen, select Aspect ratio **16:9 Display**. This will set the flag to be 16:9 so that the DVD player knows that it has to stretch the image. In the Advanced tab in settings, set the Video arrange method to **Full Screen** (no matter what it will stretch the image to full screen) and then in the filters below select Clip frame. Double-click on it and in the Clip frame tab set Top **60** and Bottom **60**. The "Size after clipping" value should now should read 720x360 pixels.



That's it, click OK, close settings and you are ready to convert. The result will be "faked" anamorphic 16:9 movie for DVD.

#### **16:9 Menus**

You can also create 16:9 menus, please refer to the 16:9 section in [Menus](#).

#### ► **Progressive or Interlaced**

Unless the MPEG video file is a transfer from a normal film, most of the videos will be interlaced. Video cameras, TV and any other consumer devices works primary with interlaced video signal. You may be tempted to encode the interlaced video as progressive but it is a generally bad idea. This is a too drastic step, it is always best to keep the DVD video as close to the source as possible. There is a lot of discussion about making video a more film-like, but the key is not the progressive format. The film has a film look mostly because of the lighting and scene framing. You can't make a good looking film or DVD from a bad looking video.

## Movie window – Subtitles

**Studio:** A movie can have one subtitle track

**PRO:** A movie can have up to 8 subtitle tracks. Initially there is only one Subtitle track visible to save space. As you add the subtitles to this track a new, empty track will become available.

DVD-lab allows you to import various types of subtitles and also adjust timing, text and visual effects.



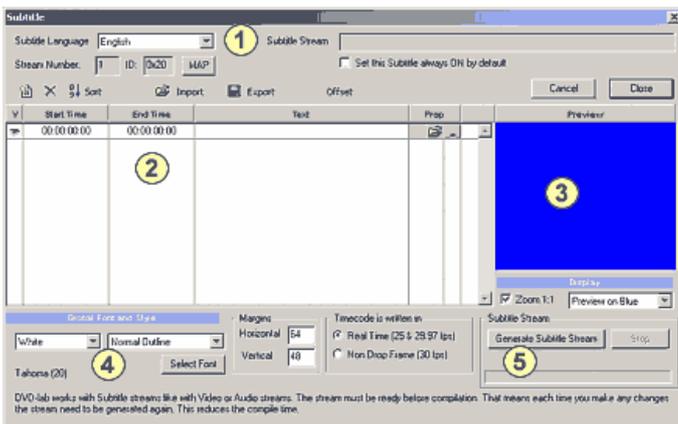
### Add Subtitles

DVD-lab Studio/PRO works with subtitle stream as any other streams such as audio or video. The subtitle stream has extension \*.sp1..\*.sp8

To create new subtitles, double click on the empty subtitle spot:



A new subtitle window will appear. From this window you can import subtitles, adjust them, set properties and finally compile them to \*.sp stream.



- 1 – Stream Info
- 2 – Subtitle Editor
- 3 – Subtitle Preview
- 4 – Font and Style
- 5 – Generate SP file

You may wish to create some subtitles right away. Enter start time, end time and type some text.

V	Start Time	End Time	Text	Prop
👁	00:00:01:00	00:00:05:00	This is subtitle text. Great!	🗑

The time is in format:

## Movie window – Subtitles

## HH:MM:SS:FF

For example the time above 00:00:01:00 means one second. A time 00:19:23:12 means 19 minutes 23 seconds and 12 **frames**.

The edit boxes are set for fast typing. You can use Tab to jump to next box .

The text can be maximum 3 lines per subtitle. You can either type text, import text from few common subtitle formats or import a 4 color bitmap that will be used instead of text.

 **Note:** The subtitle editor in DVD-lab PRO is for simple creating, adjusting and importing existing text or bitmap subtitles. It is not replacement for a more sophisticated subtitle editor. We expect that you already have figured out the exact timing of each subtitle. Adding subtitles on audio cues is a lengthy and delicate process that is best carried in a NLE or dedicated subtitle editor and require perfect audio/video sync that is not possible when using elementary streams. DVD authoring application is never the best place to start creating subtitles from scratch.

You may look at "Subtitle Workshop", a freeware application from www.urusoft.net, which can be used to add subtitles on audio/video cues.

## Import Subtitles

The most common way to enter subtitles is to import them from common text or bitmap formats. Press the Import button on top



These formats are directly supported:

\*.sub;\*.srt;\*.ssa;\*.son;\*.sst

Most subtitle editors (such as "Subtitle Workshop") will export subtitles in one of these formats.

00:10:10:23	00:10:15:04	schloß! Ich war in der Küche mit dem Rosenkohl bei	
00:10:15:12	00:10:20:02	r Cas, Schreudalcher! Das hat vorher noch nie ein	
00:10:20:17	00:10:24:09	Jetzt braucht es nur zu pfeifen und ich springe.	
00:10:24:10	00:10:28:17	wätz langweil dich sicher. Man hat dich an Rastplatz	
00:10:28:18	00:10:33:05	Und du willst denen eins auswaschen.	
00:10:33:06	00:10:36:09	Ich will nur nach Pescara zurück.	
00:10:36:10	00:10:40:09	Ich war nämlich noch nie einen Tag allein zu Hause	
00:10:40:10	00:10:44:10	Ich hab viele Dinge zu erledigen.	
00:10:44:11	00:10:48:20	Schneepfarr! Ich mach. Mittenwiese benimmst ich euch	
00:10:49:09	00:10:53:13	Oh Gott, hab ich dich beleidigt?	
00:10:53:14	00:10:57:13	Ja? Was hast du gemacht?	
00:10:57:14	00:11:01:13	Zienwarengeschäft. Dann meinem Mann bei der Büc	

 **Note:** Most of the subtitle formats (except \*.son) use timecode in HH:MM:SS:DD or HH:MM:SS:CCC where D are 1/10 sec and C are 1/100 of sec. It is important to note the difference. A timecode such as 00:15:49:200 or 00:15:49:20 will be imported to DVD-lab as 00:15:49:06 for NTSC or 00:15:49:05 for PAL which is the same time, but in format that depends on FPS. It is important to note this fact or you will be surprised why DVD-lab "changes" the timecode.

Generic Text Subtitle Formats		DVD-lab	
HH:MM:SS:DD	HH:MM:SS:ccc	HH:MM:SS:FF (NTSC)	HH:MM:SS:FF (PAL)
00:15:49:20	00:15:49:200	00:15:49:06	00:15:49:05
00:00:05:85	00:00:05:852	00:00:05:26	00:00:05:21

You can export back the subtitles to \*.srt or \*.sub formats and the frames will be transformed back to 1/10 sec or 1/100 sec. Some rounding will apply.

 **Note:** The format DVD-lab uses is 'DVD-ready' and it depends on FPS.

## Adjusting Subtitles

You can simply adjust timing by typing a new time to Start Time and End time.

Eye icon. By clicking on the eye icon you can disable displaying of the subtitle at that time.

	00:10:24:10	00:10:28:17	wätz la
	00:10:28:18	00:10:33:05	
	00:10:33:06	00:10:36:09	

### Loading Bitmap.

You can load a bitmap instead of text subtitle. The bitmap has to be full screen (720x480) with only 4 colors used – black, white, red and green – 4-bit RLE-encoded.



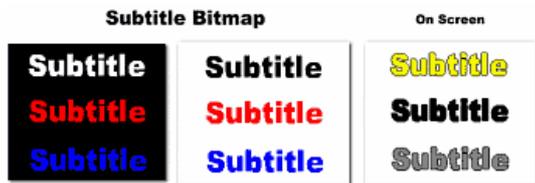
### Bitmap Format

For subtitles apply the same as for subpicture on menu. It is a mask that use 4 colors (black, white, red, blue) These colors will be then replaced by the Style color and transparency.

The 4-color BMP file will be used this way:

BMP Color	Used for	Color on screen
white*	Background	Transparent
black*	Main Color	White or Yellow
red	Outline	Black
blue	Antialiasing	Semitransparent gray

\*If the bmp image has black background then the black and white colors in BMP will be swapped (Black will be used for background and White will be used for main color). The background is determined from the top left pixel of bitmap.



 **Note:** You can apply the Outline and other styles to bitmap as well as it is apparent on the image above (Thin black outline)

### Font and Style.

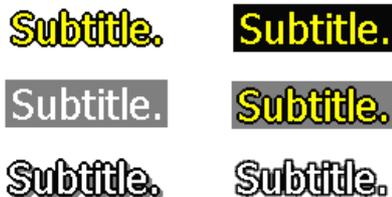
Applied to all subtitle rows. This is found on the bottom of subtitle window. Here you can choose the font and a style.



 **Tip:** Best fonts for subtitles are light Sans–Serif fonts such as Helvetica, Verdana, Tahoma or Microsoft Sans–Serif. You should start with size 24.

DVD–lab PRO allows creating White and Yellow subtitles with various outlines or background bars. Yellow subtitles are often used for their great visibility on any background.

Here some of the combinations that you can create:



There are two ways how the font outline is created and this affects the overall look of the text on screen:

- **Bitmap based**, using various bitmap post–processing functions to create round outline.

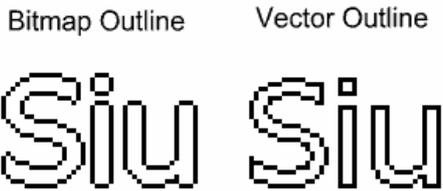
- **Vector based**, Outline is created using pure vector processing

Bitmap based Styles are all first styles from *Outline* to *Smooth Max*, Vector based are last from *Vector Outline* to *Vector Thick Back*

A Bitmap based create a rounder, less jagged text. However displaying it on some players may suffer from player poor scalling algorithm.

A Vector based create more crispier text. A Smooth Vector type is set as default.

Here is example of the same font processed through Bitmap and Vector outlining. Both have outline exactly 1 pixel. The Bitmap looks smoother but the letters may look less defined on TV, the Vector will show more jagged letters but it will be optically crispier because of more "air" between outlines.

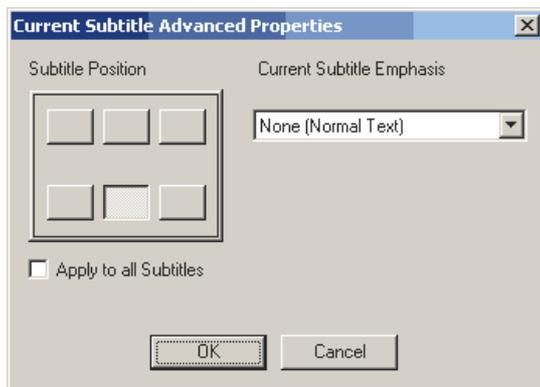


### Subtitle position and Emphasis.

While the font and style apply to all rows, each row in the subtitle window can have few unique properties. To change subtitle properties click on the small button, near the bitmap open.



This opens the Advanced properties for that particular row.



Here you can set position of the subtitle. Subtitles are by default displayed on bottom center. Clicking on Apply to all Subtitles will apply this setting to all subtitles in the grid table.

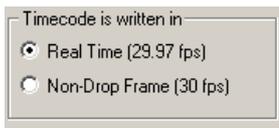
A **Subtitle Emphasis** is other way how to further adjust each subtitle. For example, it is often used in dialogue with somebody off-screen, the first line, in italics, would be spoken by someone out of shot, whilst the second, in normal style, by someone in the shot:

*-First Line*  
-Second Line

### Timecode Format

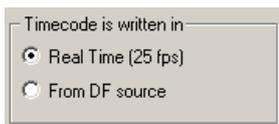
When importing or writing subtitles in NTSC you have to know if they are written in **Drop frame** or **Non-drop frame** timecode.

NTSC



This setting is to distinguish between Drop Frame (DF – 29.97 fps) and Non Drop Frame (NDF – 30 fps) timecode. The difference between NDF and DF is about 3.5 sec. in one hour and that is quite significant for subtitles. If your subtitles are getting progressively late or early, you had chosen the wrong timecode and choose the other setting. Most of subtitles created in external subtitle editors will be probably created in Real Time format (29.97 FPS)

## PAL



PAL doesn't suffer from the DF and NDF issue, but if you import a NTSC subtitle for PAL project, there is a big chance that the subtitle was written in DF timecode. In this case the subtitles will go progressively out of sync when playing back on PAL. You should use the second option "From DF source" that will first compensate for Drop Frame and then use the subtitles for PAL.

**Note:** DVD-lab compiles the subtitles to the subtitle stream *before* you close Subtitle window. Having subtitles compiled before main compilation is a big timesaver. When you do any other changes to the project, the subtitles will not have to be recompiled, but directly the \*.sp? stream will be used. Similarly if you do any changes to the subtitles they have to be recompiled.

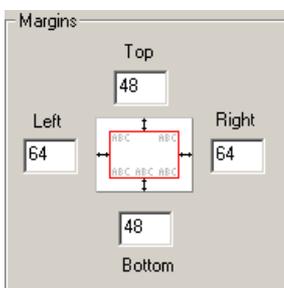
## Stream Info

Here you can set the subtitle language and subtitle Map.



## Margins

By changing margins you can define the position of the subtitles on the screen. The margins define the rectangle inside screen in which the subtitles will appear.



## Format for 16:9 (optional)

A normal subtitle is formatted for 4:3 TV. A widescreen 16:9 movie is side-compressed on the DVD and so a Widescreen TV need to stretch the image to widescreen format. A subtitle will be stretched with it as well and depending on the font it may look "fat" on 16:9 screen.



This subtitle will look correctly on 4:3 TV, but on widescreen TV it will look bit side-stretched as the image above. That means for 16:9 movies we **may** consider to squeeze the subtitles to something like this:

Subtitle

so after the widescreen TV stretch the image they will appear somehow normal

Subtitle

To squeeze the subtitles we have a *Format for 16:9* option (In Studio version this is called Squeeze to 16:9):



 **Note:** This option is enabled only if the movie is 16:9.

However, once we squeeze the subtitles they will now appear squeezed on 4:3 TV!

## Keyboard Shortkeys for Movie

All items listed in menu can have assigned a customized keyboard shortcut. To assign a shortcut, go to menu: *Tools – Customize*. Then select Keyboard Tab. You can see the assigned shortcuts also listed on right side of menu items.

However there are also other special keyboard shortcuts that can be used while on Movie window. Such shortcuts can be used directly or they can be used in customizable Jog–Shuttle controllers such as ShuttlePRO2.

Action	Shortcut	Description
Jog Right	Mouse wheel Up or Right Arrow	Moves the position cursor right
Jog Left	Mouse wheel Down or Left Arrow	Moves the position cursor left
Shuttle Right 1	]	Moves the position cursor faster right
Shuttle Right 2	'	Moves the position cursor even faster right
Shuttle Right 3	0	Moves the position cursor fastest right
Shuttle Left 1	[	Moves the position cursor faster left
Shuttle Left 2	;	Moves the position cursor even faster left
Shuttle Left 3	9	Moves the position cursor fastest left
Zoom In	+ on numeric keyboard	Zoom Timecode In, can be used for more precise setting of chapter point.
Zoom Out	– on numeric keyboard	Zoom Timecode Out.
Insert Chapter	SPACE	Insert chapter at the cursor point
Remove Chapter	Del or Shift+Del	Chapter point must be selected. Del is used also for removing the video, audio or subtitle tracks. Shift+Del can be used only for deleting Chapters.
Next Chapter	Page Up	Select next chapter (right of cursor)
Previous Chapter	Page Down	Select previous chapter (left of cursor)
Show Connections	Ctrl+Home	Bring connection window on top (customizable)

Also see [Shortcut Summary](#) for setting up a Shuttle device.

## Menu window

The Menu window is where you create your Menu design, add buttons and to link them with other Menus or movies. In the real world, creating Menus and links is the main creative task of the DVD authoring process and it determines how polished and professional the final DVD product will look.

Therefore DVD-lab puts a strong emphasis on this area of DVD creation. We can say with confidence that the Menu creation module of DVD-lab surpasses that of almost every other DVD authoring tool.

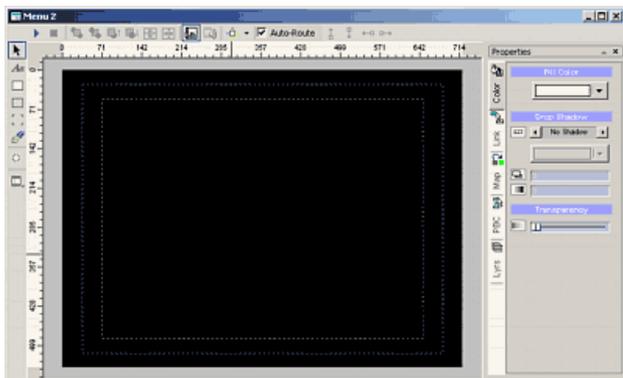
### DVD can have two kinds of Menus.

In the **PRO** version you will see that you can create two kinds of menus. One is called VTS Menu or simply Menu. The other is called VMG Menu. The differences are mostly in limitations of linking to other menus or movies. You can read more [here](#). In brief: If you are creating a normal project that doesn't require multiple VTS, you can go away just with using normal Menu. If your project has movies that have each different parameters (for example one is 16:9 and other is 4:3) you may need to use also one or more VMG Menus.

Both VTS and VMG menus are being edited exactly the same way so the text below simply refers to a "Menu".

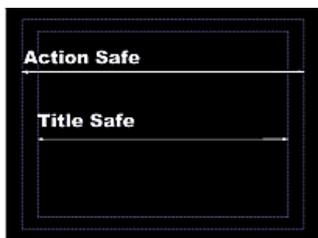
**Studio** version uses only VTS menu to make things simpler.

### The Menu window basics



### Safe Area

We will refer to the working area of a Menu as a "canvas", it's shown in Black here. You will notice the two rectangles shown over the Menu canvas. This is called the "Safe Area".



Standard tube TVs are usually set to overscan, that means you can't see the edges and you lose up to 20% of the image that you would see on computer screen.

Make sure that all important information such as text and buttons are placed within the Title Safe Area.

### Safe Area for Widescreen menus



Widescreen menus that are set to display Pan & Scan on 4:3 TV (Properties) will have Pan & Scan Safe area displayed. You have to limit all text inside this area otherwise people watching it on 4:3 TV will not see it all. You can also set the menu to be displayed as Letterbox (in Properties) and then use whole wide area for your text. For more information, see the end of this topic.

### Zoom

You can zoom in or out of the Menu canvas by selecting the zoom in or zoom out tool and clicking on the Menu canvas where needed. Notice the zoom tools on the main toolbar:



### Snap to Grid

The main toolbar has another Menu related button: **Snap to Grid**:



This will make designing layouts easier. **Snap to Grid** is a toggle, click the button to turn the feature on, click again to turn it off. The layout grid is set up in such a way that it follows a 4:3 ratio. With the **Snap to Grid** toggled on, it is very easy to move objects to line up in a precise manner.

### Undo/Redo

The Menu window features multiple Undo/Redo (the number of undos can be set in the Project Properties).



The Undo/Redo feature keeps track of these object parameters: position, size, color, drop shadow, link.

### ► Basic design

The Menu window features many controls and settings. On the right side of the window you have a Properties window with 4 Tabs: Color, Link, Map, PCG and Layers

On the left side is a toolbar with tools for creating text, rectangles, frames, Group Hotspot and chapter still image.

The top toolbar has settings for Navigational routing, simulation and buttons for moving in layers.

### ► Set the Background

You can supply your own image or use one of the DVD-lab supplied backgrounds.

In the Assets window, click the **Backgrounds** tab:



You will see a number of backgrounds available for your Menu. Pick one and drag-and-drop it onto the Menu to set the Background. You can replace the background with a different one at any time.

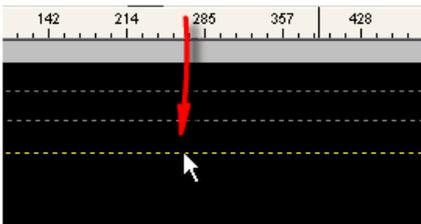
**Tip:** You can use a video still frame as a background when you drag the video frame from the Preview window onto the Menu while holding the SHIFT key. It's SHIFT-Drag & Drop. Similarly, you can use any image as a background if you drag it from Assets to Menu while holding the SHIFT key.

### Merge to background

This command in the Menu will merge all objects in the menu onto the background. All links will be lost and all objects will be then deleted.

### Guidelines

You can use guidelines to help you place your objects, as you might in many other graphic tools. To create a guideline, simply drag it from the horizontal or vertical ruler onto the canvas..



To remove guideline, drag it outside the canvas.

Objects will snap to the guidelines, if they are moved close to it. Guidelines are saved with the project.

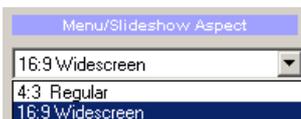
By right-clicking on Ruler, you will open a Guidelines edit box where you can add or delete guidelines by their relative pixel numbers. This offers much precision by defining the exact screen pixel to align to.



### 16:9 Menus

DVD-lab allows you to create 16:9 aspect ratio Menus for viewing on a Widescreen TV.

DVD-lab PRO create **multi-aspect widescreen menus**, that means they are safe to use for both widescreen and 4:3 viewing.



### Displaying menus on TV.

The images below explains how are 4:3 and Widescreen menus displayed on different aspect TV's.

Menu window



The 4:3 Menu can be displayed on widescreen TV as stretched (16:9 TV Full) or with the correct aspect with black bars on sides. There is nothing to set on DVD, all settings will be done while viewing on the widescreen TV.



The 16:9 Menu will be displayed as designed on widescreen TV. On 4:3 TV the menu can be displayed either as Pan & Scan or Letterbox. You have to set this settings in properties before you compile DVD.

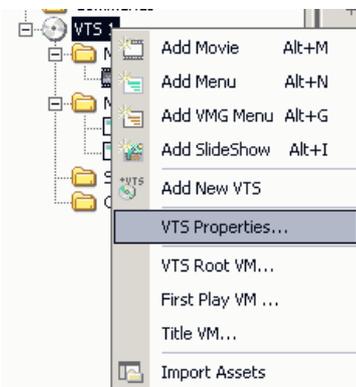


If you select Pan & Scan you have to remember to have all objects inside the Pan & Scan Safe area. The 16:9 Menu on the example above is a good example of correctly designed menu for PS – in all possible situations the menu will display all objects inside the screen.

A good rule of thumb is that if the main movie is in 4:3 (Full Screen) then you should also design your menus in 4:3. For 16:9 movies you can go with 16:9 menus.

### PRO Version

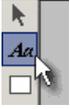
In DVD-lab PRO **each** VTS can have its **own** aspect settings. You can have for example one VTS with widescreen menus and other with fullscreen menus. To set settings that are different from global settings set in Properties, right click on the VTS in the Project window and select VTS Properties.



## Menu window – Objects

### ► Add Text, Rectangle or Simple Frame

To add text, click the Text tool button on the left toolbar:



Click in the Menu canvas area and a Text Entry windows appears. Here, not only can you edit the text, you can apply attributes such as Font, Size, Bold, Italic and set justification as Left, Center or Right.

Once you add text, you can resize it or position anywhere on the screen. To edit the text, double-click on it.

To add a rectangle or a frame, click on the rectangle or frame buttons and draw the rectangle on screen. Rectangles and frames are mostly used for the highlighting of text. For example, you may use a rectangle to draw an underline which you will learn later how to set-up visible only if the link is selected. Similarly you may use frame to highlight a thumbnail image.



### ► Selecting an Object

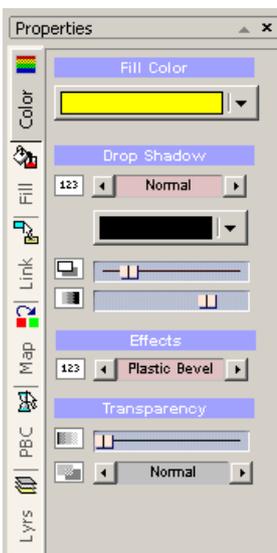
To select an object, simply click on it. This will select an object which is on top. If you have a pile of objects and you would like to select the bottom one, then first click away from the object so nothing is selected. Then, hold **CTRL** and click on the objects. The bottom-most object will then be selected.

To select an object **below** the currently selected object, hold **ALT** and click on the pile of objects. By repeating this you will loop through each of the object on pile.

 **Note:** When moving the objects, they are made a bit "sticky" to their initial position. This is to prevent from accidental moving the object when you just want to select it (shaky hands from too much coffee). To start moving object you will have to click on object and move the cursor about 4–5 points to the desired direction.

### ► Color and Drop Shadow

You can change color of these basic elements with the Fill Color on the Color tab of Properties. Below is a Drop Shadow setting. You will notice that everything you add or draw will have the drop shadow on by default, but you can switch Drop Shadow off at anytime. The Drop Shadow makes the text stand out. If you look at the image above you will see that it makes the image looks more readable by adding a sense of dimension to it.



The Drop Shadow itself can have also its own color. By default, this color is black. The sliders below are for setting the shadow offset (how far away) and the shadow intensity.

The top selector is for selecting the type of shadow, It has values: **No Shadow, Normal, Strong, Sun, Hard** and **Fat**

You can use these settings also for a few additional effects:

To create **Glow**: move the offset slider to left and set some other than black color as a drop shadow. Set type to **Strong**.

To create **Outline**: move the offset to left, the intensity to right and select **Hard**.

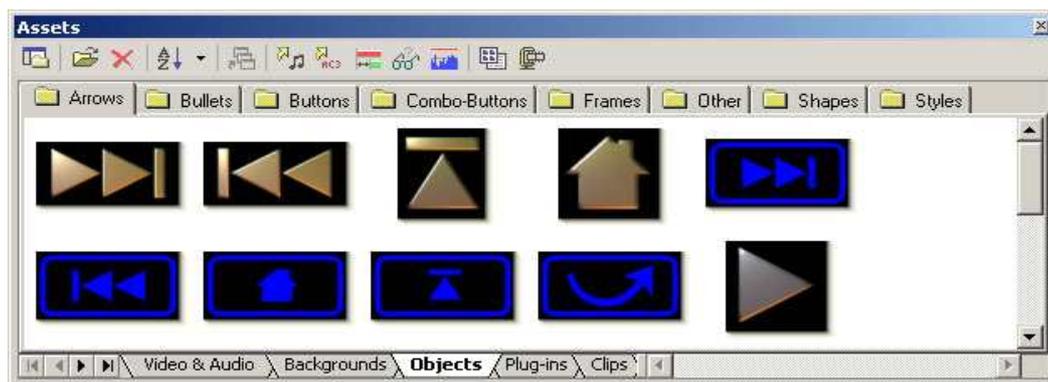


**Note:** The Strong type is particularly good for dark backgrounds.

You can apply these effects on any object in menu including video stills. The effect will be not part of the subpicture (highlighted mask)

#### ► Buttons, Frames and Bullets

Being limited to only text and rectangles on a Menu wouldn't be much joy. To extend the artistic qualities of a Menu, DVD-lab provides you an Objects bin in the Assets window where many buttons, frames and bullets are available for your use. Each of these Objects were produced so that they blend perfectly into any background.



You can design your own buttons in software such as Real-DRAW pro – where these default buttons were originally designed.

#### ► Buttons and Bullets

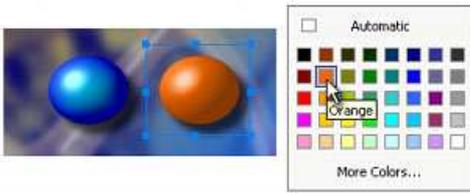
To add a button to a Menu canvas is easy – just drag the button from Assets Bin and drop it onto position on the menu.



#### ► Colors and Drop Shadow

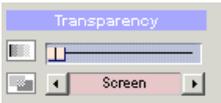
As with the text and rectangle you are allowed to change color and drop shadow.

As you drag the button to the canvas, its color will be set to Automatic (shown as white), this will show the button colors as the button was originally designed. You can re-color the button by selecting the button object and then choosing a color in Fill Color. You also have a choice to reset the color to its original color by checking the Automatic checkbox.



If you choose Black, the button will be de-saturated (Black & White). This method also works also on Video Stills.

### ► Transparency and Layer Effects



Each object on a Menu can have its transparency value set to blend with other objects. You can set the transparency value of an object by selecting that object and moving the Transparency slider in Color Properties.



### ► Layer Blend Effects

This option changes the way a current object (layer) blends with the objects (layers) below. There are 14 typical effects available: (Normal, Multiply, Difference, Screen, Overlay, Darken, Lighten, etc.)

For more information, see [Blend Modes](#) in the Appendix.

**Note:** When you switch from Normal to any other Blend mode, the Drop Shadow will be set to None. This is the most probable use for the blend modes. If you decide that you do want the drop shadow, you can turn it back on via Properties / Drop Shadow.

### ► Frames

Frames are essentially same as button objects, except that when you drop a frame on existing object, the frame will be resized to surround it.



You can always resize a frame or move it, but this method will save you some time. Another feature of a frame is that it will also pick-up a link from the object behind it.

### ► Object Order

As you are adding objects they are placed on top of each other in what we call "Layers".

On the top toolbar you have the left-most four buttons which can move the object within the layers:



You can move an object to be top-most, bottom-most, up one layer, down one layer by first selecting that object and then clicking on the buttons shown here that represents what you want it to do. The two right-most buttons are for centering the object on page horizontally and vertically.

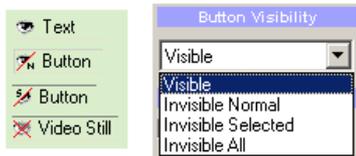
### ► Layers

You can also select object by simply opening the Layers Properties. (Lyrs)



By right-clicking on the Object in Layers, you can also set few things such as Links or Copy.

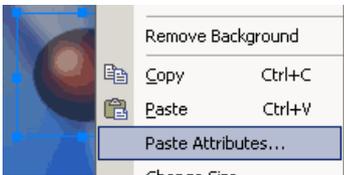
There are few icons showing status of the object. For example the Eye icon corresponds to the Button Visibility:



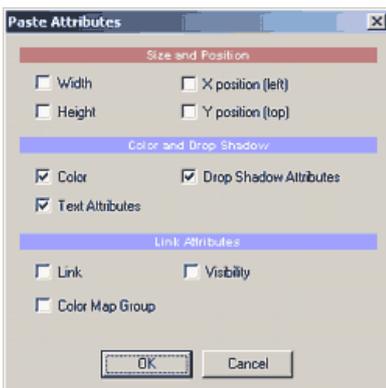
Other icons: = Auto Action, = Object has link, = Object is locked

### ► Paste Attributes

This is a way to format two or more objects the same way, to have their formatting attributes be consistent. First, select the object to copy attributes from, then Copy (CTRL+C) that object as the source to clipboard. Then use paste Attributes on other selected objects from right click menu.

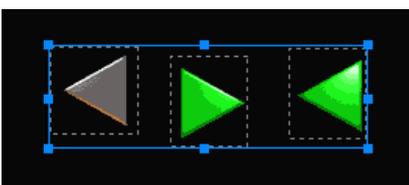


You have options for various settings as to which attributes you would like to be pasted over the new object from the source (in clipboard) including size, color or link information.



### ► Multiple Selection

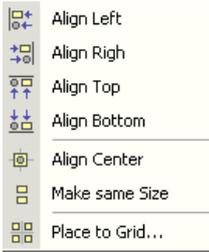
You can select multiple objects by holding CTRL and clicking on the objects or by drawing a selection rectangle around all the objects to be selected.



This allows you to move or resize the objects together. It also allows you to change the color properties to all selected objects together.

### ▶ **Align options**

When you make multiple object selections, then right-clicking on the Menu canvas will present the Align sub-menu.



This allows you to align the objects in various ways.

### **Shortkeys**

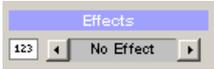
Action	Shortcut	Description
Next Object	Page Up	Select next object (towards layers top)
Previous Object	Page Down	Select previous object (towards layers bottom)

## Menu window – Object Effects

DVD-lab PRO menu capabilities are far beyond simple 2D graphic editing. In fact you can easily create hundreds of 3D-like effects, that are normally difficult to create in any graphic editor. These include realistic light-reflecting bevels, various glass or magnifying effects, shiny metals, chrome or gold and much more. This is another very unique feature of DVD-lab PRO.

### ► Basic Effects

On the Color Tab there is a switch for effects.



These are some quick, but powerful effects you can apply to an object. These are various types of bevel or glass effect.

### Basic Bevel types:



### Realistic Bevels

These bevels offer very realistic look of shiny metal or a smooth plastic:



### Water Drop

Water Drop object takes color from the background and fill it to the shape simulating watery or glass effect.



**Tip:** A water-drop effect can be nicely combined with texture **Fill Type:** *Transparent*. Adjusting *Color-Fill Mix* will create hundreds of glass-like effects.



### Lenses (Magnifier, Mirror Lens)

These effects work best with large objects. One magnifies what is below and the other displays it upside down.

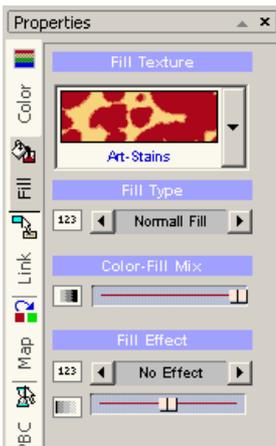


**Tip:** A mirror Lens effect with drop shadow can be used on a text on colorful smooth background. The reversed mirror effect of the background will create a subtle color difference that is similar to background yet still distinguishable.



### ► Texture Fill

The TAB Fill offers additional texture fills and effects that can be combined with the effects on Color Tab. The Fill effects will allow you to create many amazing results that can be normally obtained only in special graphic software.



Any object can be filled with a Texture. The textures are fully seamless.



### Fill Type

The fill type determines how the texture will be applied to the object.



Normal Fill – The texture is filled in the object

Overlay – The texture uses the object color

Negative – The texture is applied as negative

Transparent – The texture affects alpha channel of an object

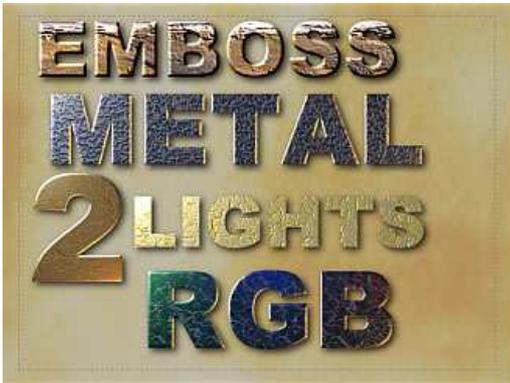
### Color-Fill Mix

This slider will affect how the original color and texture are mixed. On the left side is full color, on the right side is full texture.

### Fill Effect

Another set of effects can be applied to the filled texture. The slider below will adjust the effect.

Fill effects combined with texture will allow you to create many interesting effects like metallic shine or gold.



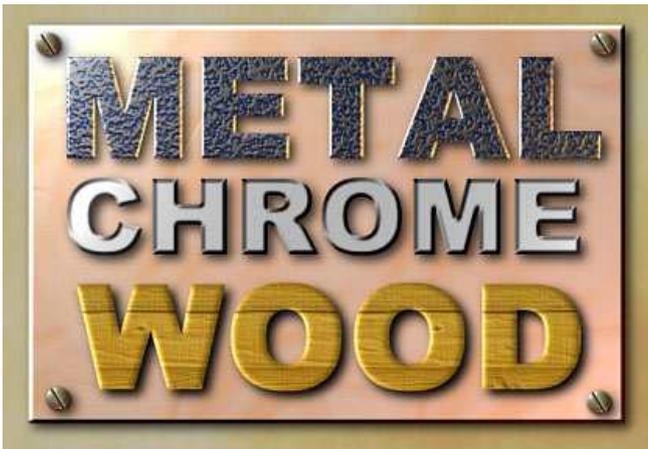
**Emboss** – a simple embossing of texture. Gives dimension to wood or other non-shiny materials.

**Metal Shine** – a contrast strong light from left top corner will create shiny sparkles on a fine texture

**2-Lights Shine** – Two lights from corners will work best on smooth textures to create gold or chrome effect

**RGB Shine** – Three lights from top will cast Green, Blue and Red light. Good with smooth textures.

Shiny materials are usually very hard to create in normal graphic applications, but DVD-lab PRO can do this very easy. By combining the texture fills, Bevels and effects you can easily create various materials from marble through metal to wood.



### Object Styles

To be able to quickly remember and recall particular object effect, we have a special sub-bin in the Object bin, called Styles.



Style holds only the color and effects attributes of the object, but not the object shape. (Unlike objects found in all other bins)

To quickly reveal the Styles bin, press *Show Styles* on the Menu tool bar:



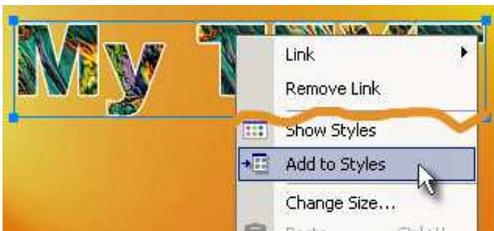
### Apply Style

To Apply Style, simply drag and drop a Style from Style bin over the object in menu



### Create Style

To Create a new Style from any object, select the object, right-click to reveal pop-up menu and select Add to Styles.



### ► 3D Rotation Tool



Any Menu object can be rotated. DVD-lab allows you to not only normally rotate the object, but move it in a virtual 3D space. This is a great way to add some interesting looks to your Menus by tilting, rotating and panning the text, buttons or video stills.



You can rotate around one axis at a time by holding the keys:

CTRL – rotate around X only

SHIFT – rotate around Y only

ALT – rotate around Z only (same as normal 2D rotation)

 **Note:** remember that active buttons on DVD can be only rectangles. If you rotate a button, the active button space will be the maximum rectangle around the button. This will change the distance how close together you can put two buttons. It doesn't affect non-linked objects. See the picture below which shows the new active area:

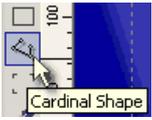


 **Note 2:** When you select the object, the bounding rectangle with the resizing handles will remain in the original object position for simplicity.

## Menu window – Cardinal Shapes

### ► Create Cardinal Shape

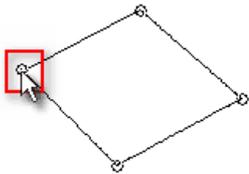
A Cardinal Shape is a special type of polynome with the ability to dynamically adjust its roundness.



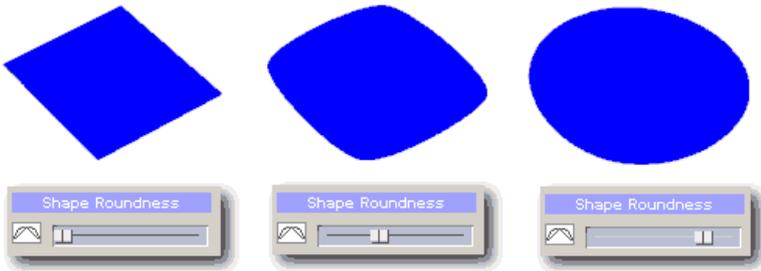
To create a Cardinal Shape, click the Cardinal Shape tool, as shown here. Then click on the Menu canvas to create a first point and release the mouse button. Drag the mouse to the second point and click, then release the mouse button. Repeat this for the desired number of points.



To finish the shape, create the last point over the first point where you started drawing.



A Cardinal Object will be created. If you look at the [Color tab](#) in the menu properties a new slider will appear there just below the Transparency Section: **Shape Roundness**. By moving the slider towards right (changing Tension) the Cardinal shape become more rounded.



This is the basic idea of Cardinal Objects.

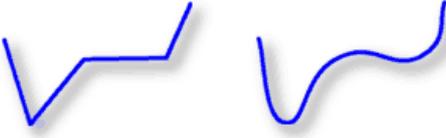
### ► Open Shape (line)

If you don't wish to close the object then instead of clicking and releasing the last point, double-click. This will create an open shape.



(Doubleclick)

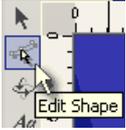
You can adjust the roundness of the open shape the same way using the Shape Roudness slider:



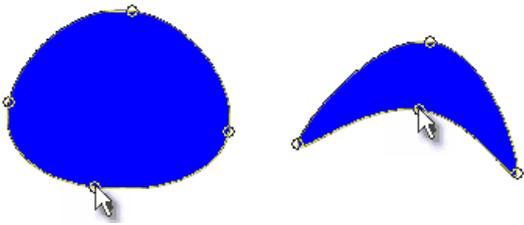
### ▶ Editing the Shapes

Once you create the shape you can still move its points to adjust the shape.

First select the Shape Object tool, then when an object is selected, click the Edit Shape. Alternatively, you can double-click on the object.



The points will become visible and you can drag the points with the mouse to a new position.



When the Roundness slider is set towards right the shape will always keep its smoothness allowing you to create interesting and natural looking shapes.

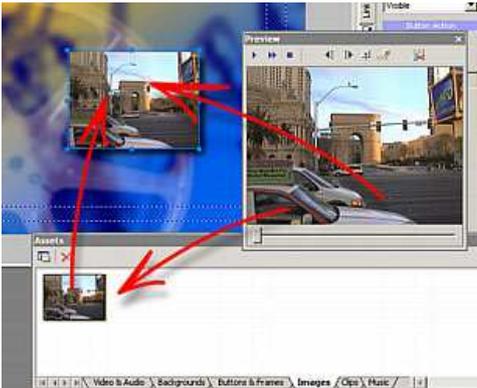
💡 **Tip:** With Cardinal Shape it is easy to create a circle: Draw Square with Cardinal Shape Tool and then set the Roundness slider almost to the right (but not completely) 

### ▶ Break Shape

You can break a closed Shape with the *Menu-Break Path* command.

## Menu window – Video Stills and Images

In addition to all of the objects you can place on a Menu, you can also drag video–stills onto a Menu. You can either collect your video–stills and images in the Image Bin (by dragging them there from Preview) or you can **directly drag** a still–frame from the Preview directly onto a Menu.



Navigate in the Preview to the exact spot from which you would like to make a video–still. What you see in the Preview, is what you get. Click within the Preview and drag directly onto the Menu, close to where the image should land, then release the mouse button. Alternatively, you can choose to drag a video–still from Preview directly into the Assets / Images Bin and then to a Menu from that Bin. The latter method allows you to have this image a separate file in a bin, to do what you like with.

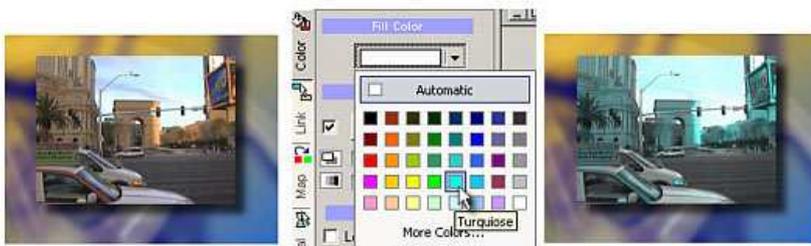
As described in [Assets](#), you can drag any of your own images to the Images Bin from the File Browser or Windows Explorer.

### ▶ Video Still as Background

You can also directly set the Menu background with the video–still image. When dragging from Preview onto a Menu, hold down the SHIFT key. The Video still will then be placed as a background. Holding SHIFT will indicate that this graphic is to be inserted as a background, not as an object.

### ▶ Change color

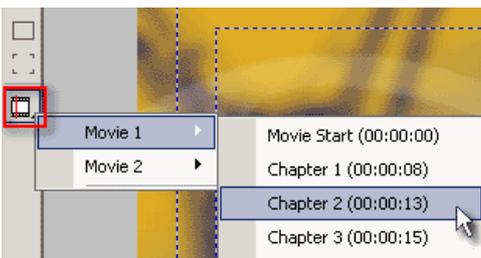
As with any other object, you can also re–color stills with Fill Color properties. This is a non–destructive feature, the image itself is never changed. You can return to the original colors (Automatic – white) or choose any other color at any time.



If you choose a black color the image will be de–saturated.  
Re–coloring is an interesting way how to make your menus look "cool".

### ▶ Insert Chapter Still Images (VTS Menu)

Instead of spending a lot of time tracking down where Movies / Chapter Points are and collecting the stills for all Chapter Points, DVD–lab provides a neat tool called "Insert Chapter Still Images" to greatly automate the assembly process.



Considering that a Movie in the Project has had [Chapter Points](#) defined, DVD-lab knows exactly where they all are. Along the left side of the Menu border, we see the above button for the list of Project Chapter Points, that button is the "Insert Chapter Still" button. Click this button and a flyout menu will appear (as above) from which you will be able to select the appropriate Chapter Point. A video-still from this chapter point will be automatically inserted to the Menu, when selected. The video-still will also have a link set already to the chapter point.

A very smart feature that can save you a lot of time.

 **Note:** You can link to chapters only from [VTS](#) menus. On VMG menus this button will be disabled!

## Menu window – Create Button Links

Menu objects can be either active (meaning it has links to another Movie or Menu) or inactive.

An active object is commonly referred to as a "Button", though it can be any shape. An active object could equally be text or a frame.

### ► Create a simple link

To create a simple link, just drag an Item from project window and drop it on a object.



You can drag the "link" to an empty space on menu and DVD-lab will automatically create a new object. In the case of a Movie, it will create a simple rectangle button with still frame from the movie.

💡 **Tip:** Hold Shift while creating the new object this way and you will be offered the option to create a Text object instead of a still frame.

### ► Create links to Chapter Points (VTS menus)

A very convenient and intuitive way to create a link is to right-click on the Menu object and select "Link". From there you will be shown a list of places to link to that DVD-lab knows about and keeps track of for you. As shown in the screen shot here, if we select a Movie that has Chapter Points defined, we can directly link to a specific Chapter Point.



This method will give you access to link to any object in the project.

📄 **Note:** You can link to chapters only from [VTS](#) menus. From the VMG menu you will be able to link only to Movie Start and no other chapter points will be listed! This is in compliance with the DVD-Video specifications.

💡 **Tip:** Press Spacebar when you have selected object and a link menu will directly appear at the place of cursor.

### ► Remove Link

To remove a Link, right-click on the object and select Remove Link.

### ► Button order

When you create a link, a number will appear near the top left of the object showing that button's order.



The button order is not so much the order in which you created the links, but the order in which the objects will be navigated on the player's remote control. That means, if you start adding text from the top, the top button will always be button number 1 no matter in which order you created the links. As you add or remove links, DVD-lab will keep track of the button number order.

It most important for us to know which button is first.

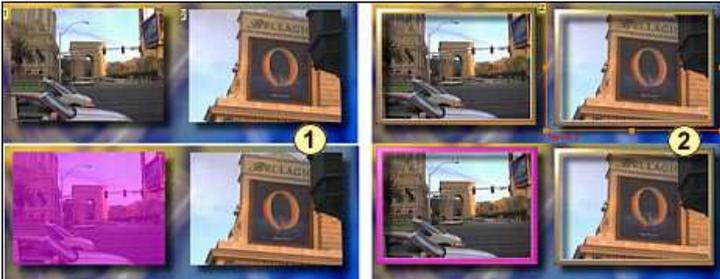
### ► First Button

Each Menu will display Button 1 as selected, by default. That's why it is important to set a first button. You can make any Button a first Button by right-clicking on it and choosing "Set as First Button". Another way is to select the object and move it to the back with the layer buttons. You can also Force Select any other button to be selected.

### ► Frames as links

We know that if you drop a frame on an object, it will position the frame to surround the object. And that if the object happens to have has a link, the frame will pick-up that link. Defining a frame as an object to link to gives us good creative options, especially for thumbnails and images.

Notice the following images:



1 – Here are two video stills each with a link (top). When the Menu plays (bottom) the whole image is highlighted.

2 – Here we have a frame around the thumbnails (the frame was dragged to the Menu from the Assets / Buttons & Frames bin) and the frame has a link (top). When the menu plays (bottom) only the frame is highlighted rather than the image creating an outline effect.

### ► Overlapping

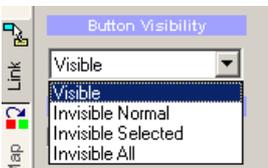
Buttons on DVD can not overlap. This is DVD illegal as the player could not determine which button to activate. If you create a new object or move two active objects so that they overlap, you will see the overlap warning as show by the rather obvious red grid.



Just move the buttons some where else until the Overlap warning disappears.

### ► Visibility

Now the fun part starts. A button may have visibility properties.



This is a setting in the Link tab of Menu Properties. An active object may be:

– **Visible** (default)

The object is always visible against the background. If it is selected then the object is highlighted using the highlight color.

– **Invisible Normal**

The object is not normally visible. If it is selected then just the highlighted image is shown.

– **Invisible Selected**

The object is visible against the background but when it is selected it doesn't show the highlighted image

– **Invisible All**

The object is both invisible against the background and as highlighted. The user cannot see that such a button exists but can navigate there and press Enter. This is sometimes used for "Easter Eggs" or secret buttons.

The most useful are the first two settings.

Here are some examples. We have two text objects that link to movies.



1 – The first text is set as default **Visible**. The second text we set as **Invisible Normal**.

2 – When the menu is played and the first text is selected, it is highlighted. Since the second text is **Invisible Normal** we don't see anything else there

3 – When the second text is selected (press Enter), the player then shows only its highlighted picture.

### Application of visibility

Besides creating Easter Eggs, the visibility settings has a quite important role in customizing the menu.

Please consider the image below:



1 – We **removed** the Links from the text 1 and text 2 objects and added a rectangle below each text. Next we **add** links to each of the rectangles. (See the button numbers to their left).

2 – Next we set both rectangles to **Invisible Normal**.

3 – When we play the menu – it looks like the selected text is underlined.

Similarly, we can modify the example with frames where we set the frames to **Invisible Normal**:



Though the thumbnail images have no visible frame, when the menu plays, only the "**Invisible Normal**" frame which has a link defined will be highlighted.

These settings let you customize a menu in many ways. Instead of highlighting what the user sees as a button you can highlight a frame around an object, highlight a bullet such as an arrow placed over an object or beside it, an underline etc...

### ► Special Commands

DVD-lab PRO has a special set of commands that can be called from the button. See more in [Special Links](#)

These features give the DVD Author a lot of freedom and creative options. When used along with the Group Hotspot feature, this gives you some very impressive design tools.

### Shortkeys

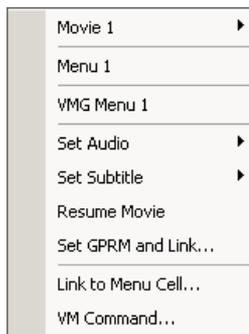
Action	Shortcut	Description
Add Link	SPACE	Shows a Link menu below cursor
Remove Link	Shift+Del	Shows a Remove Link menu item below cursor

## Menu window – Create Button Links – Special Links (Advanced)

There are few special functions that can be used as Menu Button Links

### ► Special Links Commands

DVD-lab Studio/PRO has a special set of commands that can be called from the button



**Set Audio** – Directly Select which audio track will be played when you play the movie.

**Set Subtitle** – Directly Select which (if any) subtitle will be visible when you play the movie.

Set Audio/Subtitle will be combined with one of the following command:

+ **Restart Menu** – (Default) When user click on the Subtitle or Audio button on menu the Subtitle/Audio stream will be set and Menu (if motion or sound) will start playing from beginning. This is to prevent compatibility problems with some players.

+ **Go To Next Menu** (PRO) – When user click on the Subtitle or Audio button on menu the Subtitle/Audio stream will be set and Next menu will play.

+ **Go To Prev Menu** (PRO)– When user click on the Subtitle or Audio button on menu the Subtitle/Audio stream will be set and Previous menu will play..

+ **Go To First Menu** (PRO)– When user click on the Subtitle or Audio button on menu the Subtitle/Audio stream will be set and First menu (a ROOT menu) will play.

The "+" commands can be used various way. When user click the button to select Audio or Subtitle, it can immediately return to parent (previous, ROOT) menu, next menu to set other settings or even play movie.

 **Note:** Setting Audio or Subtitle Directly from button **may not always work correctly** on all DVD players. For greater compatibility across many different players and for greater flexibility you should consider creating your own Audio/Subtitle Manager that uses Set GPRM and Link command. See more about this later.

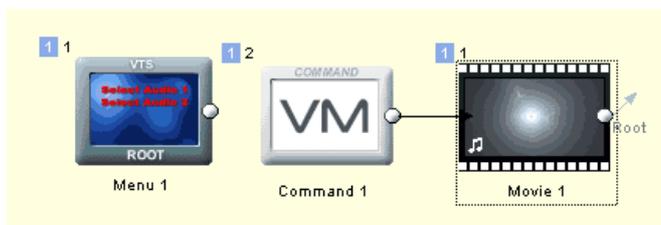
**Important:** You can use this only from a VTS Menu.

### Audio/Subtitle (Direct Setting) Examples

The following apply only to PRO version.

 **Note:** We used big red text on menus to be visible in this manual. Normally using red text is a very bad choice. (Red can be good for highlighting)

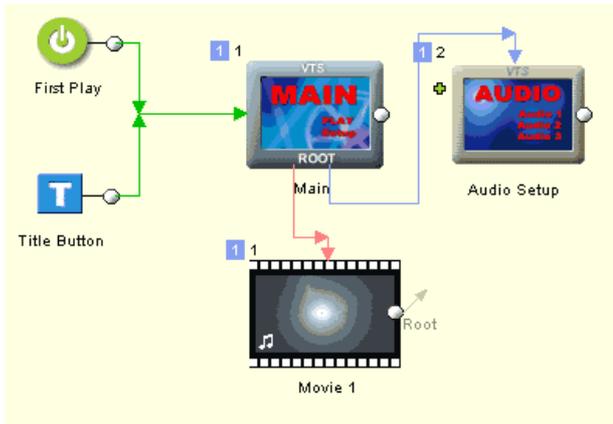
**Example 1:** After User select Audio 1 or Audio 2, the movie will start playing right away.



This is done by setting each of the two buttons to select Audio Stream 1 and Audio Stream 2 and set the "+" command to "+ **Go To Next Menu**". Then we have to create the *next* menu – in our case we added VM Command object (*Connections – Add – Add Command Object – In VTS Domain*) that is placed in VTS Menu domain (so our Next menu will be the [VM Command](#) object).

Then we link the VM Command to the Movie.

**Example 2:** We have Main Menu with buttons to Play movie and Setup Audio. Clicking Setup will get us to next movie where the current audio is highlighted. Changing the audio will get us back to main menu.



The basic is done simple way. The Audio Setup menu has 3 buttons for Audio 1, 2 and 3. Each links to Audio Stream 1,2 or 3, The "+" command is set as "+ Go To Prev Menu". So far so good.

Now how does the Audio Setup menu knows which button to highlight according to the current audio selection? For this trick we have to use VM Commands. This will be explained much later but as a preview here is the Custom VM Command in menu PRE Sequence:

```
GPRM0 = SPRM1
GPRM1 = 1024
if (GPRM0 == 1) GPRM1 = 2048
if (GPRM0 == 2) GPRM1 = 3072
SetHL_BTN GPRM1
Break
```

GPRM0 is set to the status of current Audio (SPRM1) 0,1,2...7  
 GPRM1 is set to 1024 for first audio. 1024 is first button (buttons are set as multiple of 1024)  
 if the current audio is 1 (second audio) then set the second button to be selected  
 if the current audio is 2 (third audio) then the third button is set  
 Now highlight the button according to the value in GPRM1  
 Do not execute any other commands below (they will change the highlighting)

Modify the code to highlight the buttons according to the Subtitle.

Instead of SPRM1 use SPRM2, but we have to change values as well. The SPRM2 if Subtitle1 is ON is 64, Subtitle 2 On is 65 etc...

```
GPRM0 = SPRM2
GPRM1 = 1024
if (GPRM0 == 64) GPRM1 = 2048
if (GPRM0 == 65) GPRM1 = 3072
if (GPRM0 == 66) GPRM1 = 4096
SetHL_BTN GPRM1
Break
```

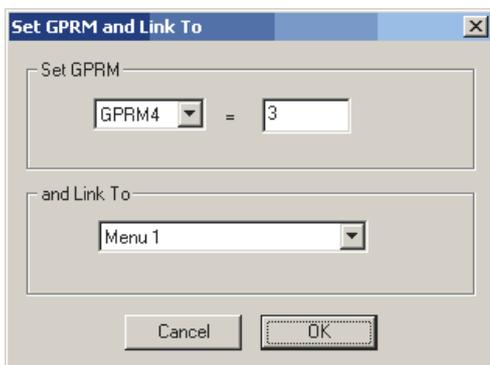


**Other Commands**

**Resume Movie** – resume the movie from the last position. Works, for example, if you interrupt movie with menu button.

**Set GPRM and Link**

Allows setting one of GPRM parameter to a custom value and then link to another menu or return to the same menu.



The DVD specs allows linking only within the domain – that means:

- from VTS menu you can link only to other or same VTS menu or VM Command Object in VTS Domain
- from VMG menu you can Link only to other or same VMG menu or VM Command Object in VMG Domain.

By default The *Link To* will be set to the same menu where we are editing the button. This will restart the menu (play music/motion from beginning). It is necessary to avoid some players lockup.

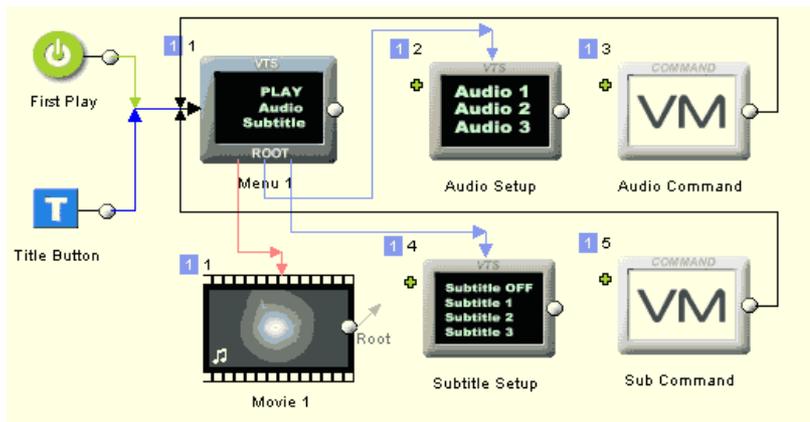
This function enables you to create a special button functionality that normally is not possible. For example you can create the full Audio/Subtitle or Language Manager. It really depends on the author what he can do and what functionality he needs.

### Audio/Subtitle Manager Example

We mentioned previously that for greater player compatibility and flexibility we should create our own Audio/Subtitle manager. The task is not that difficult and we will reuse code mentioned previously.

A goal of this simple manager is to have two menus called from main menu, one for setting audio and other for setting subtitles. Each menu should by default select button that represent the current audio/subtitles regardless if it is selected with remote or on screen. Then when user select Audio or subtitle it should return back to the main menu from where user can press Play. The selection should be remembered even when a movie ends.

**Important:** You can use SetSTN commands only from within VTS domain. Therefore we can do our special menus as VTS, not VMG!



This is our simple Audio/Subtitle Manager project. We have Movie that has 3 Audio Tracks and 3 Subtitle Tracks. VTS ROOT Menu has link to Play movie or to set Audio or Subtitle. We need two additional menus for Audio and Subtitle selection and two VM Command objects in the VTS Domain (Menu: *Connections – Add – Add Command Object – In VTS Domain*)

Audio Setup menu has 3 buttons for selecting the audio. The Menu has a PRE command that is similar to one we had previously to highlight the currently selected audio stream.

#### Audio Setup PRE Command – highlight button according to the current selected Audio

```
GPRM0 = SPRM1
GPRM1 = 1024
if (GPRM0 == 1) GPRM1 = 2048
if (GPRM0 == 2) GPRM1 = 3072
SetHL_BTN GPRM1
Break
```

Instead of directly setting Audio stream on buttons we will use Set GPRM and Link command.

Let's say GPRM2 will be used to hold the new desired audio. So each button will set GPRM2 to different value (0,1,2) and then link to a VTS VM Command object "Audio Command"



Each button after setting GPRM2 links to Audio Command VM Object. This object has just one command that finally select the audio according to the GPRM2 parameter.

### Audio Command VM Object

```
SetSTN (audio=GPRM2 )
```

The Audio Command VM Object links back to our main menu Menu 1.

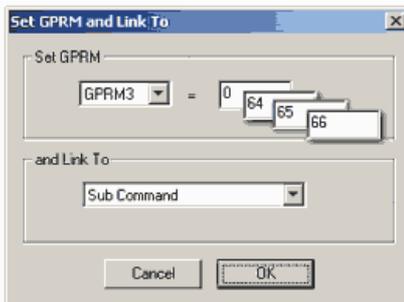
Second menu is Subtitle Setup menu to choose a subtitle. Same as above, but with modified PRE commands for highlighting the current subtitle.

### Subtitle Setup PRE Command – highlight button according to the current selected Subtitle

```
GPRM0 = SPRM2
GPRM1 = 1024
if (GPRM0 == 64) GPRM1 = 2048
if (GPRM0 == 65) GPRM1 = 3072
if (GPRM0 == 66) GPRM1 = 4096
SetHL_BTN GPRM1
Break
```

We will use GPRM3 to hold the new desired subtitle stream – we will use the same coding that DVD expects.  
 0 for selecting first subtitle stream and setting it OFF,  
 64 for selecting the same first subtitle stream but setting it ON,  
 65 for second subtitle ON  
 66 for third subtitle ON.

All buttons will link to "Sub Command" VM Object.



The "Sub Command" VM Object object has just one command that finally select the subtitle according to the GPRM3 parameter.

### Sub Command VM Object

```
SetSTN (subp=GPRM3:off )
```

Again the Sub Command object links back to main Menu.

We are done with our simple Audio/Subtitle manager. This is of course just one way which may be modified to fit the project. We can, for example, modify it for Language Manager, that will select both Audio and subtitle according the Language preferences or we can create much more complex manager that involves "switched" menus where we can put Audio and Subtitle on the same page with a "selector" pointing at both current Audio and current Subtitle.

One other example of more complex Audio/ Subtitle Manager that uses different approach is here:



This would involve a multiple menu trick, that means we would need one menu for each combination (total 6 menus).

💡 **Tip:** You start by making one menu complete and then use *Menu – Add – Add Duplicate*, then change the differences.



You need to fit this with commands. Here you don't necessarily need to use a VM Command object as above because each menu can be used to set the Audio and Subtitle in its PRE command (because simply each menu defines exactly the correct combination). That means we don't need to use buttons with Set GPRM either, or any other trick but simply link each button on each menu to the menu that corresponds to the new combination. A lot of criss-cross linking!

From the Main menu we need to call this group of menus through one VTS VM Object that would be used to choose the correct menu according to the currently selected Audio and Subtitle combination... a case of employing some simple maths! Ok, a bit more help, we solved this Selection task using this code snippet:

```
GPRM0 = SPRM1
GPRM1 = SPRM2
GPRM0 *= 100
GPRM0 += GPRM1
if (GPRM0 == 64) LinkPGCN 4
if (GPRM0 == 65) LinkPGCN 5
if (GPRM0 == 100) LinkPGCN 6
if (GPRM0 == 164) LinkPGCN 7
if (GPRM0 == 165) LinkPGCN 8
LinkPGCN 3
```

but let's stop there. The rest is a good exercise for you to complete.

### Other Special Link Commands

**Link to Menu Cell** – A special VM Command helper that sets the VM Command so the Menu ([motion menu with delayed buttons](#)) will jump to next cell.

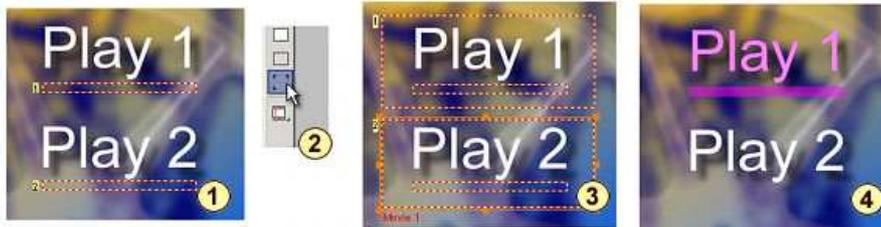
**VM Command** – Type a single line of VM command directly to a button. See more info about VM [here](#). (Buttons can have only single line VM command as per the DVD specs)

## Menu window – Group Hotspot

Previously, we saw how to use visibility to customize what Menu object will be highlighted. That related to a single object only. Now we are going to look at making a group of multiple objects.

For example: What if we would like to have not only the text underlined, but highlighted as well?

For all this and more there is the Group Hotspot feature.



The image above is a modification of our previous example.

- 1 – We have a Text object and an underline rectangle object with its link set to Invisible Normal.
- 2 – Select the Group Hotspot tool.
- 3 – Draw a rectangle (bounding box) to include both the Text object and the underline rectangle. The objects within the bounding rectangle become a Group. The Group Hotspot will pick-up the link from the underline rectangle. Repeat this action to make a group from the second text object and underline object.
- 4 – When played, both the Text and underline will be highlighted together a Group, each retaining its original visibility.

The Group acts like a single item on the player, yet we designed this from multiple objects grouped together.

### ► What does the Group Hotspot do?

First of all, it is an invisible (logical) object for which we can define a link. The Group Hotspot uses all the objects which are behind it (or inside its boundary) and the properties of these objects to draw the highlighted image. With the Visibility settings applied to the objects behind it, you can determine exactly which objects will be highlighted. In the example above the Text is set to Visible, the underline rectangle is set to Invisible Normal. After drawing a Group Hotspot over them they become one logical button, still retaining these characteristics.

You can move the Group Hotspot away if you need access to an object behind it in order to change that object's properties. You can also add a link to the Hotspot the same way as you would to any other object.

*Group HotSpot is a powerful and amazing tool that belies its simplicity.*

There are also other object parameters which the Group Hotspot preserves, such as the Color Map Group. You will learn about Color Map in the next chapter, but here is a small example. You can set the Text object to a different Color Map Group than the underline rectangle object, which will allow you to have different highlight color settings for each. Now you group them under Group HotSpot so they become one button, but they will retain their color mapping parameters as well.



**Note:** The Group Hotspot doesn't necessarily have to be on top of all objects in order to function. In fact, if you need access to the objects it contains, you can move it back behind all those objects. So it would be fair to say that the Group apply to all objects bounded by its rectangle.

This barely scratches the surface of all the possible uses of the Group Hotspot. Together with the Visibility settings and Color Mapping, it will let you to create any button highlighting possible. You can set the highlighting to exactly what you need.

## Menu window – Color Map

We have already learned how to create links and how to modify what part of a button that will be highlighted.

When you **Simulate** the Menu, you will see that all the links are highlighted with the same color and with some transparency. The Map tab on the "Menu Properties" is where you set these parameters.

 **Note:** The changes to Color Map can be seen directly in Simulation. That means you can stay in Simulation mode and change the parameters with immediate results.

### ► Hi-lite Groups/Antialiasing

Any active object can be in one of the three groups 1,2 or 3 (also called E1, E2 and P). By default all buttons are set to group 3.



Each of the Button Hi-lite groups can have different color properties.

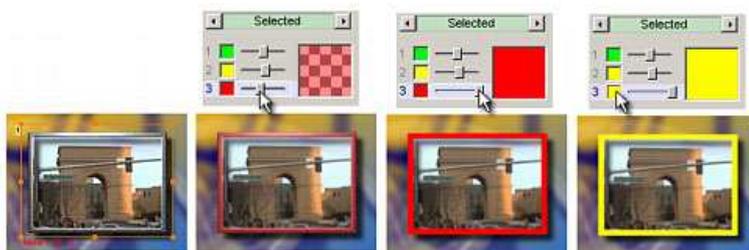
### ► Antialiased Subpicture



Three color groups can be used together to create an anti-aliased subpicture. DVD-lab will use the three groups of color to create a color fade on the edges. The edges will then appear smoother, but this will allow you to use only one color and transparency value for highlighting the buttons on the menu.

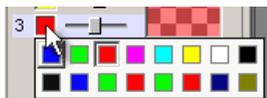
### ► Transparency and Color

In the example below the Frame with link is also set to group 3 so the third slider will affect it.



Notice the different settings for the highlighted image. The slider is the **transparency** of the highlighted picture (left – fully transparent, right – opaque).

To change the color, click on the color "well" to the left of the slider.



You will be given a palette of 16 colors to choose from.

### A Button State

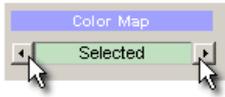
An active object can have 3 Highlight states: Normal, Selected and Activated.

**Normal** state is when the button is not selected. A most common setting is that in a Normal state the highlight picture is fully transparent.

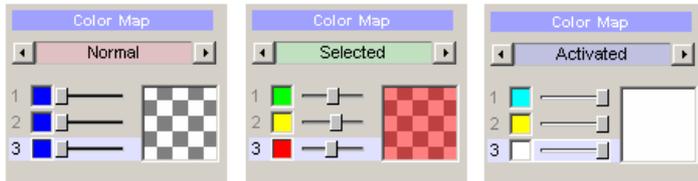
**Selected** state is when the button is selected. This is where you do most of the changes, because this is the highlight state that user will see the most.

**Activated** state is when the user clicks on the button (press Enter on their remote). This state will briefly appear before the player navigates the link.

To change the color settings for each state, click on the left or right arrows near the State indicator:



Here are the default settings for each state and highlight group



Again note, that in the Normal State all groups are fully transparent. That means you don't see any highlighted picture if the button is not selected. However, in some cases such as for motion menus, you may use also the Normal state.

All this may seem to be a bit overwhelming but it is really quite easy to master.

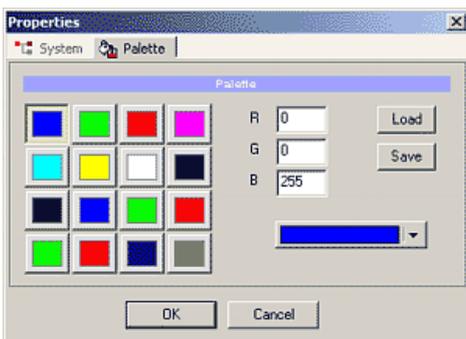
### A small challenge

Here is an example of what you can do with the features we have just described. By combining all the accumulated knowledge of Frames, Visibility, Groups and Color Maps, you should be able to produce the buttons below (displayed as not-selected, selected and activated).



### Palette

The palette is a common color set for the whole project. You can change the Palette in the menu Project – Project Properties.



## Menu window – Navigation

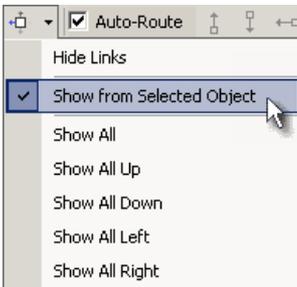
When a viewer plays a DVD on their DVD player, they have the option to interactively navigate menus and other features by using the buttons on their DVD remote control.

The navigation logic that the DVD player will respond to is setup during DVDaAuthoring with a tool like DVD-lab. Each menu button has four parameters to direct the player as to where to go when the user presses either the Up, Down, Left or Right keys.

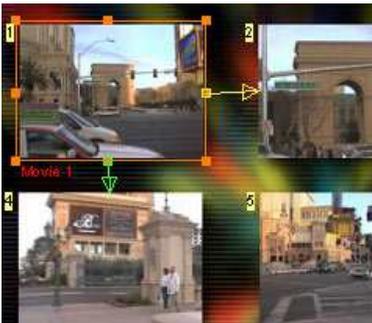
 **Note:** Navigation is a property of a button, that is any object which has a link to movie, menu or chapter point. Objects without links are not navigable.

### ► Show Links.

At the top of the Menu window is a small yellow square that represents "Show Navigation Links" Clicking the down arrow at the right of this button will offer the below pull-down menu to control which links to display (or hide). Display of the navigation links is disabled by default. Links can be displayed or hidden as needed during the Menu design stage.



Here we selected "**Show from Selected Object**". Whenever you select an object, its links to other buttons will be shown by arrowheaded lines.



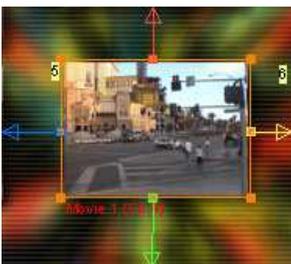
Here we see that when the user has button 1 selected and then presses the down key, the selection will go to button 4. If they press the right key, the selection will go to button 2.

You may try other settings to show all links or only links in a certain direction.

### ► Link Color

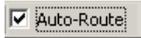
The down button may not always point down, so each direction has its own color and you can visually recognize visually the link by it's associated color:

Up is Red, Down is Green, Left is Blue, Right is Yellow



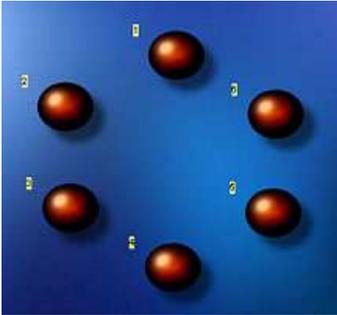
### ▶ Auto-Route

DVD-lab offers an option of automatic button routing. That means DVD-lab will automatically determine a best routing pattern and populate the button navigation parameters for you. In many cases, this will be quite acceptable, as it follows simple matrix logic.

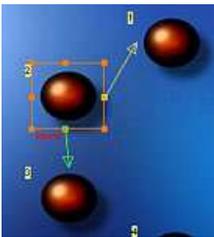


### ▶ Manual-Route

For less traditional design, Auto-Route may not be what you want. Consider the following image:



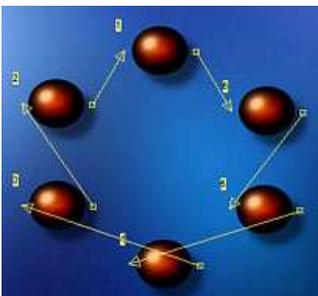
We have buttons position in a circle. Here normal matrix logic will not work. On the following picture it shows that using auto-routing you will have to press right key to go from button 2 to button 1 and a down key to go from the button 2 to button 3.



It may not look like a big deal, but try to navigate such menu in a real life. You will be guessing what buttons you have to press in order to get somewhere.

### Clock Navigation

Even if it may look alien at first, the best way to navigate such menu would be in a circle.



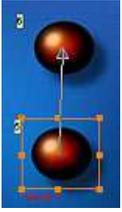
That means we would set up the keys Up and Right going clockwise and the keys Down and Left going counter-clockwise. In the image above, we see only right navigation links for better clarity. Watch where the arrow points and you will see all of the arrows go clockwise.

That's why, in DVD-lab you have the option to switch the Auto-Routing off and draw the links manually.



Drawing links manually is very easy. First, un-check the Auto-Route checkbox. Then, select one of the four link directions to draw with buttons, these are shown as color coded next to the Auto-Route checkbox. Let's say for example, you choose Up.

Now, click on the Menu button that will be the FROM button and drag to the button that will be the TO button.



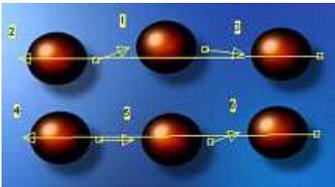
 **Note:** When drawing links, only the links of the same kind will be shown. That is, if you are drawing an up link, you will only see up links. It is logical this way.

▶ **Blind Link**

You can by design, make a link that does nothing. If you don't want a direction arrow to point to any object, drag it to a space where there is no object. Such link will be blind, meaning the user can press a button for that direction, but nothing will happen.

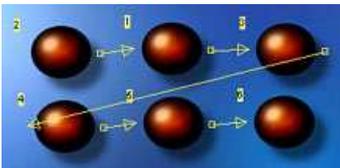
▶ **Looping**

Another type of navigation is looping. The right arrow of the end button (3) links back to the first button (1) and the left arrow of first button (1) links back to the end button (3).



▶ **Zig-zag Navigation**

Another type of navigation is Zig-zag . The end of one row navigates to beginning of next row and vice versa.



 **Note:** Remember to draw all four direction navigation links. When finished drawing the Up arrows, then continue with the Down arrows, etc...

 **Note:** If you were to switch back to Auto-Route ON, all of your manual navigation layouts will be lost! It's one way or the other only.

Finally, you can test your Menu navigation layout in a **Simulation** view within DVD-lab.

## Menu window – Duration (Timeout), Force Selected, Force Activate

There are a number of very sophisticated Menu navigation techniques that the DVD Author has available to them within DVD-lab. These feature controls are found on the PBC (Playback Control) tab of the Menu window.



### ► Duration (Timeout)

A Menu's duration is set to infinity by default, in other words, it never finishes or "times out". That means if the user doesn't press any remote key, a Menu will stay on screen forever or until the DVD player breaks down (which may not be as long as you think).

DVD-lab has an option to set a value for Timeout in seconds. If you set the Timeout value to 10, then after a Menu has been on screen for 10 seconds, the Menu will then be considered finished or "timed out"; play of the program will then continue in a flow defined in Connections. The choices of program flow are: go to itself as loop, go to another Menu or it can run the **Force Activate Button** Command.

 **Note:** To set the Timeout value back to infinity, enter **255** in the Timeout "sec" box.

When you add Audio or Video to the menu the Duration will change to "a/v" which is the same value as entering 0.



That means the duration of the menu is the same as the duration of audio and/or video after which the menu either loops (if no end link is specified) or continue to another end link.

### ► Force-Select Btn:

When a DVD player comes to a new Menu, it considers the first Button (1) on a Menu as its starting place. After that Menu has been visited, the DVD player then remembers its last Button position.

DVD-lab allows the Author to override this default by entering a number greater than zero in the **Force-Select Btn** value. Refer to the numbers at the top left of Buttons that display their order. These numbers are valid values for **Force-Select Btn**. Enter 4 into the **Force-Select Btn** value and the Menu will have Button number 4 highlighted when the DVD player encounters this Menu.

**Force-Select Btn** is used for Switched Menus, for example.

### ► Force Activate Btn.

If you set a value for Timeout in seconds, then you can also force the activation of a defined button when the Menu "times out". For example, you have a Button on a Menu to play a Movie. You set the Menu Timeout value to 60 sec. and set the **Force Activate Btn** value to 1. After the Menu has been on screen for 60 seconds and "times out", Button 1 will be automatically activated and the movie will start.

 **Note:** This is not the same as Auto-Action (found on Link tab). Auto-Action needs user input (pressing a key to get to the button), **Force Activate Btn** doesn't need user input. However, you can use both features, if you need to.

## Menu window – Simulation

As you are developing your DVD Project, one of the important steps in Menu creation is the Simulation of how a Menu will perform if it were in a DVD player, mostly regarding the links and navigation.



The current Menu will be shown in a similar manner as it would be on a DVD player.



While a simple Menu probably doesn't need much testing, if you use advanced features such as Visibility, Manual Routing or Groups you will want to test the creation thoroughly. The Simulation mode will allow you to view the [Color Map](#) and Color group changes in real time.

Navigating a DVD Menu on a computer using a mouse and navigating a DVD player using remote control may be different. Simulation provides a DVD player–like remote control on screen, which you can use to test the Navigation sequence (which button gets selected). You can also use the keyboard arrows to navigate the menu.



**Note:** The Simulation is for testing the Menu's look and functionality. It doesn't actually play the DVD disc. You can however see the link on clicked buttons when you change the Properties to Link tab. In fact, you can even change links while in the Simulation mode by clicking on the Link box and selecting new link from Menu or dragging a new link from the Project window.



### ▶ Follow Link option



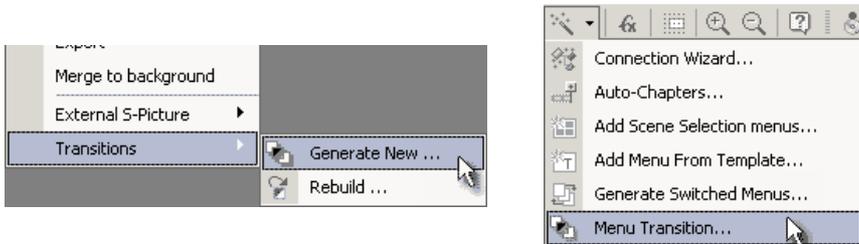
Normally the Simulation is for testing the Menu subpicture display, so that when using Simulation, it doesn't jump to the links when you click on them. By enabling the Follow Link Option, you can enable this feature so that when you click on a active link, the particular object (Menu/Movie/Slideshow) will open. This will help you to Simulate the DVD play and check the program flow on the disc.

## Menu window – Transitions

DVD-lab uniquely provides an interesting visual effect: a transition between two Menus. This is done by inserting a motion Menu in between Menu A and Menu B.

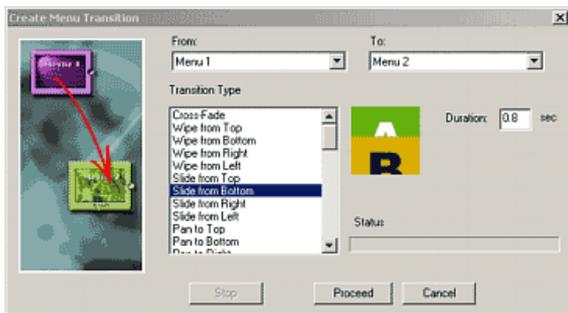
The effect is such that, when you click on a Button on Menu A which is linked to Menu B, you will see a short transition when the Menu changes, such as blending, zooming, panning, etc. Used with artistic care, this feature can enrich the visual experience of the viewer.

We need at least two Menus (A and B) to add a **Menu Transition**. It also helps if there is a link between the two Menus already established, but it is not required. Then, select either "Menu – Transitions – Generate New..." or from the Wizard button select *Menu Transitions*.



A transition dialog will then appear where you choose the direction – from what Menu (Menu A) to what other Menu (Menu B).

**Note:** You can make a transition both ways. For example, from Menu 1 to Menu 2 and/or from Menu 2 to Menu 1. There is no limit to the number of transitions in a Project.



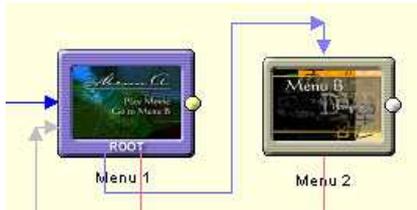
Choose the **From** Menu and the **To** Menu using the pulldown list of Menus that DVD-lab knows are in your Project. Alternatively, you can use a blank **To** Menu, this will have the effect of going to black (nothing) instead a real Project Menu.

Then, pick your Transition effect. There are many different transition styles to choose from. The last thing is to select the duration of the transition. It usually works best around 1 second.

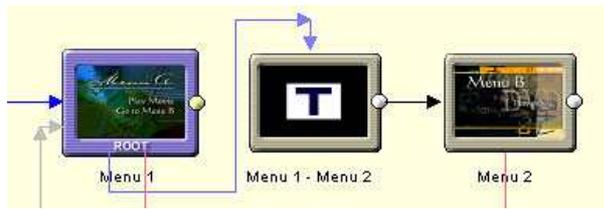


DVD-lab will then prompt for the file name of the new MPV file it is going to create for you.

If a link from Menu A to Menu B was already created, then the new transition will insert itself in the flow:



Menu 1 link to Menu 2



Menu 1 link to Menu 2 through the transition (Menu 1 – Menu 2)

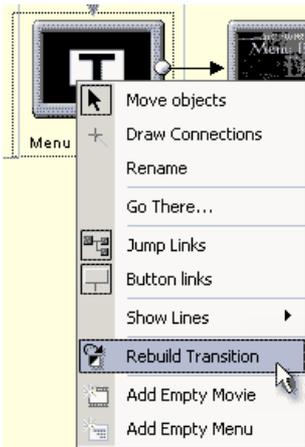
If you don't have a link created, then the transition will create a link to Menu B and you will need to manually choose a Button on Menu A and link it to the newly created transition.

**Note:** The transition video will be created according to the Project's TV standard (NTSC or PAL) and Size (D1, Half, SIF...). If you change these settings at any time whilst working on this Project, you will need to rebuild the transitions.

### ► Update or change Transition

Since a Transition is essentially a video clip, anytime you change the look of your Menus, you need to re–create the transition. This is simple to do since the transition "Menu" remembers it's settings. This way you can easily change the transition type without deleting the object and creating it again.

Transitions are rebuilt by either by opening the transition "Menu" and then using "*Menu – Transitions – Rebuild...*" or even better from Connections view, right–click on the transition and from the context Menu select "*Rebuild Transition*" as shown here.



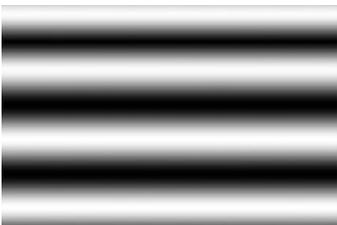
You will return to the Create Transition dialog where you can change the duration or transition type and build the transition video once again.

### ► Custom Transitions

Transitions are generally 2 kinds – the pre–defined (algorithmic) ones which are in the first half of the Transition type list (such as Pan, Move, Page Curl) and the Bitmap or Custom type. This gives you a lot of freedom to create your own transitions.

Custom Transitions are grayscale jpeg files 720x480 in the **Transitions** folder.

Examine the Bars.jpg



The Custom transition will simply progress from black to white during the Time duration and use the intensity to mix the A and B Menus. The pixels which are below current intensity will be Menu A and pixels above the intensity will be Menu B. As the current intensity progresses towards white, Menu B increases in visibility whilst Menu A decreases in visibility.

It helps if the transition jpeg file is the size of the system (NTSC or PAL) but you can use any size and it will be resized to cover the whole frame.

► **Transitions from outside DVD-lab**

Since a Transition is really a short MPV video file, you have the option to create transitions outside DVD-lab as well. You can [export](#) Menus as a AVI file (See *Menu – Export*) then bring them to your video editing application and apply transitions to the AVI files. Then, export the AVI file to a MPEG-2 DVD file. Now, you can create a [motion Menu](#) with this file which is called from a Button on Menu A and a timeout to Menu B.

## Menu window – NTSC Safe Colors

A graphic (such as a Menu) played on a NTSC television may have special requirements. If you use saturated reds or yellows, they may "bleed" on the TV screen, other colors may appear washed-out or some parts may flicker even though the same content looks perfectly fine on your computer monitor.

Most DVD and video professionals are aware of this problem, but they often don't exactly know what is the cause of it. You often get half-cooked advice like "don't use saturated reds", etc.

 **Note:** Some engineers even refer to NTSC as "Never Twice the Same Color" (PAL is sometimes de-abbreviated to "Perfection At Last").

DVD-lab's NTSC Overheat window shows possible Menu problems and lets you to check how the Menu will appear after automatic NTSC Safe Color filtration. It will also visually pinpoint which colors are causing the problem, so that you may change your design to remove or alter these colors. NTSC Overheat demystifies the NTSC color situation and has educational value as well.

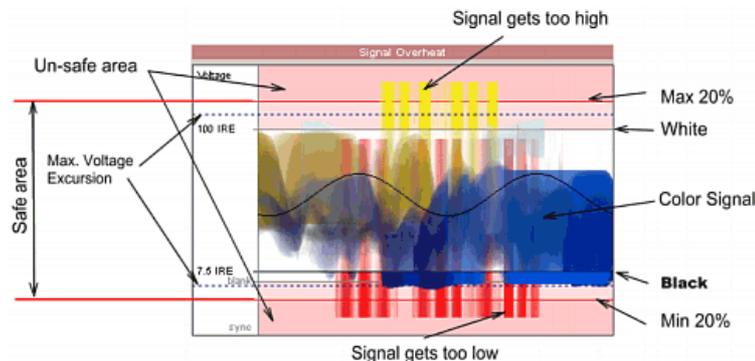
### ▶ NTSC Safe Color filter

DVD-lab has implemented one of the **most accurate** NTSC Safe Color filters available which goes hand in hand with the Overheat calculation. This exactly filters out the colors that may cause problems. The result will be a very smooth looking image without any big color changes and ready to display on NTSC. The filter is automatic, that means once you enable it in Properties you are done. This is an advanced tool. Some video professionals pay more than the entire cost of DVD-lab, for less accurate plug-ins.

### ▶ NTSC Overheat



The signal Overheat window shows how signal travels through the video composite wire.



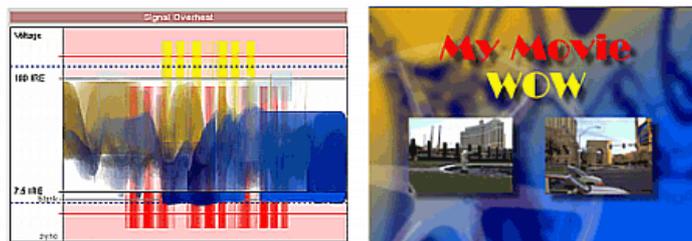
In the center between "Blank" 0 IRE and 100 IRE you will see the video signal (color-coded as to the actual color which produced it). The top and bottom red lines determine the 20% maximum and minimum limit under 0 IRE and over 100 IRE as defined by NTSC specifications. Signals which go higher or lower than these range boundaries are considered an "unsafe" signal and may produce bleeding, shaking and loss of sync.

Notice the picture below:

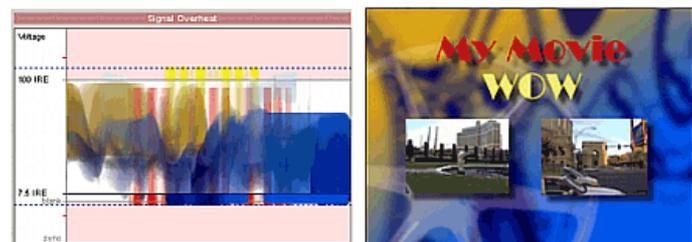


The signal is entirely within the allowed area between the red lines. That means, this Menu is already a NTSC Color Safe Menu, it will not be visually changed by the NTSC Safe Color filter.

Here is another Menu. In this Menu we boldly set a text object to be red and yellow (two colors well known as bad Colors on a NTSC TV).



You immediately notice that the yellow and red signals go way out of the safe area boundary into the unsafe area. Here the NTSC Safe Color feature will be automatically applied and the colors will change accordingly.



This is the Menu and signal after the NTSC Safe Colors feature was applied.

#### ► **Maximum Voltage Excursion.**

The dashed line shows our "Maximum Voltage Excursion" setting – this is a value beyond what we don't want any signal. This is the value NTSC Safe Color Filter uses to calculate new safe colors boundaries.

The values are from 0–20% but around **10%–15%** produces best result. If you set 0% then the signal will be strictly set to go from blank 0 IRE to 100 IRE. This will however change the Menu colors quite a bit since many colors goes beyond this.

If you set value bigger than 20%, then the signal is allowed to go beyond the red lines into the unsafe area. Logically then, you should not set this to be higher than 20%. Since NTSC allows for 20% excursion, the best values are about 15%, the color doesn't change as much as with 0%, but it is still within in the safe 20% area with 5% reserve.

 **Note:** The voltage value is in IRE measurements. The actual voltage in Volts may differ between systems and countries, so IRE is a relative measurement, the 100 IRE may be 1 V, or sometimes 0.75V etc... In the US version of NTSC the black is set as 7.5 IRE (shown on graph), while in Japanese NTSC the black is set to 0 IRE (shown as "blank").

#### **Do I need to worry about the NTSC settings?**

You actually don't. Once you have set NTSC Safe Colors in the Properties then you are safe. You can just go to the Overheat window to check how the Menu will change or set the maximum Voltage Excursion to better suit your taste.

#### ► **A little technical explanation.**

While all computer graphics are mostly RGB, this is not the color space which our brain understands. Our mind perceives color as a combination of brightness and two additional color components. YUV color space tries to reflect this. NTSC uses a similar YIQ color space to create composite signal. The I (in-phase) and Q (quadrature) are modulated together and then Y (brightness)

component is added. As you can see, these three components are mixed together to create a composite signal which travels through a single wire.

Because of the YIQ color space conversion, the highly saturated colors also generates higher voltage changes than for example: black and white. If a white color has a voltage of 1V and black 0V then yellow will have 1.33 V and red  $-0.33V$ .

Because of the backward compatibility with older B/W NTSC TV sets, the NTSC specs specify that video signal is not allowed to go more than 20% above white and 20% below black voltage levels. But some colors such as yellow or red actually go higher or lower than that (yellow +33%) !

This limitation in NTSC is the main cause of the problem. Also, the video sync signal is mixed to the YIQ signal. Colors such as red can go so low with voltage that they can even affect the sync signal and you can lose synchronization on some TV sets because of that.

PAL doesn't have this backward compatibility limitation.

## Menu window – Gen–EFX

DVD–lab allows you to apply various effects to objects and backgrounds.

Menu: *Menu – Effects*



### Simple Object Effects

You can apply one of the simple effects to objects: Sharpen, Blur and Deinterlace.

### Special Haze Effects

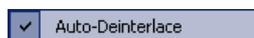
These two special effects will allow you to apply Bold Color Haze and Light Haze to images or video still, that will soften details and make the image look more "dreamy". To make the effect stronger, use it repeatedly.



If you don't select any object, the effect will be applied to background. This is great way to apply some smoothing to various images used as backgrounds or backgrounds generated by GenFX.

### Auto–Deinterlace

By default, DVD–lab always deinterlaces a graphic which is dropped from the Preview Window to a Menu or added as Chapter Point image.



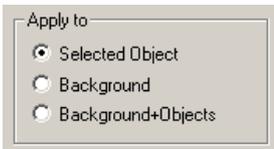
It is recommended to leave this set unless you notice it creates an unwanted side–effect on some video still images.

### Gen–EFX

DVD–lab has much more effects at your fingertips. These are special algorithmic effects commonly named Gen–EFX.



The Gen-EFX can be applied to Selected Objects (such as images, buttons or video stills), a Background or Background + Object



When you apply Gen-EFX to Background or Background+Object the result will be inserted as a new background.



The menu

GenEFX applied to object

GenEFX applied to Background

GenEFX applied to Background + Objects

### Working with Gen-EFX

The Gen-EFX window will present a preview of 12 thumbnails in outer ring and one larger thumbnail in the Center. The Center (working) image is the effect that will be applied when you click OK. The 12 smaller thumbnails are preview of random effects or variation of the effect.

#### Random

First you can simply press Random Button. This will change 12 thumbnails randomly. If you like a particular effect simply click on the thumbnail. The effect will be applied to the Center (working) image.

#### More of this kind

This button will randomly variate the effect applied to Center image in the 12 thumbnails.

#### Smaller Variation steps

If you click on the Center image, the 12 thumbnails will variate based from on the effect applied to the Center image.

#### Library

Since Gen-EFX works randomly and there are many thousands of possible effects and variations you can save current variation set to a library and then be able to recall it at a later time.

#### New Library



Clicking **New** will present a prompt to create a new \*.eff Library. You have to "save" it in the DVD-lab folder in order for it to be visible in the Library list.

Libraries work like a folders in Explorer.

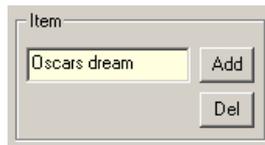


To open an existing library simply click on it in the Library view. The view will move "inside" the library where you can select or add a variation.

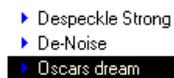


### ▶ Add new item variation to library

You can save the current variation as item to any currently opened library



First enter the new name and then click Add. The item will be appended to currently opened library.



### Delete Item

To delete an item, first select it and then click Del.

### Tips and Tricks

There are basic image adjusting functions already pre-defined in the Basic library. Many of the other effects are perfectly suitable for creating interesting backgrounds. Some are grouped in the "The Background Maker" library.

Some of the effects may seem to be a little unusual and chaotic at first. But they are specially generated for creating backgrounds and interesting textures from almost any image possible. The role of background is to make the image **interesting**, yet it **shouldn't draw** too much **attention** to itself. Putting a simple video still as background doesn't meet these requirements and looks amateurish.

By combining the Background+Objects you can easily add a text in various fonts into the background itself which often enriches the texture.



On the image above the text buttons were also mixed into the background itself under various angles by simply using Gen-EFX applied to Background+Objects.

► **Repeating Gen–EFX is the key.**

In order to create suitable backgrounds, you can repeat the Gen–EFX function as needed. For example, the green image above was created from a normal video still and by repeating various Gen–EFX on the background we got the result which has very little in common with the original image, yet we achieved an interesting texture with it.

It is up to you as to what kind of effects you want to apply and how many times you repeat the Gen–EFX. There are hundreds of thousands of combinations you can achieve, so no two backgrounds will look the same unless you want them to. Just bear in mind the background should not draw too much attention to itself . You can later apply Light Haze to soften it.

 **Note:** To add a video still as a menu background, drag the frame from Preview onto a Menu while holding the SHIFT key.

**Convert to Bitmap.**

In order to apply effects to text or vector objects you need to convert it to bitmap.

**Merge with shadow**

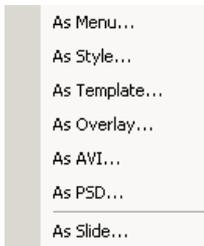
This will convert the object to bitmap and merge it with its shadow. Then you can apply another shadow to it and repeat the process. The shadows may be creative – using different colors and creating outlines and glows.



## Menu window – Import/Export

There are many ways to Export and Import Menu items. These features allow the DVD Author great flexibility in sharing, replicating and re-using a preferred Menu design. Useful for maintaining a consistent look and feel throughout one or many Projects.

Menu: *Menu – Export*



### ▶ As Menu

The Menu will be exported as \*.mnu file which you can later Load into any Menu window using *Menu – Load menu* command

### ▶ As Style, As Template

The current Menu will be exported as \*.stm file which can be used as a style or a template. Styles are used for scene selection wizard and the Templates are used for the **Add from Template** command. Please refer to the [Template chapter](#) on how these files differ from a Menu (\*.mnu) file.

### ▶ As Overlay

This will create a transparent PNG file from all of the objects on the Menu, minus the background. This is a great feature if you want to use it in Adobe "Premiere®" or Sony "Vegas Video®" to overlay it on a video clip and then bring back to DVD-lab as a Motion Menu, for example.

### ▶ As AVI

The entire Menu (with background) will be exported as an AVI file. There are video parameters you can specify such as the Compression, number of frames, FPS and the size.



This is an excellent option if you want to bring the Menu into your video editing application to create some effects such as special transitions, etc.

### ▶ As PSD

The entire Menu (with background) will be exported as layered Adobe "Photoshop®" file.

### ▶ As Slide

It will save the menu as JPG and also insert it into the first Slideshow if any exist. An easy way to create titles or credits in your slideshow.

### ▶ Load Menu

There is one function to Import an entire Menu in one step – *Load Menu*. This command will load the previously saved \*.mnu file into the currently opened Menu.

For more ways see [Add from Template](#).

### ▶ Import from PSD

This will load the menu into empty menu window from layered PSD Adobe Photoshop file. All layers will be separated as objects.

Same as if you drag and drop PSD file from explorer or assets to Menu.

Please note the PSD file must be designed in the true respective aspect (WYSIWYG) not in the DVD native system size as some other authoring tools require. DVD-lab will do the proper non-rectangular pixel stretching before compile. That means a perfect **circle** designed in Photoshop will appear as perfect circle in DVD-lab menu and it will appear as the same perfect circle on TV.

Here are the sizes you should use for designing a file in Adobe Photoshop.

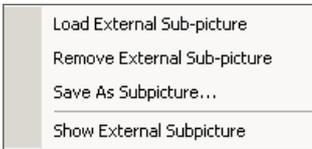
Aspect	PSD image size for both PAL and NTSC
4:3	720x540
16:9	960x540

You don't have to do anything else to the PSD file – no resizing or stretching... just use the image size from above, design the menu as you would like it to appear on TV, save and import to DVD-lab.

 **Note:** After you import PSD file, you can apply effects, fills or bevels to the PSD objects as to any other DVD-lab objects.

## Menu window – External Sub-Picture

Menu: *Menu – External S-Picture*



DVD-lab allows you to directly load a sub-picture for a Menu that was created in another authoring / image program. In most of the other authoring programs you can import a Menu by adding a background and a sub-picture. Then you define the hotspots.

DVD-lab will allow you to accomplish the same function, should you choose to not want to use it's broad Menu capabilities or in the case of having existing art that you would like to use within the DVD-lab environment.

 **Note:** You can mix the external sub-picture with the DVD-lab objects and their created sub-picture.

To import a Menu background, Drag & Drop any image file from Assets onto the Menu while holding the SHIFT key.

### ▶ Load External Sub-picture

This will load an external sub-picture as a .bmp file. The file must be 720x480 pixels for NTSC or 720x576 for PAL. You will not see any change unless you enable Show External Subpicture.

The next step is to define button rectangles, the [Group Hotspot](#) is exactly the tool for that. Simply draw the Group Hotspot rectangle around the area where you want to make a button and then add a link to it.

### ▶ Remove External Sub-picture

This will remove the external sub-picture layer from the Menu.

### ▶ Save As Sub-picture

You can also save the current existing sub-picture (loaded or generated by DVD-lab) as a file and then use in other authoring tools.

*Here is an example.*

We can design Menus using other software programs, for example Adobe "PhotoShop" or "DVD Menu Studio". In this example we will assume the Menu was created in DVD Menu Studio.



We export it as a DVD Menu using Generic Export, then select Normal Subpicture Menu and BMP files. Save it under some name for example myMenu, the result being 2 .bmp files will be created – a Menu called **myMenu.bmp** and a sub-picture **myMenu\_sub.bmp**

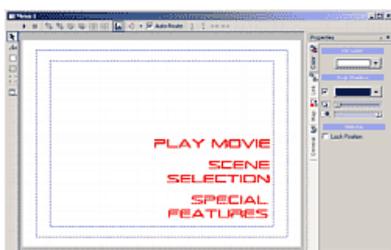
If you use other software, then you will have to create background and sub-picture files manually. Anybody familiar with creating Menus for "DVD Maestro" should feel at home.

Drag the **myMenu.bmp** file to the DVD-lab Assets / Video & Audio Bin and then drag-and-drop it from that Bin onto a Menu while holding the SHIFT key. Holding SHIFT will indicate that this graphic is to be inserted as a background, not as an object.

This will create the background in our DVD-lab Menu.



Now go to Menu-External S-Picture and select Load External Sub-picture. Choose the second file **myMenu\_sub.bmp**. The sub-picture will then be loaded. You can verify that and view the sub-picture if you go to Menu External S-Picture and choose "Show External Sub-picture"



The last step is to add button rectangles with the Group HotSpot feature and add links to them.



That's it, now you can Simulate the Menu to check your design.

Of course, this is just an example of working with graphics from outside DVD-lab. It's likely to be much easier to create the Menus entirely within the DVD-lab environment. You may consider creating the background in "Real-DRAW", "PhotoShop" or any other suitable software, import it into DVD-lab and then add text and buttons in the full featured DVD-lab menu editor.

## Menu window – Template

Templates are a simple and easy way to store Menus for future usage.

Menu: *Menu – Add from Template*

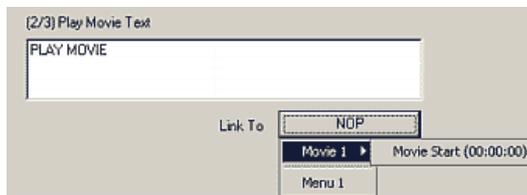
Menu: *Menu – Export – As Template*



When a template is saved, DVD-lab creates a thumbnail to go along with the template file, you can see these thumbnail images in a list in the "Add from Template" dialog.



Templates are designed to be a basic format with a number of features that may change between different Projects, such as text titles and links. Another features of Templates is that they can allow you to replace text and add links directly from the "Add from Template" dialog as shown here.



For each text item in the Template, the "Add from Template" dialog will give you a text editing entry and as applicable a selection for places for that text to link to.

Considering that a Movie in the Project has had Chapter Points defined, DVD-lab knows exactly where they all are. Click the "Link To" button as shown above, and a flyout menu will appear (as above) from which you will be able to select the appropriate Chapter Point to link to.

Click the Next button to continue or the Finish button when completed with the Menu.



### ▶ How to create a Template

Menu: *Menu – Export – As Template*

This is quite easy – create a Menu you like, then use *Menu – Export – As Template*. Recall that Template files are .stm extension files and saved into the Templates folder.

### ▶ How to create a template which prompts for text edit and links

In order to create a Template which will prompt to replace text and links, the Template needs to be instructed that a particular Button has things to prompt for. We do that with the entry of a set of specific command words, entered into the Button Label for that object (found on the Link tab in Menu Properties).



 **Note:** This is not required – you can store a Menu as a Template without this feature.

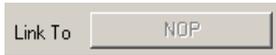
There are three parts of the Button Label command words

**askTitle Text–nolink**

The **ask** in front of any text will present the user a prompt creating the Replace text dialog in the Add from Template wizard for that object. The text immediately following **ask** will be displayed above the edit box in the wizard as a Prompt Title, it's "Title Text" in our example.



The suffix **-nolink** will disable the Link To button, so that you can't add a link to this object from the wizard. This is used for titles or any text only object.



If you don't include the **-nolink** command word, then the Link To button will be enabled. Note the dash that starts the command **-nolink**.

## Menu window – Audio

### ► Menu Background Music and Audio

A DVD Menu can play background audio whilst that Menu is on the viewer's screen. The DVD author will have already prepared audio clips for this purpose and imported these audio clips into the Assets / Music Library Bin to be shared by all projects or into the Assets / Video & Audio Bin if the audio is specific to this project only. Refer to the DVD audio specs for the specific file formats of DVD supported audio, typically 16b/48kHz AC3, MPA or WAV files. Drop a file into the Assets / Video & Audio Bin to check if it is in a compliant format. DVD-lab will let you know.

The precise time length that an audio clip will play for is quite important in the design and planning of a Menu. That is, because we know that in a DVD-lab designed Menu, at the completion of the playing of the audio clip, the player will either be either looped to itself (play again) or will continue to another Menu according to the values of the Connection links or Force Activate Btn. The DVD author has control of these features, all based on the time length that an audio clip will play.



To add background music or audio to the menu, simply Drag & Drop the supported audio format file from the Assets window, either from the Assets / Video & Audio Bin or from the Assets / Music Library Bin.

The fact that the menu has audio is indicated in the PBC Tab in the Menu Properties or in the audio track below the menu.

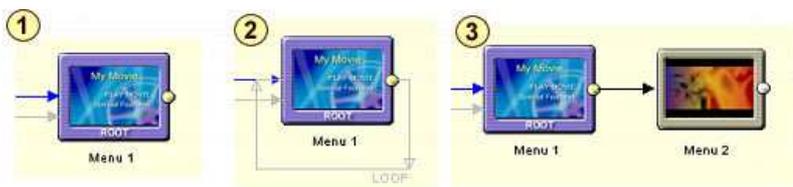


To remove the audio, simply click the Del button near the audio box in the PBC Tab or the x button on an Audio Track.



### ► Looping the menu / Continue to another menu

A discussion of Menu Connections belongs to the Connections description, but here is a quick overview:



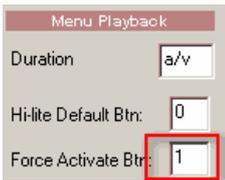
(Image 1) A Menu which has no link defined is considered as automatically looping to itself

(Image 2) A Menu can have explicitly set looping defined, even to itself

(Image 3) A Menu can be defined to continue to another menu after the completion of audio being played

### ► Continue to Play Movie

After the completion of audio being played, the DVD-lab Author can instruct the DVD to continue to play a movie or whatever a particular Menu button is setup to do. This is done by setting the **Force Activate Btn** (Button) value in the PBC tab of Menu Properties. Here we are simply saying "When you are done playing the menu audio, go do whatever button (X) does".



First, set the **Timeout** to 0 ("a/v") otherwise you can't set the **Force Activate Btn**, then in the **Force Activate Btn** input enter the number of the button in this menu where the playback should continue (in our case we put button #1). This number is the same button number which appears near the button on the Menu canvas as shown here as 1:



**Note:** The Duration is initially set to the time length of the audio which is indicated as "a/v" (it has the same value as entering 0)

You can also enter other value (1–254 sec) which will then overwrite the true length of audio/video. For example setting 10 will make the music play only 10 sec then return. Setting "inf" with audio or video present in the menu will have the same effect as setting a/v.

## Menu window – Motion Menu

A Motion Menu is a Menu where the background is a Video stream (hence Motion) instead of a still background image. You can also add sound to a Menu as background audio, which may or may not match the video.

This feature allows you to create very sophisticated Motion Menus with the right video editor. You can also use DVD-lab's built-in [Render Motion](#) tool.

DVD-lab doesn't by default, mix the Motion background with the buttons you put on top of it, as DVD-lab has no built-in encoder. These buttons will be used for the Highlighted image (subpicture) and they will be not visible in a normal Menu. You can, however, let DVD-lab render the Menu which will mix any Motion objects (backgrounds, video thumbnails) with all other objects.

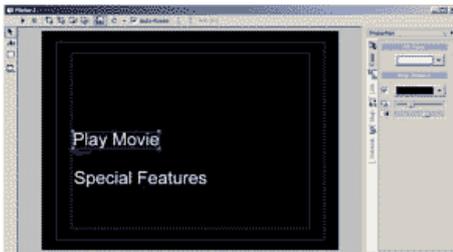
Basically, you are responsible for how and in what way you create the video background. This gives you a lot of freedom: it depends on you and the application you use to create the video background. DVD-lab doesn't restrict you to do only one type of Motion Menu, nor does it force you to use the built-in Render Motion tool.

Once you have built your video background, import it into your Assets Bin, then in DVD-lab you can easily create the highlighted text, frame or rectangle part objects and create links on top of them.

### ▶ A Very Simple Motion Menu

You can create a very simple "Motion Menu" directly in DVD-lab, without another video application, by replacing the Menu background still image with a short video clip. You will use the "Normal" subpicture properties to show an subpicture in normal state, which will then be shown in a different color for the highlighted state.

1. Create a new, blank Menu. Then add two text objects and create links from each (Just drop a Movie or Menu from the Project tree onto the text object). Something like this:.



2. Import a short video which you would like to use as background video into the Assets Bin.

3. Drag the video background from the Assets bin and drop it onto this Menu. DVD-lab presents this message:

- You are setting a Motion Menu.
- The background image and all the objects in Normal stage will be replaced by the video.

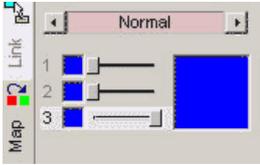
As the message indicates, it is a good idea to make the video background one of the first things added to a new menu to avoid losing any Normal State design objects the Motion Menu would replace. The Menu now looks something like this:



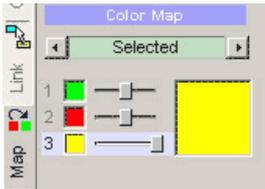
4. Click Simulation



5. The white text will disappear and you will see just the first text object highlighted. Go to the Properties pane (on the right) and select Map. Switch the State slider from Selected to Normal. Since you are using Group 3 for both text objects, move the third slider all the way to right and optionally pick some other color via the color box.



Switch to Selected and pick some color for selected:



6. That's it. Setting the Normal state will make sure the text is always visible even if not selected and the selected state has a different color.



This is very simplistic Motion Menu, but it is done without much effort. You can use your knowledge from previous chapters to build an underline (which will look better in this case) or use [Group Hotspot](#) to create more complex "buttons".

### ► Complex Menu

For everything else, you need either some video editor or to use the build-in [Render Motion](#) and/or any third party MPEG Encoder to end up with a MPEG-2 file.

## Menu window – Render Motion menu

### Menu–Render Motion

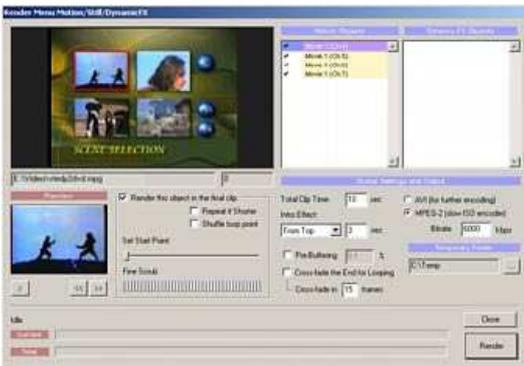
Previously, we learned how to create a simple motion menu where we replaced the background still image with a motion video clip. What we got was more or less a motion background with a subpicture over it.

You can certainly choose to prepare your motion menu in a separate video editing program such as "Adobe Premiere", "Video Vegas" or "Puremotion EditStudio". There is also a simple and effective way to build a motion menu directly in DVD–lab with the optional utilization of an external encoder application.

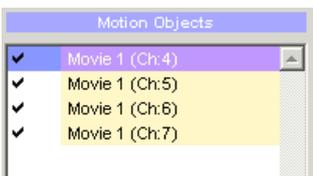
The Render Motion feature will allow you to merge the static graphics (images, background, buttons) with a motion video (thumbnails, motion backgrounds). One application would be to simply combine the background video with static object on top. Another application can be to create motion menu thumbnails, for example.



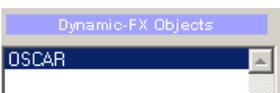
Imagine a scene selection menu as above. The Render Motion feature allows you to merge the video clips from different parts of one or more movies with the other static elements.



The Render Motion feature will recognize all objects which can be possibly motion thumbnails (images linked to movie or chapters, video stills) and lists these in the Motion Objects list.

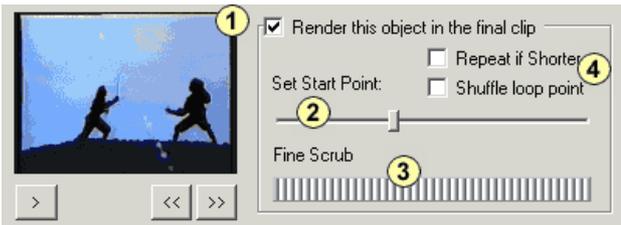


If you have [Dynamic–FX](#) objects in the menu, this will be listed in the Dynamic–FX list:



**Note:** The Dynamic–FX objects are not affected by the settings described below. They are simply always rendered to the final clip and you can change the settings in the Dynamic–FX properties.

Now by selecting each motion object you can set other parameters to the partial clip:

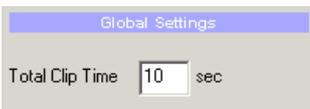


- 1 – Render this object. This determines whether you want to use the motion object in the final menu or not.
- 2 – Set Start Point of the motion clip. By default this will be at the chapter point the clip links to.
- 3 – Fine Scrub, set the Start Point more precisely.
- 4 – Set other options, see below.

You can set these parameters for each of the motion objects.

### Total Time

This sets the length of the produced motion menu. A typical motion menu is about 10 – 30 sec long and then loop.

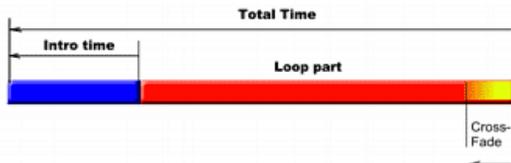


### Intro Effect (PRO Version)

This allows to add an intro (sort of transition effect) that can be later used in [Delayed button menu](#). There are few pre-defined effects, they all virtually move the objects on menu, for example all objects come to screen from top, each with its own speed.



The relation between Intro time and Total time is demonstrated on the image below. The end of the loop part may optionally cross-fade to the beginning of the loop part with Cross-Fade option.



The Intro Effects determine how the objects appear during the Intro sequence. For example "From Top" will, during intro sequence, animate all objects from top part of screen to their current position.

There are also two special cases Buttons Cut and All Objects Cut that don't have any animation.

**Buttons Cut** will make all buttons invisible during intro (every other object will be visible). The buttons will then appear at once right after intro time.

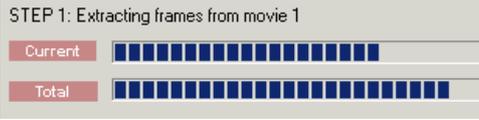
**All Objects Cut** will make all objects invisible duuring intro, except background. The objects will then appear at once right after intro time.

### Render

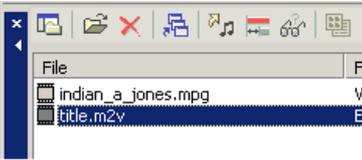
After you click the Render button, you will be asked to create the final rendering. DVD-lab will allow you to create an uncompressed AVI format video file only, which you then need to encode to MPEG-2 format with the MPEG encoder of your choice. Optionally you may directly export as MPEG-2 using DVD-lab's slow ISO internal encoder.



There are two steps in rendering. First, all of the frames will be extracted from the video clips. Then, these frames will be assembled together with static objects into a final menu video.



After that, you need to encode the AVI into a DVD compliant MPEG-2 file as an Elementary Stream by using an Encoder of your choice. Then, load the resulting MPEG file into the Assets Bin:



and then drag-and-drop this new file from the Assets Bin into the menu, which sets this video to be the Menu Motion background.

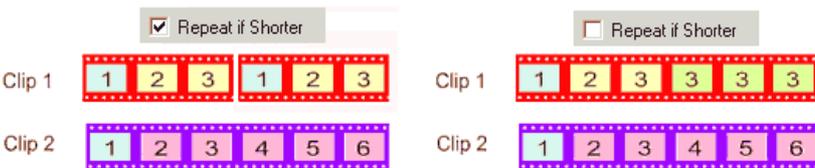


You don't have to delete any objects from the menu, just keep them there. If a motion background is defined with no objects (except the motion background and Subpicture) it will be visible.

Compile the DVD, and you have your first real Motion Menu done.

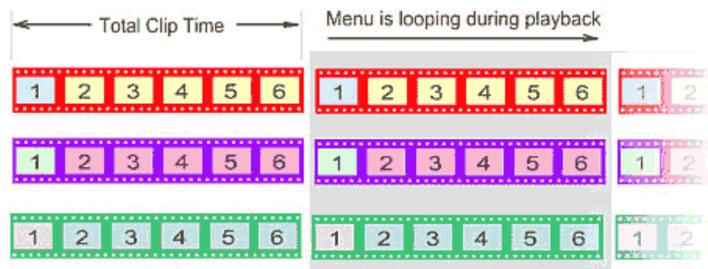
**Repeat if Shorter.**

If a motion object is shorter than desired total time you can let it loop during the total time. If you don't set the **Repeat if Shorter**, then after the motion object play is completed, the rest of the clip would remain still showing the last frame. If you set **Repeat if Shorter** ON, then the object will repeat (loop) within the total time. Of course, if the motion object is longer than the Total time, then this has no effect.



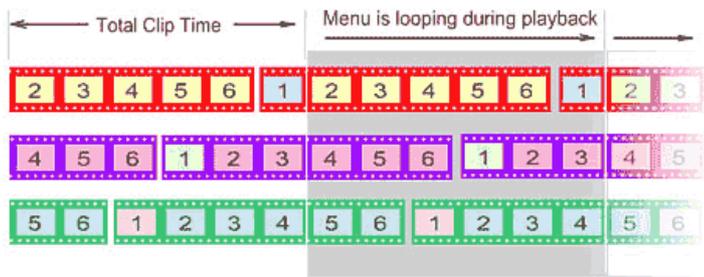
**Shuffle Loop Point, seamless looping**

When you play the motion menu, it will loop. So every Total Clip Time (for example 10 sec) you will see a jump in all the thumbnails since the last frame of any thumbnail will change back to the first frame:



You can see on the picture above, that all the thumbnails will have the loop point at exactly the same time when the menu loops. The effect is a bit annoying and quite visible. Most Hollywood productions do their motion menus (if any) this way. With DVD-lab, we can do better than that. DVD-lab has a totally unique "Shuffle loop point" option to fix this "problem".

What Shuffle loop point does is that for each thumbnail with Shuffle loop point checked, DVD-lab will offset its playback to have the loop point in different time spots than others.



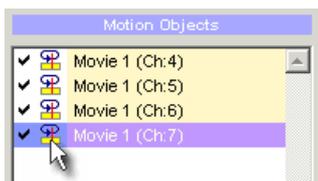
You can see from the image above that when menu loops none of the thumbnails will be in a loop point by itself. Since each thumbnail will loop in a different time the effect is that you can't visually tell during playback when the menu loop occurs. It appears as if the menu is looping seamlessly.

In real life, this is a priceless feature for anybody who creates thumbnail motion menus.

### How to set Shuffle.

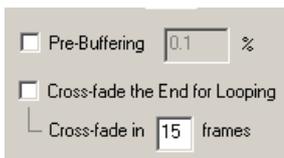
We need to set the Shuffle loop point for **each thumbnail**.

You can either do this by selecting the motion object and checking the Shuffle loop point box or you can do it by clicking on the space between the check mark and text in the Motion Objects list. You will need to click twice, since the first click will just set the **Repeat if Shorter** option.



Then Render the motion menu again. Now, when you play the menu in a loop you will not really be able to tell when the looping occurs since each thumbnail loops in different time duration.

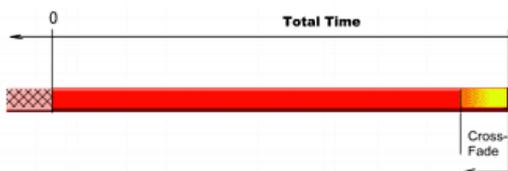
### Pre-Buffering and Cross-Fade



Pre-Buffering will start playing the video clip earlier as specified here by the %. MPEG-2 files may have an "Open GOP" structure so it is not always possible to simply start playing the clip from any place we wish. Pre-Buffering will start playing earlier and by the time it gets to the correct point the image should be fully usable.

### Cross-Fade

The end and beginning of the rendered clip can be cross-faded by specific number of frames. The specified number of frames will be cut from beginning and then they will be merged with the frames at the end. This way if the clip is played in a loop, it will crossfade on the seam, make the seam far less visible. It is good option for Dynamic-FX objects, for example. The total length of the movie will be less of the cross-fade frames.

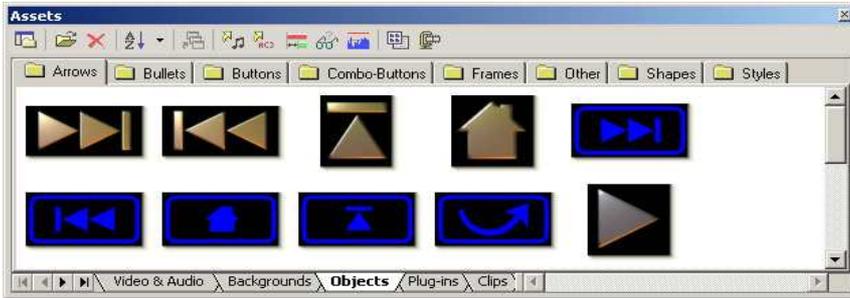


**Note:** This is just one example of how to use the Render Motion tool. Because of its simple, but effective principle, you can create many other types of motion menus. Also note that you can select different effects for video thumbnails and other objects such as Display mode, transparency Lens flare or 3D rotation so the result can be unlike any plain old motion thumbnails menu.

The Render Motion feature together with the menu editing capability of DVD-lab make it one of the most powerful motion menu solutions in any DVD authoring software.

## Menu window – Buttons

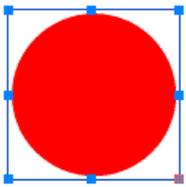
How to create customized buttons and frames for DVD-lab.



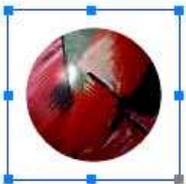
The buttons and frames that are provided by DVD-lab in the Assets / Buttons & Frames Bin are transparent PNG format files. They were all created in Real-DRAW PRO, but you can use any other software you are familiar with such as Adobe PhotoShop. [Real-DRAW PRO](#) is however the most suitable for the task.

Here is an example of the process in Real-DRAW PRO. We are going to create a simple bullet button.

1. We draw a simple circle

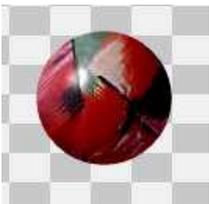


2. Then we apply a Texture and from the 3D Bevel choose 3D Ball.

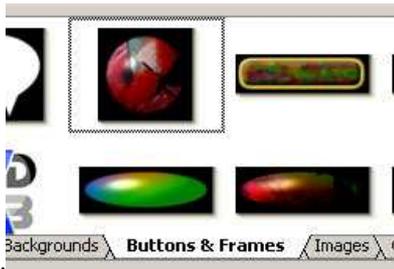


3. Do not apply any shadow – the DVD-lab will add shadow by itself and since the subpicture is created from the alpha mask, the shadow embedded in the button will make the subpicture different to what we want.

4. Use Trim Canvas or Export Crop to crop area around the button and use Export to export it as Transparent PNG format file.



5. Export it to disk. Using Windows Explorer, Drag & Drop the newly created PNG file into the Assets / Buttons & Frames Bin within DVD-lab. You will be asked if you want permanently copy the file there, say Yes. The image will be then be displayed in the alphabetically sorted images list



Now, you can drag-and-drop your new button from the Asset Bin onto a menu.

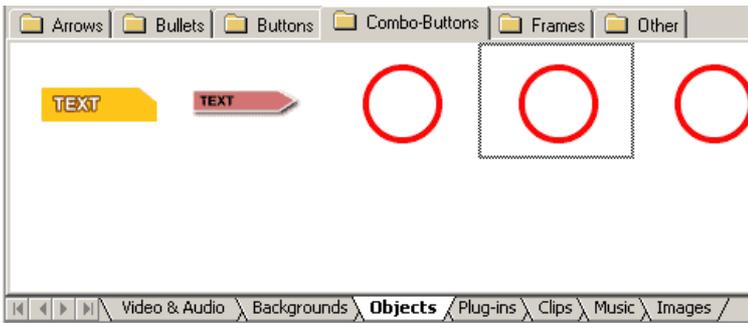
#### ▶ **Frames**

The frames have a special role. If you drop a frame on an object in a menu, the frame will be resized to accommodate the object inside. Also, if the object has a link then the frame will pick-up the link.

The frames are exactly the same transparent files as any other button. In order for DVD-lab to recognize it as frame you have to name it **starting** with the word "frame" for example frame21.png.

## Menu window – Combination Buttons

Combination button is a special case of button that carry also a customized highlighting.. You will find them in the Object tab under Combo-Buttons sub-tab.

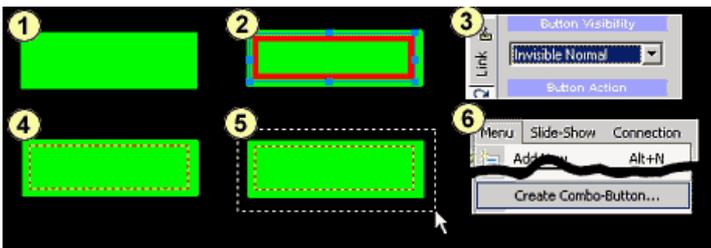


When you are there, just click on one of the buttons, you will see what it means that the button carry its own customized highlighting:



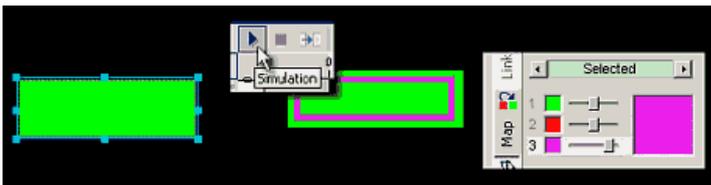
To use these buttons is easy – Just drag it to the menu, then add a link to it and you are done.

To create new combo-button button is quite easy. Bear with me:



- 1 – I draw a simple rectangle. This will be the visible part of button.
- 2 – I draw a frame on top of it – this will be my highlighting.
- 3 – Since I want the frame to be highlighting I have to set it as Invisible Normal.
- 4 – Here it is a rectangle with an invisible frame on top of it...
- 5 – ...so I select both by drawing rubber band around both objects
- 6 – Now the fun part, click menu Menu and select Create Combo-Button

Now I have my combo button. I can test it by adding a link to it and then click simulation button.

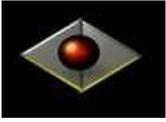


As with any other highlighting, the color of it is determined by the Color [Map](#) properties.

You can now save it to the Combo-Buttons Bin by going to Menu, then Export Button item.

This example was very simple, one rectangle and one frame on top of it. But in fact you can create much more complex button and you can combine highlighting with different groups.

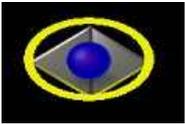
In this next example I build the background of the button from 3 different objects:



Then I build highlighting from circle frame and another ball. Here it is shown without the background for clarity, but I need to put it over the background objects.



Each of the highlighting object was set as different group so it can have different highlighting color, then set Invisible Normal. All objects together with background objects were selected and Combo button was created:



Not the best button ever, but it shows the potential.

## Keyboard Shortcuts for Menu

All items listed in menu can have assigned a customized keyboard shortcut. To assign a shortcut, go to menu: *Tools – Customize*. Then select Keyboard Tab. You can see the assigned shortcuts also listed on right side of menu items.

However there are also other special keyboard shortcuts that can be used while on Menu window. Such shortcuts can be used directly or they can be used in customizable Jog–Shuttle controllers such as ShuttlePRO2.

Action	Shortcut	Description
Arrow Tool	1	Select Arrow Tool
Text Tool	2	Select Text Tool
Rectangle Tool	3	Select rectangle Tool
Group Hot Spot	4	Select Group Hot Spot Tool
3D Rotate	5	Select 3D rotate tool
Cardinal Polynome	6	Select Cardinal Polynome Tool
Frame Tool	7	Select Frame Tool
Simulation	8	Select/unselect Simulation mode
Zoom In	+ on numeric keyboard or Mouse Wheel up	Zoom In
Zoom Out	– on numeric keyboard or Mouse Wheel Down	Zoom Out.
Add Link	SPACE	Shows a Link menu below cursor
Remove Link	Shift+Del	Shows a Remove Link menu item below cursor
Next Object	Page Up	Select next object (towards layers top)
Previous Object	Page Down	Select previous object (towards layers bottom)
Show Connections	Ctrl+Home	Bring connection window on top (customizable)

Also see [Shortkey Summary](#) for setting up a Shuttle device.

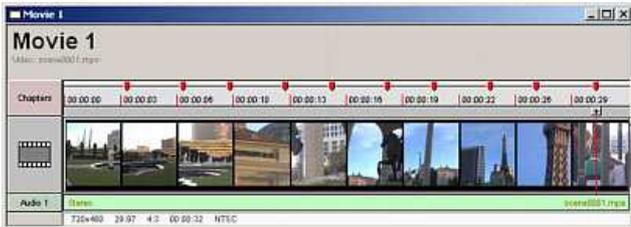
## Menu window – Scene Selection menus

### Menu – Scene Selection Menu – Thumbnail Scene Selection

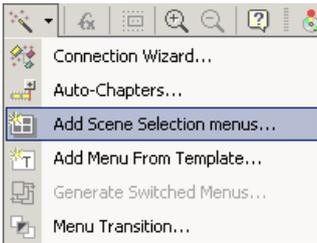
DVD-lab has a useful automation feature called "Add Scene Selection menus from chapter points". Its function is to create linked Menu buttons for you from a Movie using the Chapter Points you have already defined. As DVD-lab offers a number of ways to do things, you can also create such menus directly by using [Chapter Still Images](#).

To start with, open a Movie and add [Chapter Points](#) to the movie if none are defined. Recall that DVD-lab can find Chapter Points for you with its "Add Chapters by Scene Detection" feature, see *Movies – Auto-Chapters*.

Here is a Movie with many Chapter Points defined.



Now we are ready for the next step. Locate the Add Scene Selection wizard from *Menu – Scene Selection Menu – Thumbnail Scene Selection* or from the Wizards button just under the top menu, select "Add Scene Selection Menus...".



You will be prompted with the dialog box:

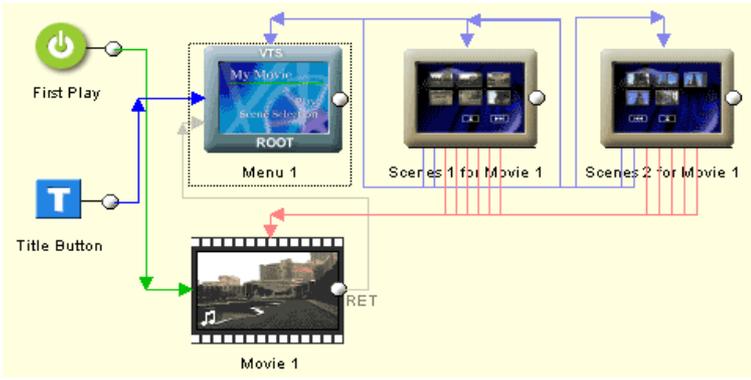


First you have to choose from which **movie** you want to create scene selections (1).

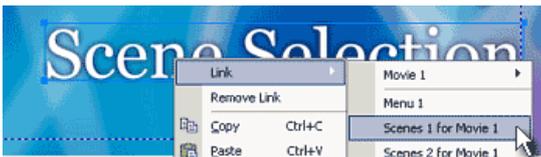
Then choose which menu is the parent menu to the newly created scene selection menus (2). The up buttons on the new scene selection menus will be linked to this menu as successive menus are added.

Lastly, choose which template (3) you would like to be the base Menu to be populated. Style items are used for these templates, you can create your own [Styles](#) as needed.

When you click OK, one or more menus will be created. The number of menus will depend on the number of chapters to allocate and the number of receiving placeholders per menu. A Movie with 10 Chapter Points using a Style with 4 placeholders will yield 3 Menus; 1) with 4 buttons 2) with 4 buttons and 3) with 2 buttons.



The Add Scene Selection wizard will have built all the necessary links automatically. The only thing you need to do now is to link the "Scene Selection" button from your main menu to the first created menu (Scenes 1 for Movie 1). This tied these new menus into the rest of the Project.



Here are few examples of how a Scene Selection created menu may look, depending on the chosen template:

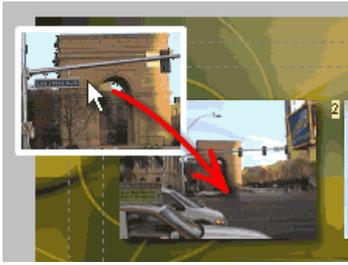


Because you can easily create your own Style template, there is a wide range in the look and layout options that you can choose from. The Scene selection template doesn't have to follow the typical column–row principle. You decide where the buttons are and in what order.

**Note:** The start of the movie is also understood to be a chapter even if you don't create a chapter point there. Each movie then has at least one chapter (the beginning). If you create 4 chapters, for example, then the total number of chapters will be 5.

#### ► Replace Scene Thumbnail.

You can replace any scene thumbnail on selection menus by simply dragging a new still frame from **Preview** over the old thumbnail. This will not change the link, simply replace the bitmap also referred to as a Video Still.

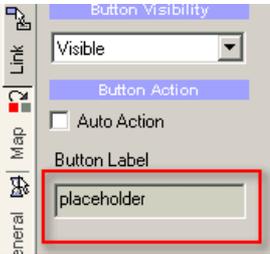


## Menu window – Scene Selection Menus – Create Style

### Menu – Export – As Style

You can create your own Scene Selection Template which DVD–lab calls a "Style". Styles are used during "Add Scene Selection menus from chapter points". See *Menu – Add Scene Selections*.

Similar to Templates, the Style objects are distinguished by the Button label in the Link tab in Menu properties.



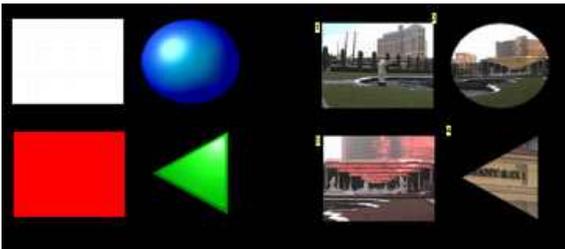
There are these functional commands DVD–lab expects to be placed inside the button label:

place  
placeholder  
up  
prev  
previous  
next  
number

All other labels are non functional and simply ignored during building the Menu. Here are explanations of what each of these functional command do for us.

#### **placeholder** (or **place**)

This is the object that the chapter thumbnail will be inserted into. The object will retain its shape when loaded with a thumbnail, so if for example, you use a circular button the result will be a circular thumbnail.



On the image above we created 4 placeholders. Each object has the command: **placeholder** entered in the Button Label box. If we export this Menu as a Style (\*.sty file) and then use that style to create Scene Selections, each of the thumbnails will automatically be placed inside the placeholders. Note that for the bottom rectangle we changed the color to Red. When a thumbnail is inserted, if the color is different than White (Automatic) DVD–lab will colorize the thumbnail as explained in the [Video Still and Images](#) section.

**Note:** The placeholders must be created in the order in which the chapters are to be inserted. This is typically starting from the Left Top corner. The order is determined by the position in layers – the first created object is on bottom layer, next object is on top of it, etc. That means you can reorder the objects by using the Object order buttons shown here:

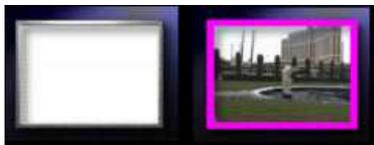


If you create objects one after another in a straight sequence, then this is not an issue. However, as soon as you change the order or delete an item or add an item, the object order may be mixed up. To help you to visualize the button order, you can drop a link on each object (for example on Movie 1). The number which appears on the top left of each object is the number of the order in which the thumbnails will be placed.

Using Styles, you don't have to worry about dealing with multiple pages. If there are more scenes identified than buttons on your Style page, DVD-lab makes more pages for you. You then only need to create one page as a Style, then when Scene Selection processing occurs, the wizard will automatically create new pages if necessary and smartly uses the rules found on the first page. It will also delete unused objects from pages.

**Pick-up links.**

There is one important rule on the placeholders. If the placeholder is on top then it will get the link to the chapter point. If there is any other object or objects directly on top of the placeholder, then the top most object will pick-up the link.



That means while the thumbnail will be always inserted into the placeholder object, the actual link may be added to a frame or other object on top of the placeholder. The image above is an example. The white rectangle has the placeholder set in Button Label, but a frame is on top of it. When Styles are used, the frame will become the actual link. You may set the Frame to Invisible Normal, or use a different Color Map and Group Hotspot over the objects. This enables you to customize Styles much further.

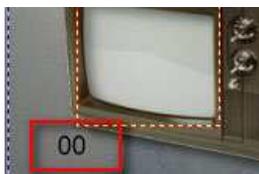
**up, previous (or prev) and next**

These are objects which will be linked to the next, previous or parent (up) Menus. Typically you would use arrows or some buttons such as below:



**number**

This is a label on a text object saying that the number of the chapter point will be inserted here.

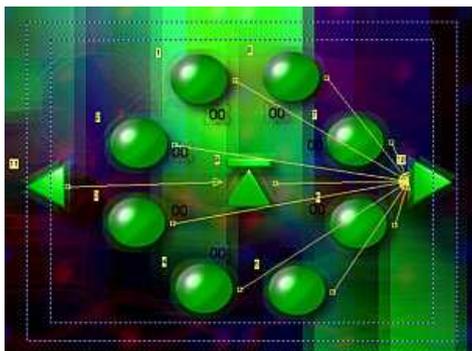


Typically you put 00 in a text object to hold the size and then type: **number** in the Button Label.

 **Note:** you must create the number objects in the same order as the placeholders. See the note in the placeholder section.

**▶ Routing**

The Style can have automatic or customized routing which will be carried forward to the new created Menus. This will help you to create styles which are not typical for example the style below.



The thumbnails (placeholder) are in the circle. Such design can't rely on Auto-Routing because the user will be confused. Instead, we created manual routing where – key up on the remote will go clockwise, key down will go counter-clockwise, key right will

go to the Next button, key left to the Previous button. The Up button will be placed in between prev and next. (On the image above you can see routing to the right)

The blurry effect was created on background using Gen-EFX.

## Menu window – Switched menus

### Menu – Scene Selection menu – Switched menus

In previous chapter about cloning we mentioned some more advanced techniques of creating interaction that involve multiple menus.

#### Switch effect

We started to call this type of menu "Switched" because this is essentially what is happening. Instead of modifying, adding or removing some objects on a menu – which is common in multimedia applications but unfortunately not possible on DVD, we simply quickly switch to the menu that has the object already modified, added or removed. The switching from one menu to other is fairly quick so user will believe that the menu actually changed. (Although players may vary). With this trick plus mixing it cleverly with some normal highlighting type of action we can create many different types of menus:

- A menu that highlights buttons with visual effects (shadow, glow etc....)
- A menu that shows different image each time we highlight other button
- A menu where user can place checkboxes to one or more items
- A menu that shows pop-up menu
- ...anything else

Here are the same visual ideas.



Switched menu trick allows us to do almost anything possible, if we have enough time for it.

#### Mixed Technique

It was not exactly intended to make menus this way when the specs of DVD were created. So it has a downside. There wasn't any requirement for players to be able to switch from one menu to another as fast as possible. While it isn't long by any means, the time lag may be an issue. For example when user press an arrow button he expect that the selection jumps immediately to next button. With switched menus (and Auto Action) this doesn't happen right away. There may be some 0.5 sec. before the menu changes. Impatient user doesn't see any action for this brief period after he press the button. That may foul him in belief that the remote didn't send signal so he may quickly press the button again and ultimately end up two buttons down. It is therefore good to mix both techniques – the old highlighting which gives the immediate feedback and the switched menu that allows us to do visual tricks.

#### Switched Menu Wizard

In all switched menus the number of menus depends on the number of buttons (behind each button is a menu usually called by Auto Action).

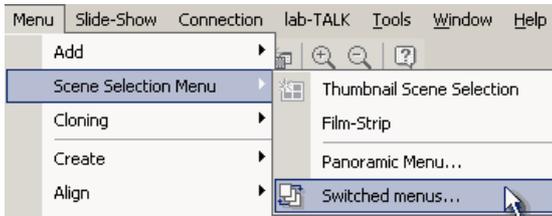
The Switched menu Wizard will create this kind of Auto-Action menus when pressing arrow button on remote will immediately call the auto action of the button that switch to the other menu.

The wizard will create each new menu by cloning it and place all the links to correct places so the moving arrow button will switch menus and pressing Enter will follow the destination link.

Before you start the wizard you have to create your menu with all the links to destination places (like Movies, other menus etc..). The wizard will build switched menus based on the linked buttons.

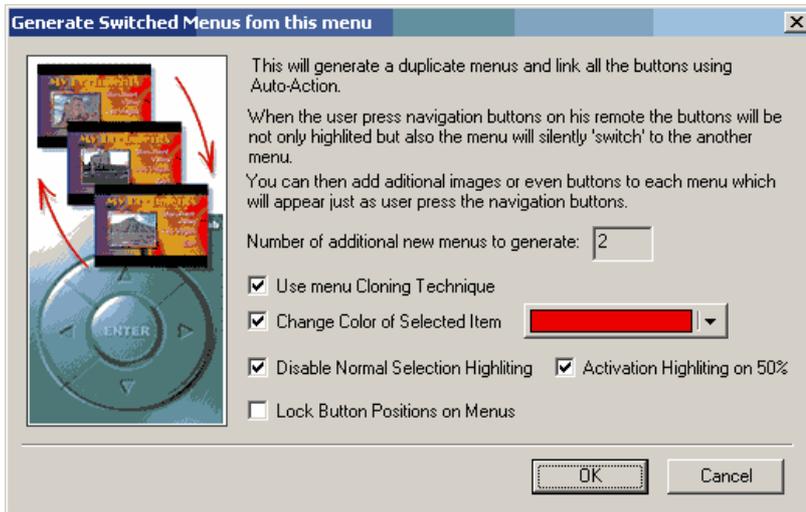


When this is done, call the wizard.



A Wizard will show the short explanation for people who don't read this and allow few options.

Here are the default settings:



**Use menu Cloning Technique (PRO)** – this doesn't just duplicate the main menu, but sets a cloning relationship. That means if you change one thing on one menu, all other menus will be updated. That's a great helper.

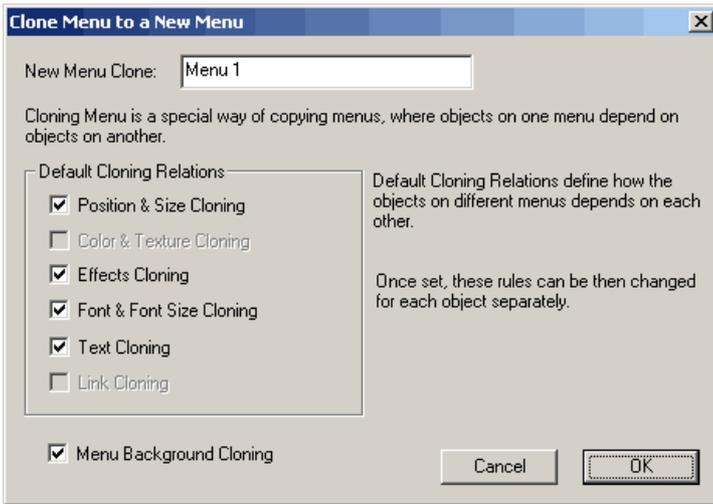
**Change Color of Selected Item** – On each created menu one item is selected – this is the item where pressing Enter will go to the button destination. You can instruct to change color of this item if you don't want to use the old fashioned highlighting overlay as in normal menu.

**Disable Normal Selection highlighting** – Disable the overlay highlighting (Selected). When you want the selected item to change color, it assumes that you don't want to use the old fashioned overlay highlighting.

**Activation Highlighting on 50%** – It is usually good to have activation highlighting set because it visually shortens the time between menus being switched.. You may set the Activate color in the Color map to the same color as you use in Change Color of Selected Item. (This has to be done prior to entering the wizard). This option will set the Activation highlighting to 50% of transparency, hiding bit the fact that this is an overlay.

**Lock Button Position** – not needed if you use menu Cloning since all buttons will be synchronized.

When we click OK, a Clone Menu (PRO version) option will appear (if *Use menu Cloning Technique* was used)

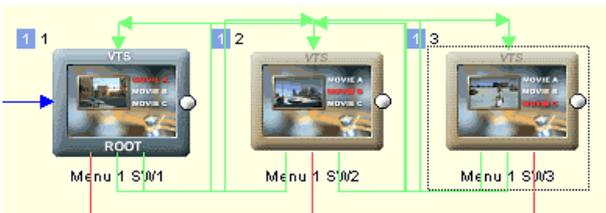


You can see that some Cloning options that would interfere with what the wizard intends to do are disabled – the Color cloning is switched off because we enabled Change Color of Selected Item and the Link Cloning is obviously off because each button needs a different link.

We will leave it as it is. Two new menus will be created and all links will be placed accordingly.

Now, our goal is to display different image for each selected button. Sort of like a Still preview of movie.

So we will replace the still image for menu SW2 and SW3. (You can replace a video still by dragging a new video still from preview window over the old one – replacing bitmap data has no effect on cloning, see more in [Cloning chapter](#))



That's all.

A typical playback sequence of this type Auto–Action Switched menu is as following:

	User see the first menu. "How nice, how nice..." he says....
	He press the Down arrow button on remote to get to MOVIE B because according to him "the MOVIE A is a chick flick."
	Because there is auto–action set on the next button, an Action Color will <i>immediately</i> appear over the next button and the menu will go to switch. It may take on some player up to 0.5 sec. until the switch appear, therefore we used the Action color red and 50% transparent (Color Map), because it shows immediate action. Because we have the selected item painted in red – we could disable the Selection color .
	The menu switched and user see selected next item. Also the image on left changed. "Now let's see some action!" He says with one hand on remote and other in popcorn bag...

	<p>He then press Enter on the remote</p>
	<p>A menu will immediately react by displaying Selection color over the button. We can be creative, the selected button on each menu may be in different Button Hi-lite Group than the rest, allowing us to have different color for the Action highlighting when user actually press Enter.(as we have here)</p>
	<p>A movie plays.          Next time you will over-hear the user saying to his friends that DVD obviously must allow the same creative freedom as any multimedia application.          "I have seen it doing things! .." he says</p>

Once you understand the simple logic behind switched menus you will discover many other usages.

Here above we used Auto-Action to switch the menus which gave us the possibility to change image while user move from button to button. We also replace the normal Selected overlay with nice smooth red text but cleverly used Activated overlay to gave user the quick feedback.

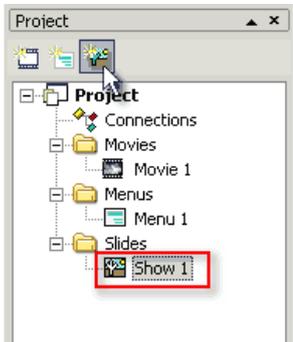
That's just one simple sample, it can go much more complex from here.

**Note:** While this allows us to create many great visual tricks, we shouldn't forget that the main goal of our work is the usability, not a showcase. What good is a special effect menu if it only confuses user (who watch the DVD mostly because of the main feature and doesn't really care to what great length we had to go to make the menu switching, buzzing and popping). A standard way of making menus – especially when combining with motion is still the most rewarding.

## Slideshow window

### Slide-Show – Add New

Slideshow is a special movie object where each frame is a slide (a video still). You can set the duration of the slide and also add audio as background music to the Slideshow. To add a new Slideshow object, click either *Slide-Show – Add New* from the DVD-lab top menu or from the Project view, right-click on Slides, then click Add SlideShow. To work on an existing Slideshow object (like Show 1) , double-click on it's icon within Project.



Like other DVD-lab windows, Slideshow is a dockable window which can be moved or reconfigured as needed.

### Slideshow Basics

The Slideshow window has its own unique layout and functions. Here are the main components:

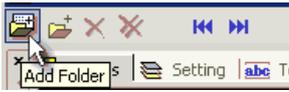
1. Slide list
2. Audio Track
3. Settings
4. Tools
5. Slide Preview



### Add Slides

The basis of this window is to arrange a list of still images (slides) in a list. To start, we will bring some slide elements into slide containers on the Slideshow timeline. As is true in other DVD-lab windows, you can drag-and-drop files from Assets / Images Bin into a slide container.

Another way to bring in slides is to add slides into the slide list using Add Folder or Add Slides, see the top left of the Slideshow window for these buttons.



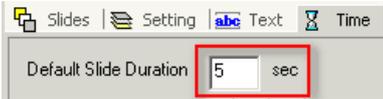
The Maximum number of slides in one Slideshow is 99 slides. You can however create more than one Slideshow object optionally linking them together in the same way as Movies are linked.

### Add Audio Track

To add audio to the Slideshow, Drag & Drop an audio file from Assets to the Audio Track or Slide Preview.

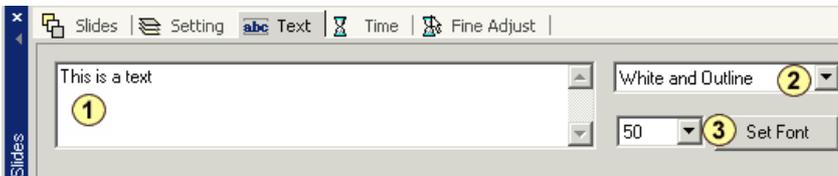
### Set Default Slide duration

Click on the Time tab in Settings and set the default duration of each slide. This is the time in seconds that each slide will appear on screen before going on to the next slide.



### Add text to a slide (optional)

You can add a text line to a slide. Select the desired slide in the Slide list (notice the Red box around the slide frame when selected), click the Text tab in the Settings and type any text to be displayed with this slide.



- 1–Type the text that is to be displayed here
- 2–Text style
- 3–Text size and font

### Text Style

There are various types of styles of text defined: White/Black/Yellow text on solid/transparent background, outline, etc.. Text often looks best on a TV screen with a slight drop shadow or outline as is the default.

**Tip:** While the text editor is open, should you want to edit text on another slide, you can move to the next slide by clicking either of the Next/Previous slide buttons shown here.



### Remove Slide(s)

You can remove the current slide or all slides with the Remove buttons on the Slideshow tool bar shown here.



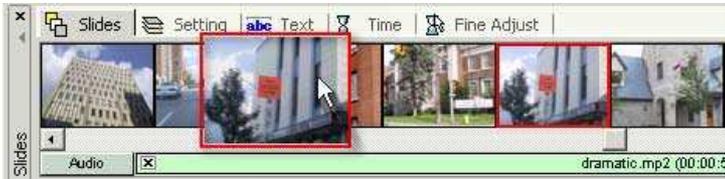
You can also remove the slide by dragging it from the slide list anywhere outside of the slide list (for example to the preview)



**Note:** You can drag the slide from the slide list to a Menu. The slide will be removed from the list, but it will be inserted in the menu as object. You can also copy the slide to menu by doing the same while holding the CTRL key.

## Re-arrange slides

You can easily change the order of the slides by dragging a slide within the slide list to a new position.



## Slideshow window – Advanced settings

### Slide Settings (global for all slides in the current slide object)



Settings made here will be in effect for all of the slides in this Slideshow.

#### Fit Image

This sets how the slides will fit to the screen.



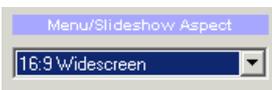
- 1 – Full Screen
- 2 – Action Safe Area
- 3 – Title Safe Area



 **Note:** The normal tube TV's are usually set to overscan, that means you can't see the edges and you lose up to 20% of the image you would see on the computer screen.

#### Crop to 16:9

This setting is for 16:9 Slideshow/menus. You can set 16:9 aspect ratio for the Project in the menu *Project –Project Properties* (Menu/Slideshow Aspect)



A normal picture is in 4:3 aspect ratio, so displaying it in a normal way (Full Screen, Action or Title Safe) on 16:9 aspect will display the picture in the middle with black bars on left and right.

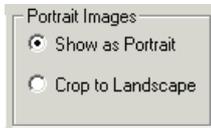


Crop 16:9 will enlarge and crop the picture to fully-fit the 16:9 display.

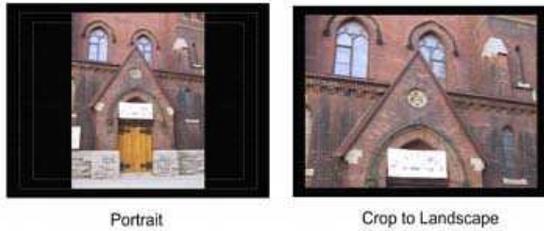
 **Note:** This works only for 16:9 aspect ratio projects.

## Portrait Images

Some images are shot as portrait. You can choose how these images will be displayed.



The Crop to Landscape setting will enlarge and crop the image so the main focus fits on a 4:3 display.



## Add Background

You can add a background under the slide if the slide fits in Action Safe, Title Safe or Crop 16:9. To add a background simply drag the background image from Assets–Backgrounds to the Slide Preview.



Slide Backgrounds are global to the Slideshow Object. All the slides in the current Slideshow will have the same new background instead of a black frame.

## Remove Background

To remove a background from a slide, select the slide, right-click on the slide preview and select "Remove Background".

## Add a Drop Shadow

To spice up the image you can also add a drop shadow for all slides in the Slideshow with the Setting / Effects / Drop Shadow checkbox.

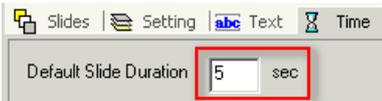


## Slideshow window – Advanced Timing

DVD-lab's Slideshow feature has options for fine tuning the durations of slides and matching up audio content with the Slideshow as video content. Each Slideshow object can have up to 99 slides contained within it. A Project can have multiple Slideshows, linked together or linked to separate buttons as you might with a Movie.

### ► Default Slide duration

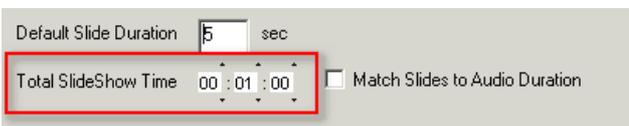
Click on the Time tab in Settings and set the default duration of each slide. This will be the default playback time for all slides in this Slideshow.



Each slide in the Slideshow will be displayed for the number of seconds set here.

### ► Total Slideshow Time

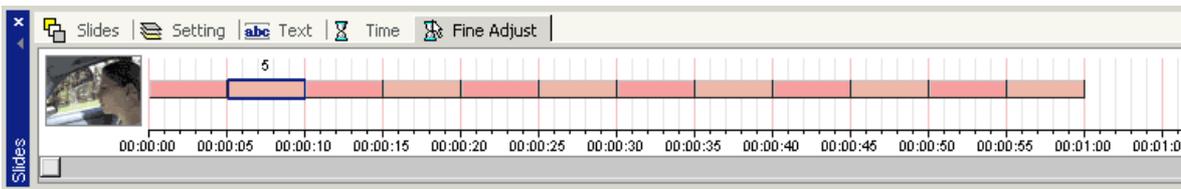
This is a helper setting in the Time Tab



The number of slides and the Default Slide Duration are multiplied and displayed as SlideShow Total Time. If you change the Default Slide Duration, you will notice the Total Slideshow time changes as well.

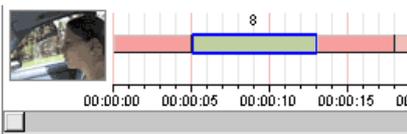
You can also change the Total Slideshow time by clicking the up / down arrows on each of the numbers, in the Hours, Minutes, Seconds columns from left to right. The Total time will be divided by the number of slides and the result, the calculated default time for each slide will be posted into the Default Slide Duration box. Since the time for each slide is set in seconds, not all changes in Total time will affect the Default time duration.

### ► Fine Adjust tab



The playback time of any slide can be directly adjusted individually in the Fine Adjust tab, as show above. Each slide is represented by a colored bar segment on the screen, If you click on the bar, the duration time for that segment will be displayed on top and a tiny slide image thumbnail will be displayed on the left.

Click on the screen in the segmented area that represents a slide, hold down the mouse button and move the mouse left or right. This will increase or reduce playback time for that particular slide.

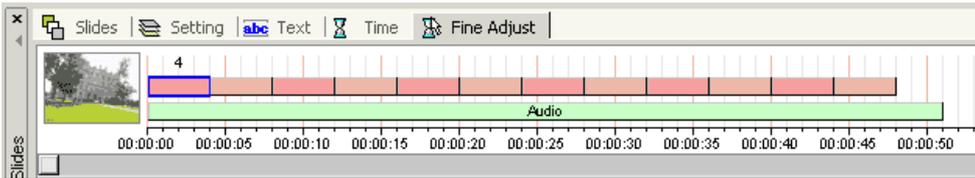


### Red and Green bars.

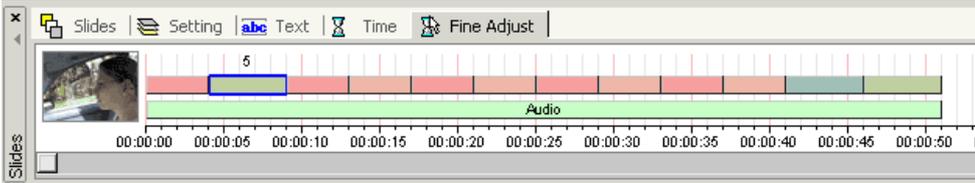
The red bars indicates that the duration time is set by the default duration. If you change the default duration, all red bars will change and segments are redistributed. The green bar indicates that the duration time was adjusted manually. A duration time can be set to more or less than the default duration. The changing of the default duration time has no effect on the duration time of the manually set green bars.

### Match Slides to audio duration

When you add audio track, its length will be displayed below the slide bars.



To make you video content match up in total time with the total time of the audio (which is set), you can move the duration slider for one or more segments to fit to the length of audio track.

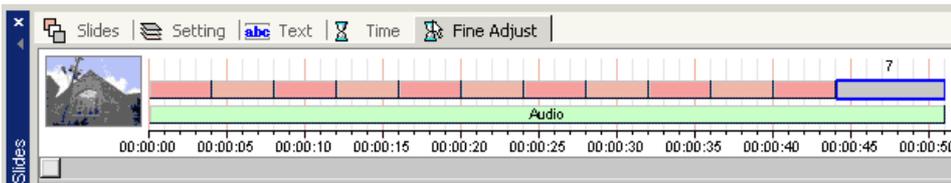


This is fine, but when you add one more slides or change the duration time of a slide, the timing will be off regarding the video total time matching up with the audio duration.

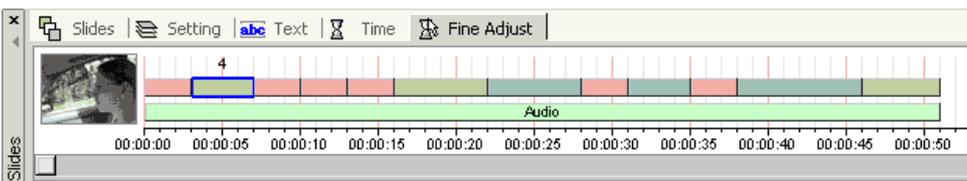
There is a better way to do this. Make sure that all the slides are in Default Time (resize them until they are reddish). Set the **Match Slides to Audio Duration** checkbox to checked.



The default slide duration will be adjusted to fit to the audio length and last slide duration will be adjusted to fit completely to the length of the audio.

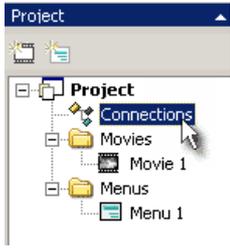


Now, even if you should add or remove slides or change the duration time of some, the total length of the video content is tied to the audio content.

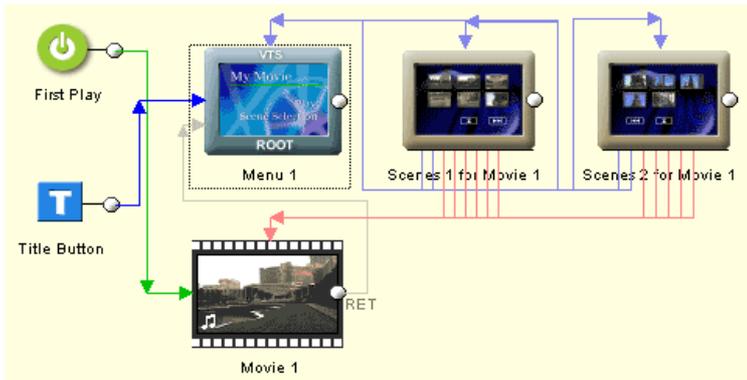


## Connections Window, Basics

To open the Connections view, double-click on Connections in the Project window.



The concept of Connections is the essence of the DVD layout. Connections define how the various elements (Movies, Menus) are connected together.



### ► Why do we need a link?

The links tell the DVD player what to play next when the current item has finished. A typical example is a Movie, when it finishes playing, we can have the DVD player return to a Menu or play another Movie. You can have many Movie segments linked together.

For Menus, dealing with what happens when it finishes is less important. Most Menus have a Timeout value set to infinity meaning they never "stop" playing. However, for those Menus that have an audio background, or Motion Menus or for Menus with a defined number of Timeout seconds, these Menus will in fact "finish" at some point. For these cases, we do need to define a link as to where to go next within our DVD-lab Project.

If a Menu has no link defined, then it is assumed to be looping (to itself).

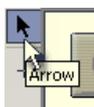
There are two types of links shown in the Connections view. First, there are the Item or **Jump links** (from the right side of an object to the left side of another object). These are links that you can draw connections for. Second, there are **Button links** within Menus. These links show a relationship from where the buttons are on a particular Menu link. Button links are display only, you can't draw or delete these links from the Connections view. You create or delete Button links from inside the Menu window by adding or removing links. Button Links are displayed in a light red color (for Movies) or light blue color (for Menus) and go from the bottom of a Menu to the top of a Menu or Movie.

You can show or hide displaying of these types of links via these Connections view controls.



### ► Moving Objects

You can move a Movie or a Menu object anywhere on the Connection workspace. To do so, select the Arrow tool.



You can move these items anywhere you like to better reveal the Connections or group the related parts together, etc.

## ▶ Drawing Connection Links

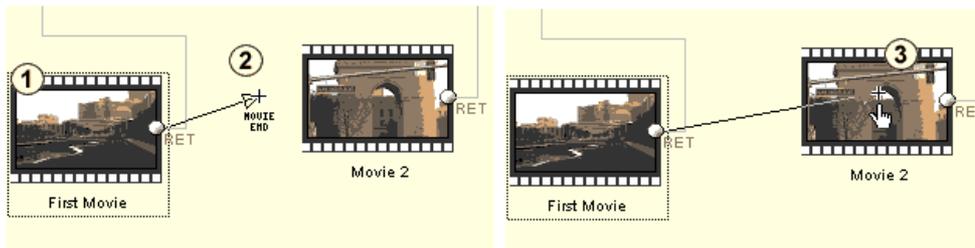
To draw Connections select the Draw Links tool.



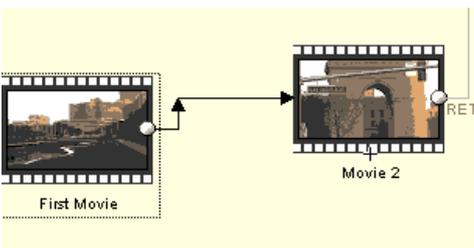
As you add new items you will notice that they are already connected by default. For example, all new movies will return to the Menu using RET command (image 1), the First Play will be connected to the Menu etc. You can leave these as they are or rewire the Connection as you need. For example, to connect movies sequentially (Image 2)



To draw a Connection, click on the Draw Links tool button, then click on the object **From** (Image 1) and drag the line (Image 2) to the object **To** (Image 3).



When you release the mouse button the new Connection will be made and a flow relationship is displayed.



## ▶ Connection restrictions.

Due to various technical reasons, there are few restrictions as to how to make direct Connections.

1. The First Play, Title Button and VMG Menu can be linked either to **Any Movie, Any VMG Menu** or it can link to **First Menu (ROOT)** of any VTS.
2. The movies in one VTS can be linked together in any order. They can be also linked to any menu in the same VTS.
3. VTS Menus (using a [Duration](#) value or button link) can directly connect only to another Menu or Movie in the same VTS or any other VMG Menu. Don't mistake this with the button links on Menus! The button link on a Menu can link to **any Movie** or **any Menu**.

Here is a table for a better overview

	Connect to Movie	Connect to VMG Menu	Connect to VTS Menu
First Play	✓	✓	ROOT Menu
Title Button	✓	✓	ROOT Menu
VMG Menu	✓	✓	ROOT Menu
VTS Menu	✓	✓	✓ (in same VTS)

✓ means it can connect to Any of that item

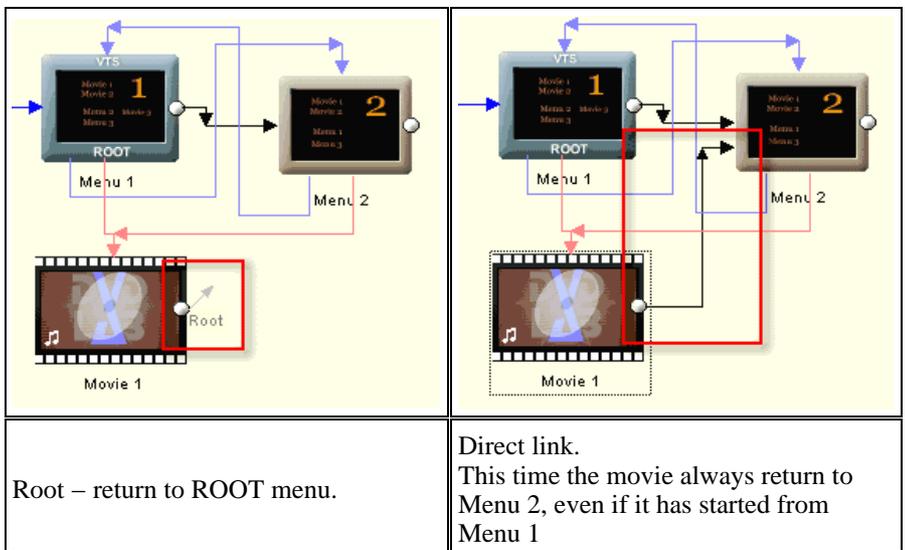
If you look at the table above you will see that these are in fact not that restrictive to your creative ability.

**Trick:** You can connect First Play, Title Button or VMG menu to any VTS menu by simply going through a short movie placed in the same VTS (such as 1 sec transition).

► **Root command**

Movie can return to the ROOT menu with Root command. That means if you start the movie playing from Menu 2 the Root command will return to first menu (Root) when the movie is finished.

To create Root link simply draw the connection from end of the movie to any free area.

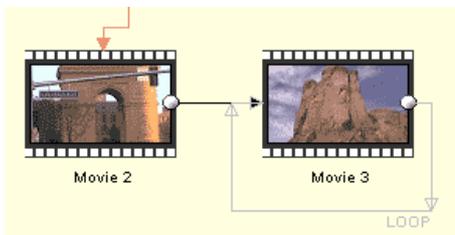


► **Looping**

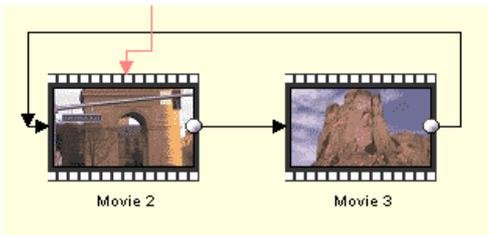
You can add looping to any item Movie or Menu. As stated before if a Menu has no exit link defined then it is assumed looping. Looping is especially useful for Motion Menu or Menus with audio.

To Draw a loop – click on the end of an Item (right side) and drag the arrow to front (left side) of the same item.

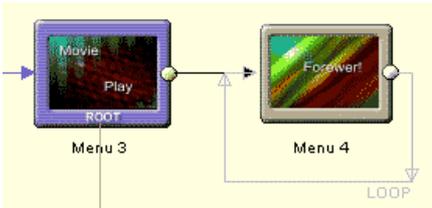
► **Movie looping** – a movie segment can loop to itself, that means it will play forever until you press Menu or Title on the remote.



You can also "loop" multiple segments together, but that's considered a "link".



► **Menu Looping** – The looping for Menus has meaning only if the Menu is one of the types that will "finish". These Menu types are: Menu with a timeout value set, Menus with an audio background and Motion Menus. For each of these types, we can define a Connection action to take when the Menu "finishes".

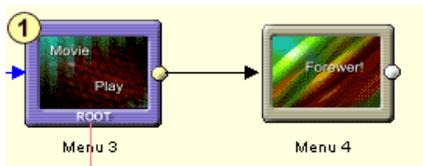


Make sure you create a button on a looped Menu by which the user may escape!

📖 **Note:** If you don't have audio, nor Motion Menu then setting some timeout value and also looping makes very little sense.

► **Menu Timeout vs Menu Button Link**

It is important to see the difference between Menu Timeout (Image 1) and the Menu Button Link (Image 2)



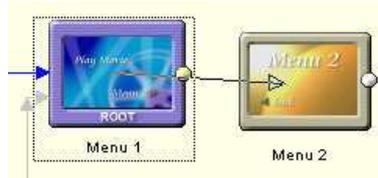
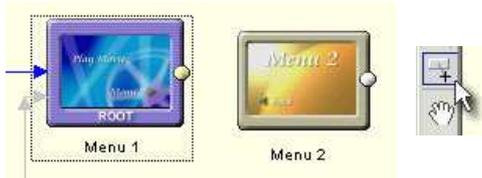
Both features connect Menu 3 to Menu 4, but the **Image 1** feature relies on fact that we set a timeout (ex. 10 sec) or there is an audio background or motion video on the Menu. The player will go to the Menu 4 after it has been played or the time-out occurs. If we don't set the timeout or there is no audio, or not a motion Menu, the link will be never executed.

**Image 2** connects Menu 3 to Menu 4 through a Button link. This means user either needs to click on the button or if we set a timeout value (or have an audio background or a motion Menu) and use Force Activate Btn. then the player will jump to menu 4 automatically.

► **Button Connections**

So far we covered connecting objects when the object comes to an end (end of the movie, end of the Menu). The Connection view also allows you to connect Menu items (buttons) to objects. This is normally done in the Menu designer and it is described in detail [there](#).

For better flexibility, you can connect Menu objects to a Movie or a Menu from Connections as well.



We want to link the button on first Menu with the second Menu.

Select the "Draw button Links" tool

Drag the Connection FROM the first Menu to the second object (Menu or movie)

A small window with the first Menu will appear where you select the link button.

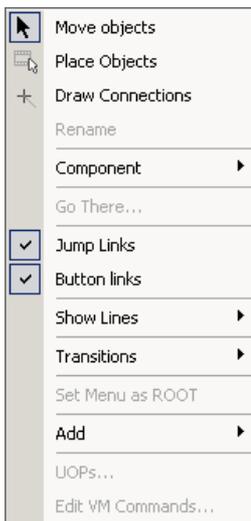
**Note:** Buttons with NOP text are not yet assigned. NOP means No Operation.

### ► Use Connections as your Workspace

You can use the Connections view as your main Workspace. Within the Connections view you can easily add or delete Movie and Menu Items, add clips and audio files to Movies, add backgrounds, still images or buttons to Menus, edit transitions, rename objects. This can all be done directly from the Connections view.

### ► Connection Menu

When you right-click on the Connection view you will see a Connection context menu as shown above. From here, you can access features such as Rebuild Transition or Rename as well as other navigational features.



### ► Add Empty Movie/Menu

There are couple of ways how to add new Movie or Menu



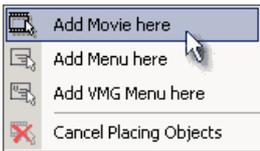
Clicking on a button in [Project Window](#). This action will also open the newly created Movie/Menu as soon as it is created. The object will be added to the first empty place in Connection window following the internal rules.



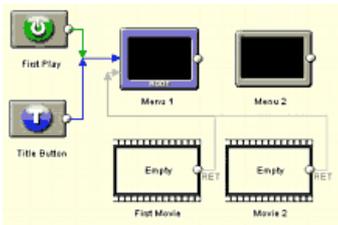
Clicking on buttons in Connections bottom bar or using Connections/Context Menu: *Add* → *Empty Movie*,... The object will be placed to first empty spot in Connection but the new items will be not opened in their respective windows. In this manner, you can add additional empty items to the Project as needed and then edit them later in their respective view.



Using Place Objects button in Connection view. This will allow to add new Movie/Menu on the place of cursor. You can continue adding items until you select other tool.



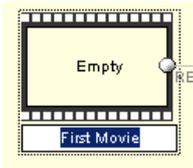
It may seem that adding new objects is redundant in DVD-lab (it is used in many places) but it is done on purpose. Adding Movies and Menus is the most used function and user can choose the most suitable way to do it.



Here we have added a Menu and two Movie Items, ready for development.

### ▶ Rename

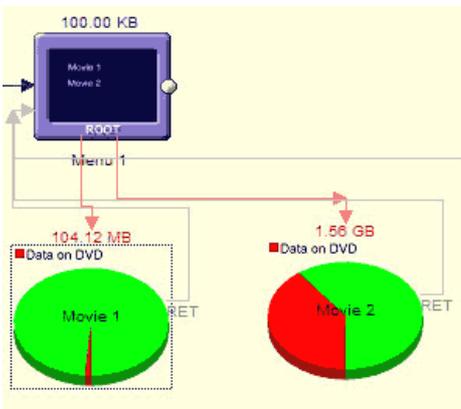
You can rename Items by selecting the Item and pressing the F2 key or the right-click Connection context menu and select Rename. Type the new name, then press Enter to confirm it or Esc to cancel.



### ▶ Size Size / Show Pie



At the top of the Connections view are two buttons for Project statistics. Use the Size and Pie buttons to see an overview of each object's size and percentage of use on a 4.7 GB DVD disc.

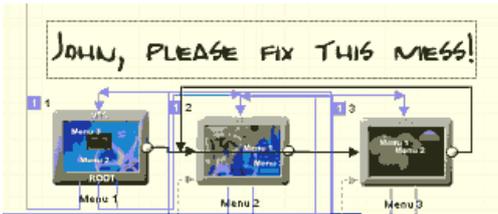


See more in [options](#).

### ▶ Text Notes



You can add many free text notes on the connection canvas. They can be in any font and any size. They will be saved with the project \*.dal file.



## Connections Window, First Play

To open the Connections view, double-click on Connections in the Project window.

The DVD Project has a few special entry points, from a viewer's point of view:

**First Play** – This is the very first item to play when the DVD starts. A DVD starts when a disc is inserted into a DVD player or when the Play button is pressed on Remote. The DVD Author can decide to have the player start the Program by showing a Menu or a short clip and then go to a Menu or to immediately start playing the main feature or combination of these features.

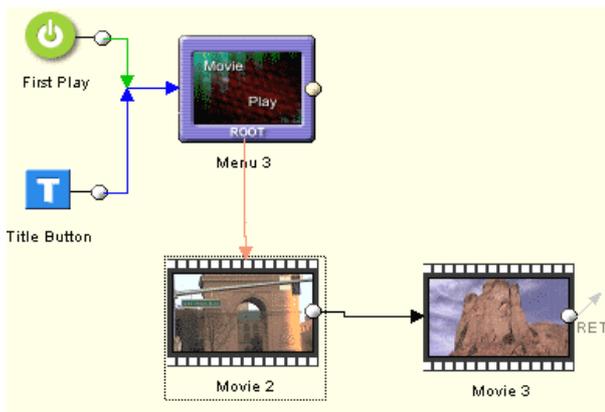
**Title Button** – This is the action to take when the user presses the Title button on their remote control.

**Menu Button**– This is the action to take when the user presses the Menu button on their remote control.

Here are the most common examples:

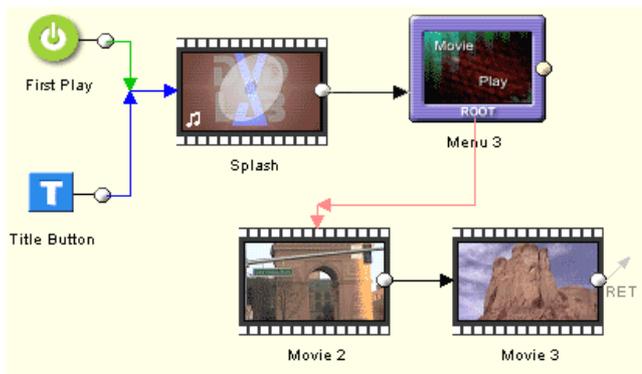
### First Play – Play Menu

This is the default Connection, the First Play (and Title button) will start with the first Menu (which is called ROOT).



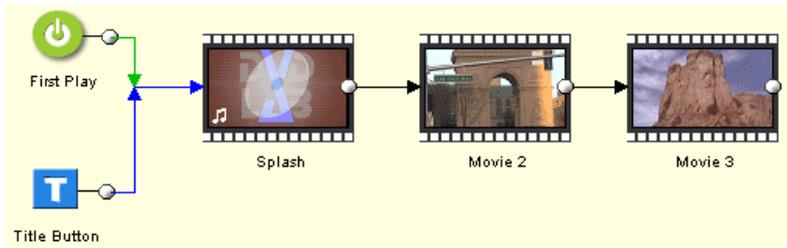
### First Play – Play short Clip, then Menu

This is a modification of the above. When the DVD starts, a short clip such as warning or company logo is played first and then the player goes on to the main (ROOT) Menu.



### First Play – Play Movie

You don't have to have a First Play at all. The DVD Author can decide to have the player just start playing the main feature movie immediately, without the need of an initial Menu. You can also have the player first play a short clip and then the main movie, similar to the following Connections.



The DVD Author can also decide to combine these features to create a custom flow. Immediate movie play with return to a menu is such a combination that might be useful. We can do all of this within the Connections view.

First Play can be connected to any VMG Menu, Any Movie and First (ROOT) VTS Menu in each VTS

	Movie	VMG Menu	VTS Menu
First Play	✓	✓	ROOT Menu only

## Connections Window, Title Button

To open the Connections view, double-click on Connections in the Project window.

A DVD remote has two kinds of "Menu" buttons. One is called simply Menu and the other is called Title Menu, Title, Top Menu, Digest and few other creative names just to confuse people.



Here is a simple remote from DVD. The Title menu is here called Top Menu.

**Title (Top Menu)** – This is the action to take when the user presses the Title button on their remote control.

**Menu** – This is the action to take when the user presses the Menu button on their remote control.

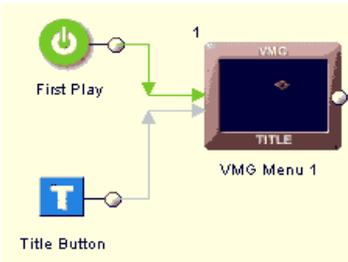
### ► The Title Button Connection

The Title Button is similar to the [First Play](#) function with the difference being that it's interactive where First Play is always automatic and out of the users control. We define connections for the Title Button as the action to take when the user presses the Title button on their remote control.

A Title Button is on connections represented by blue "T" icon.



You simply connect it same way as you do other objects or first play icon.



Title button can be connected to any VMG Menu, Any Movie and First (ROOT) VTS Menu in each VTS

	Movie	VMG Menu	VTS Menu
Title Button	✓	✓	ROOT Menu only

## Play Lists

DVD-lab Studio has a special objects that is called "Play Lists". They simply list a number of movies that can be accessed through the object. These movies are not added as duplicates to DVD. The list holds only a "shortcut" to them.

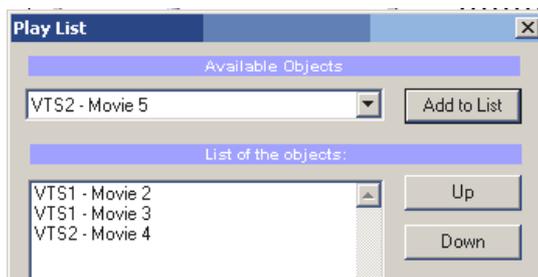
### Play List

Menu: *Connection – Add – Play List*



Play List will play all movies one by one in the order they are listed inside the Play List object. The last movie will return to the end-link of playlist.

To define the play list you have to double click on it in connections window.



Here you can add items from "Available Objects" to the list.

*Example of usage:*

Create DVD with numerous movies that has a Play All function. The Play All button simply link to a Play List. Play List has listed all the movies we would like to include in Play All. The end of Play List goes back to Menu.

### Play All

A special type of VMG Play List is a Play All object.

You don't have to add any Movies inside. When the Play All is called, all existing movies will play one after another in the same order as added in DVD-lab project.

## Connections – Components

Component is a group of objects (Movies, menus) in Connections.

It has several practical applications:

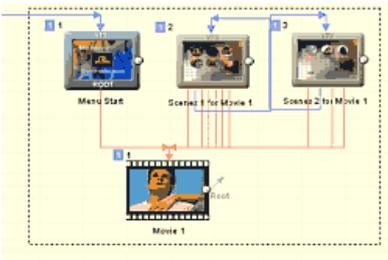
- Group and enclose objects in connections into logical blocks for easier designing
- Export the component and reuse it many times
- Create a Smart-Components that runs like a wizards

### To create simple component

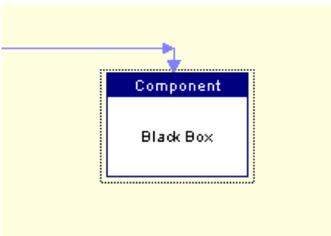
Component can be created with the Component button on the left Connection tool bar.



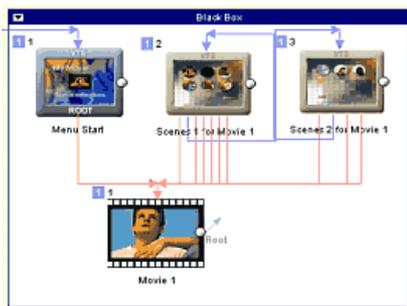
Select the Component button and draw a rectangle around objects that you want to enclose into Component.



A component will be created. It will be named by default "Black Box"



To **Open** the component, double click on it.



To **Close** the component, double-click anywhere inside the component (on the white area) or right click on component and from menu select *Component – Open/Close*.

To **Move** open component, click anywhere inside the component – on its white area and drag it.

To **Move** objects inside component, simply click on the object and drag. The component will be resized to accommodate the changes.

### Component Control menu

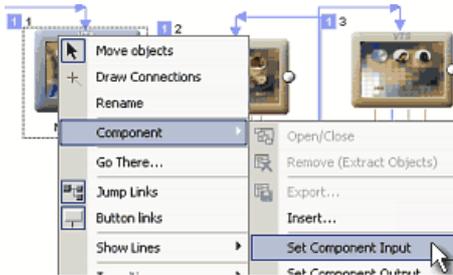
Open component has a small arrow on the right top corner. This open a control menu for special commands.



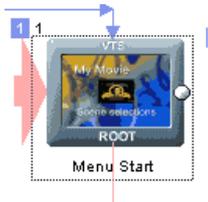
## Input and Output

When you open the component you can freely link from/to the objects inside, as if the component doesn't exist. If the component is closed you can specify Input and Output points of the component. Then you can link to closed component and work with it as if it is really "black box".

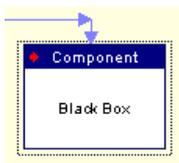
To specify Input, right click on object **inside open** component and from pop-up menu select *Component – Set Component Input*.



Similarly you can set Output. Once the Object is set as input/output a red arrow will appear near it.



This will also show on a closed component as small red arrow



Now even if the component is closed we can draw a link to it. If we specify output we can also draw link out of closed component.

**Note:** Since the components can be exported and reused later, the Input and Output marks what is intended input or output for the group of objects inside. This allows us to work with the component as with a box without need to look inside.

## Rename Component

To rename component, select it and press F2. This is same as with any other object.

## Add Object to component

Right click on any object outside component to open Pop-up menu. Select *Component – Add Object to Component*. A menu with list of all components will appear. Select the desired component and the object will be moved there.

## Remove Object from Component

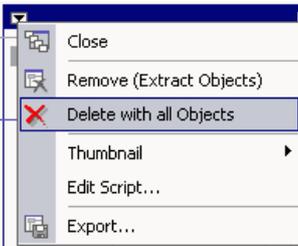
Right click on any object inside open component to open Pop-up menu. Select *Component – Remove Object from Component*. The object will be removed and placed outside the component.

## Remove Component – Extract the objects

Right click on component to open Pop-up menu. Select *Component – Remove (Extract Objects)* . All objects will be removed and placed outside the component and the component will be removed.

### Delete Component and all objects inside

Either delete all the objects from inside by pressing Del button or Click on the Component control arrow and from menu select Delete with all Objects.



### Change Component Thumbnail.

A closed component can be represented by a thumbnail. You can load your own thumbnail that will be saved with the component. Click on the Component Control arrow in top left corner and select *Thumbnail – Change Thumbnail*. Any image can be used – it will be resized to correct size. To remove existing thumbnail select *Thumbnail – Remove Thumbnail*.

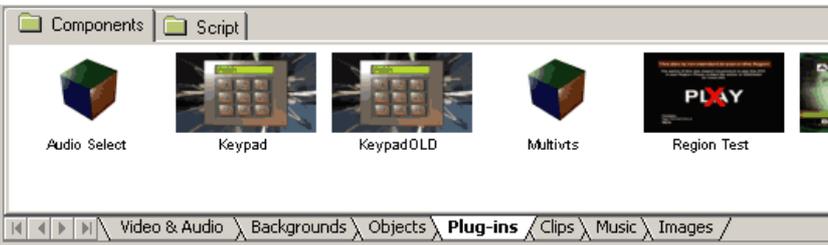
### Export Component.

Once you do all necessary changes to the component you can export it. Either from Component Control arrow or right click on component and from menu select *Component – Export*

Component has the extension \*.box and by default it will be saved in *Extras\Components\* folder.

### Import Component

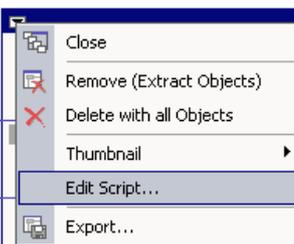
All exported component to *Extras\Components\* folder will appear in the Assets – Plug-ins tab under Components Sub-tab.



You can simply drag and drop component from there to Connection window. Alternatively you can also import components that are not saved to *Extras\Components\* folder and don't appear in the asset window. To do so, right click on a canvas in connection and from pop-up menu select *Component – Insert*.

### Smart Components (PRO version)

A component can use [labTALK](#) script to create reusable wizards. To edit script associated with Component, click on the Component Control arrow in left top corner and select Edit Script.



The script will be run every time you drag the component from Asset Plug-ins window to Connection and can initialize the component various ways. For example it can create menus depending on the user input.

All default components that can be found in the Plug-ins tab are scripted in labTALK.

 **Note:** If you don't want to run the script when adding the component to Connections, hold down SHIFT.

### Writing script.

For more information about labTALK see the appropriate topics. Here are just some important notes about labTALK usage for Components.

1. To access component objects from within the component script you have to use special access. In order to know which objects belongs to the component three array variables are filled up:

#### **menusInBlackBox, vmgsInBlackBox, moviesInBlackBox**

*Example:* menusInBlackBox returns the number of menus in box and menusInBlackBox[1] returns what is the order number relative to project of the first menu in box, see the code below:

```
print "Number of Menus in this Component: ",menusInBlackBox  
  
for menu=1 to menusInBlackBox  
print "Menu #",menu," in Component is a Menu #",menusInBlackBox[menu]," in the whole project"  
next menu
```

Simply if we want to use menu number one we can't use Firstmenu = 1 because that is not true, but we have to use Firstmenu = menusInBlackBox[1]

2. After you edit the Component script you don't have to press save button in the lab-TALK window, simply just close the lab-TALK window and then export the component.

3. Because the component script often changes the component itself, it is important to keep an original, unchanged copy of the component while you debugging the script. For example the Keypad component has initially just one menu. If we run its script it will create couple of new menus inside the component. Obviously we want to keep the component before the script is run.

There are few scripts in the appendix that can help with understanding lab-TALK's use inside Components.

[Script 1 – Region test](#)

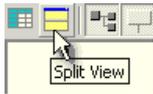
[Script 2 – Keypad](#)

[Script 3 – Set Audio](#)

## Connections – Options and Settings

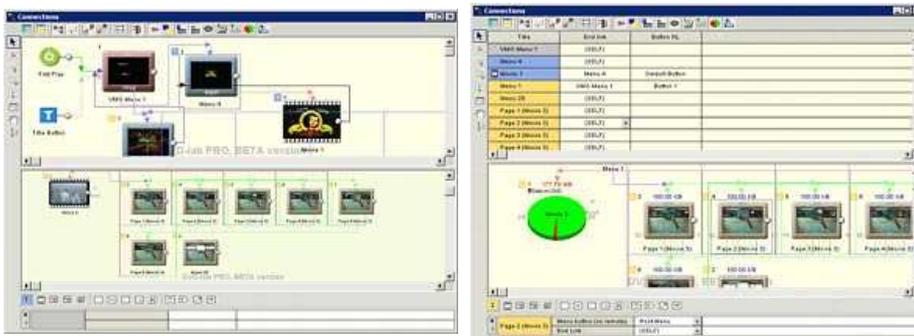
In DVD-lab the connection window is the most important. Therefore it is highly customizable and offers many settings and helpers.

### Split View



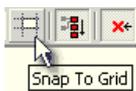
#### *Connections – Split View*

A Connections window can be split to two windows where each can show different part of the structure and each can have its own settings such as zoom for example, table view, size view etc...



This can help you to better navigate and edit objects in connection view.

### Snap to Grid



#### *Connections – Snap to Grid*

Snap to grid will place a grid on the connection window which will help you to organize the objects by snapping them only in between the grid space. It also adds a column header on top (letters) and row header (numbers) that helps navigate in large projects.

### Jump Links, Button Links and lines



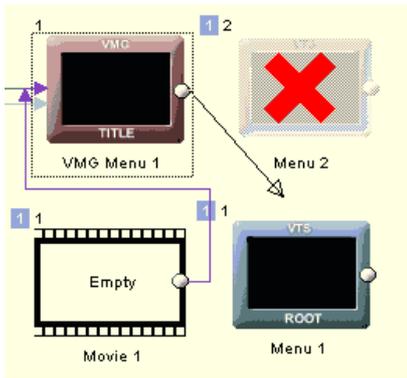
These buttons are for showing or hiding a few types of lines that link objects. Jump links show/hide the end connection links and Button links show/hide the links that come from menu buttons.

The lines may be straight or right angles.

### Link Assist



Link Assist is a great helper for adding links. When selected, using link tool will visually disable objects to which you can't link from the object.



In this example we see that we can't link the VMG menu with anything other than the ROOT VTS menu.

### Info Tools



Various info tools are provided to give better information.

**Show Item Order** – This shows a virtual item order in that VTS.



**Show Size** – This will show a size in MB that the object takes from DVD.

**Show Average Bitrate** – This will show average bitrate of movie objects.

**Pie graph** – Shows the relative part that the movie takes from the DVD.



## Keyboard Shortkeys for Connections

All items listed in menu can have assigned a customized keyboard shortcut. To assign a shortcut, go to menu: *Tools – Customize*. Then select Keyboard Tab. You can see the assigned shortcuts also listed on right side of menu items.

However there are also other special keyboard shortcuts that can be used while on Connection window. Such shortcuts can be used directly or they can be used in customizable Jog–Shuttle controllers such as ShuttlePRO2.

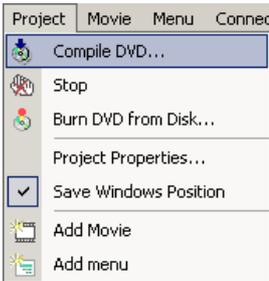
Action	Short key	Description
Arrow	1	Select Arrow Tool
Draw Links	2	Select Draw End links Tool
Draw Button Links	3	Select Draw Button Links Tool Tool
Draw Transition	4	Select Draw Transition Tool
Menu Button link	5	Select Remote Menu Button Link Tool
Create Component	6	Select Create Component Tool
Hand Tool	7	Select Hand tool to move canvas
Switch to table	8	Switch/Unswitch table view
Zoom In	+ on numeric keyboard or Mouse Wheel up	Zoom In
Zoom Out	– on numeric keyboard or Mouse Wheel Down	Zoom Out.
Next Object	Page Up	Select next object (towards Project top) and scroll view if it is not visible
Previous Object	Page Down	Select previous object (towards Project bottom) and scroll view if it is not visible

Also see [Shortkey Summary](#) for setting up a Shuttle device.

## Compile

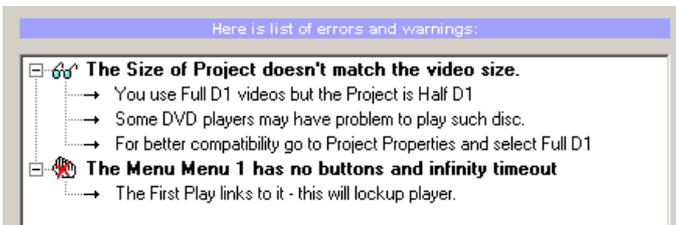
Menu: *Project – Compile DVD*

After you design the DVD it is time to compile it. Compiling means that DVD-lab processes all the assets and features of your Project, converting them into DVD files ready to be tested and then burned onto DVD media.



### ► Errors and Warnings

Before you start the compile process, DVD-lab will check all data and display possible Errors and Warnings



The **warnings** can be ignored – these are the best suggestions or things which you may have forgotten, but they don't essentially make problems for the DVD.

The **errors** are serious problems which will make the DVD unplayable. You can't continue with Compile unless you fix all errors.

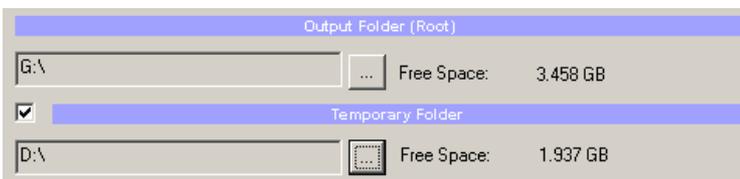
-  Error - you can't ignore this
-  Warning - you can accept or ignore this. The DVD may be still playable

### ► Compile

DVD-lab favors the two-step method of DVD creation. First, you Compile the DVD to hard disk, which enables you to test it from hard disk with a software DVD player such as PowerDVD or CinePlayer. Then, if everything is fine, you can burn it to DVD media with either the DVD-lab internal record module or any third party software you have good results with such as Nero, Gear, Easy CD/DVD, Prassi, etc...

There are few groups of parameter settings in the compile window.

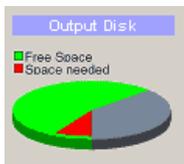
### ► Output folders



Here you set the output directory. **Output Folder** is the place where the final compilation files will be created. The folder you specify will be the root to the VIDEO\_TS and AUDIO\_TS folders. In the example above a folders G:\VIDEO\_TS and G:\AUDIO\_TS will be created and the DVD files will be compiled into the VIDEO\_TS folder.

 **Note:** It is normal for the AUDIO\_TS folder to be empty on a DVD-Video Project. Do not delete this folder as the DVD player expects to see it.

The Pie graph on the right shows the free space (green) on the drive where you specify the Output folder. The red part of the pie is the space that will be used to compile the DVD.



► **Temporary Folder.** You can speed up the process when you set a temporary folder which is on different drive than the Output folder. This temporary folder will be used during multiplexing.

If there is not enough free disk space required for all the files, a icon exclamation will be displayed near the troubled data.

Free Space:  1.937 GB

The Pie graph on the right shows the free space (green) on the selected temporary drive. The red part of the pie is the space that will be needed.



► **Required Space**

DVD-lab will check and calculate the free disk space needed on the Output and Temporary drive

Required Space	
Estimated DVD Size:	2.12 GB ( 4.7 GB DVD space = 2.44 GB )
Temporary Space:	2.12 GB
Total Required Space:	 (G:\) 2.12 GB + (D:\) 2.12 GB

**Estimated DVD Size** – this is the DVD data which will be put in the Output Folder. These are the data you are going to record to DVD. It displays the data in computer format (Here 2.12 GB) and in DVD data format (here 2.44 GB). The DVD data format is a format where 1KByte has 1000 bytes as opposed to computer format where 1KByte has 1024 bytes. If you know your DVD-R has 4.7 GB then look at the second number to see if it fits to DVD or not.

The Pie graph on the right shows how much data will be used (red) on the 4.7 GB DVD disc.



**Temporary Space** – the space needed on temporary disk.

**Total Required Space** – this is the sum of both the temporary and output folder required space. The exclamation point will be shown if there is not enough space to create the DVD on your hard drive.

► **Pre-Compile Options**

Pre-Compile Options	
<input type="checkbox"/>	Rebuild All Transitions
<input checked="" type="checkbox"/>	Create/Use Frame-Index for better Chapters accuracy

**Rebuild All Transitions**

Just before the compile starts, all transition will be re-created. This will make sure the transitions reflect the menu changes.

## Create/Use Frame-Index Chapters

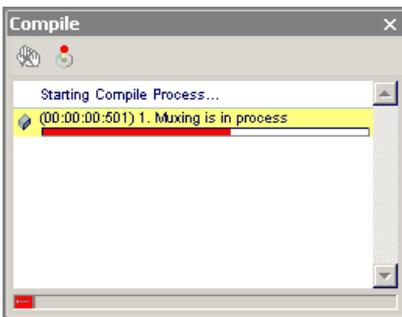
This feature will first perform frame-indexing on all movies if the index doesn't exist and then use the Chapter Points in a frame format instead of time-code format. You can optionally create a frame-index before compilation from menu Movie-Frame Index - Rebuild Frame-Index. See more about this in the [Frame-Indexing](#) section.

## ▶ Compile Options



## Run on Background

DVD-lab allows you to run the Compile as a background process. This enables you to work on the project or any other project during Compiling. If you use this feature, a Compile window will be opened in DVD-lab where you see the Compile progress and you will get full control over the application. You can even start doing a whole new project while Compile is processing.



You can also exit from DVD-lab during Compiling. In this case, you will be prompted with a question whether to stop the Compile as well or leave it running and detach it from the closing application. In the second case the Compile window will be detached from DVD-lab and the application will close leaving the compile running in its own new window.

## NTSC Safe Color

You should leave this set, For more info read [here](#).

## Reduce Jitter

This will reduce the Jitter on Menus by applying a special de-jitter filter to each menu.

## Test Compile

Because multiplexing long movies is a most time consuming operation, you can let DVD-lab replace the movies with a dummy MPEG file as a place holder. This will make the Compilation very brisk and you will be able to quickly test the overall layout and flow of links on your menus with a software DVD Player such as PowerDVD or CinePlayer.

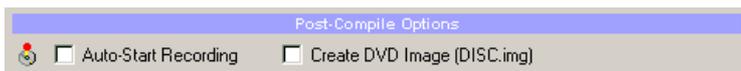


This is a very fast way how to test your DVD Project performs without a long wait for the multiplexing phase to finish.

## Compile without Abstraction layer

A special option that create DVD without DVD-lab's abstraction layer. Read more in [Abstraction Layer](#).

## ▶ Post-Compile Options



### Automatically Start Recording

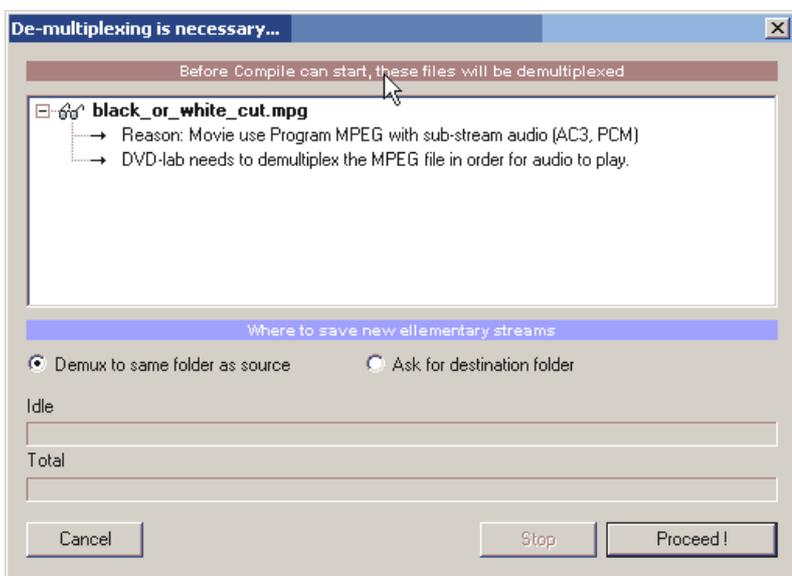
Optionally, you can set a parameter to have DVD-lab run it's Recording module after the Compilation is finished. However, this is not recommended. It is better to first test the compilation with a software DVD Player, playing the DVD files from your hard drive and then record it. This will save a lot of wasted DVD-R media.

### ► Necessary Demultiplexing

Even if you choose Program MPG or VOB files to be imported without demultiplexing, there is still chance in special situations that the demultiplexing is actually necessary prior compile.

These situations are:

- 1. You have MPEG file that has no MPA audio, but has multiplexed AC3 or PCM substream instead. Unless you are sure that the file is just wrongly named VOB file, you will need to demultiplex otherwise the audio will not be heard.
- 2. You use Program MPG file or VOB/VRO file in the movie, but add additional audio or subtitle streams to the same movie. You can't mix multiplexed and elementary streams in one movie, so the MPG or VOB files will need to be demultiplexed.



**Note:** As mentioned above in (1), some MPG files that have AC3 streams as audio may be in fact full VOB files but wrongly named with an MPG extension. In this case it is easier to rename the \*.mpg file to \*.vob, import it again and use it directly. Unless the (2) apply to the VOB, compiling vob files will be much faster.

### ► Testing the Compiled DVD

To test the DVD from your hard drive use any software DVD player which can run DVD's from hard drive files. For example, PowerDVD, CinePlayer, WinDVD and others can do that.

On a software player, try opening the VIDEO\_TS.IFO file in the VIDEO\_TS folder as a kind of header or index file to start the DVD. Some players need you to open this file from within the player.

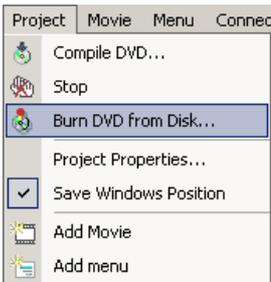
**Note:** The software DVD players can have their own issues. Each software has it's own little quirks and features. For example, PowerDVD doesn't correctly display a menu if a project is not Full D1. Try your project on as many software players as you can to insure consistent performance results.

## Burn DVD

Menu: *Project – Burn DVD from disk*

This is the last step in the DVD creation process.

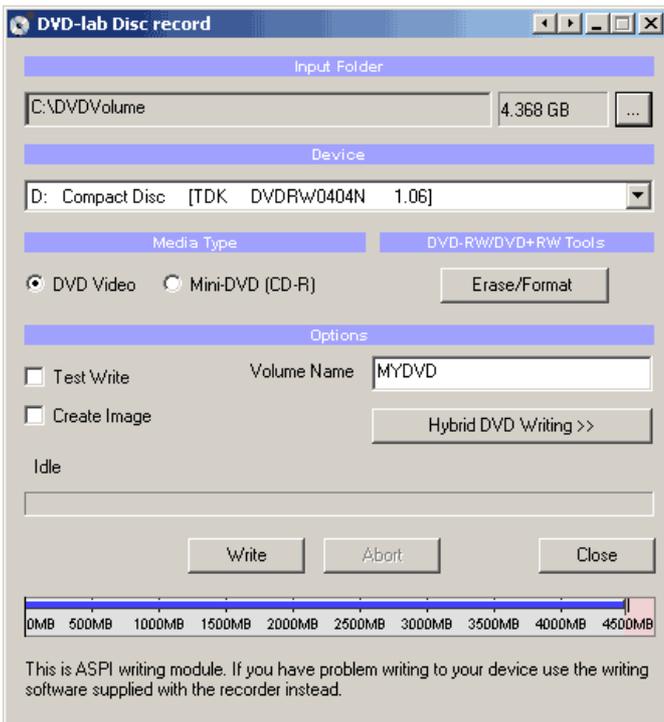
With our DVD Project having been Compiled, there are a set of files that DVD-lab has prepared for you in the Output folder as set in the Compile process. At this point, the DVD Author has choices as to how to convert this set of files into a DVD master disc. You can either use the DVD-lab built-in recording module or you can choose to use a third party DVD recording software such as Nero, Prassi, Gear, etc...



It is common that you are supplied with a DVD recording software that was bundled with your DVD-R/DVD+R burner. This software may be better optimized for your particular drive. The DVD-lab built-in DVD recording module is a general ASPI writing application and should work fine. In an ideal world, either one would work equally well.

### ▶ DVD-lab Disc record window

The DVD-lab Disc record window is automatically detached. That means it runs as a separate process independent from DVD-lab, you could even close DVD-lab and the recording will continue.



Here are some of the parameter choices for the DVD-lab Disc record window.

### Input Folder

The Input Folder is the same as the Output folder in Compile. That means this is the folder where the VIDEO\_TS and AUDIO\_TS folders are expected to be.

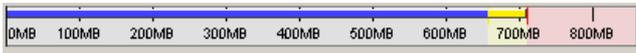
## Device

The DVD recording drive you want to write to, presented as the O/S recognizes it.

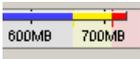
## Media Type

Set if you want to burn DVD Video or a Mini-DVD.

**Mini-DVD** is a DVD format burned on the CD-R. Obviously you can put far less data on a CD-R (about 700 MB) than on DVD (4.3 GB)



The size indicator on the bottom can help you to determine how much data you can record to the disc. You have to keep your data below the red area.



**Note:** While you will be able to play the CD-R on a computer not all standalone players will be able to play the Mini-DVD. In fact such format is not officially supported. The reason is that CDs have far less density of data so in order to play the large DVD video bitrate they have to spin much faster than DVD. Not all DVD drives in players are ready for this so the functionality to DVD files from CD-R is often simply disabled. However a number of Asian or re-branded Asian US models of players use a standard PC type of DVD drive which allows for the faster spin speed of CDs.

## DVD-RW/DVD+RW Tools

For those using a re-writable media, the DVD-RW needs to be formatted if they were already used – click the **Erase/Format** button to do this. The more common DVD-R media do not need any formatting.

The DVD-RW and +RW needs to be finalized after writing. This takes quite a large amount of time on RW media. Please be patient until this important process is completed.

## Options

### ▶ Test Write checkbox

Use this option by checking the Test Write checkbox to have DVD-lab do a trial run at writing a DVD. This option does not write anything to disk or your hard drive, it merely goes through the motions to insure that all of the content and menus within the DVD project are correctly prepared and defined.

### ▶ Volume Name input

Enter here a name for the DVD volume that will appear when placed in a computer drive. A standalone DVD player just ignores this.

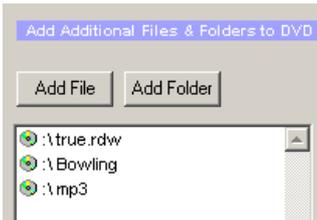
### ▶ Create Image checkbox

You can choose to have DVD-lab create a large file on your hard drive which is an the image of a DVD disc instead of burning. The result will be one big IMG file. That IMG file can be used with a number of third party DVD recording software to replicate a DVD disc from this image file, as many times as you like, whenever you like. Some software will look for a ISO file name extension, if so, just rename the file to a .ISO extension. This method has the advantage of speed as the DVD image is all prepared on your hard drive, it is then a just matter of how fast your DVD burner drive will burn that image.

### ▶ Hybrid DVD Writing button

You can add additional files and folders to the DVD master disc with the Hybrid DVD Writing option. What this option will do is setup an alternate filesystem on the DVD master disc which is called an ISO filesystem. The ISO format is what a standard CD uses while the DVD video is in UDF/ISO. This is perfectly DVD "legal" as the DVD player doesn't know or care about this ISO filesystem's contents, it just looks for a UDF filesystem.

It doesn't matter at all what the content or nature of these files are. They are just files, not Windows or Mac or Linux files, just files. As they are recorded into the ISO file system domain, they are available on any computer with a DVD drive. This offers the DVD-lab Author some creative options for bonus content that would be available to a computer user on any O/S that supports a DVD drive.



For example, you can create an autorun project in Multimedia Builder and record it to DVD as an extra feature when used on PC. HTML based content may be placed here as well, be sure to indicate to your computer users where to find your HTML starting page (ex: index.html).

 **Note:** The space used by the Hybrid DVD Writing option counts in the entire Project space value. You only get so much space on a DVD (4.7G), this option uses part of that. Do the math to be sure you have room for this extra area.

#### **Write button**

As expected, click this button to start the DVD writing (burn) process.

 **Note:** It is not recommended to do any work on the computer during DVD writing. Things like reading/writing to hard-drive may easily ruin your DVD-R. Try to let the burning process be the only thing your computer is running until it is completed.

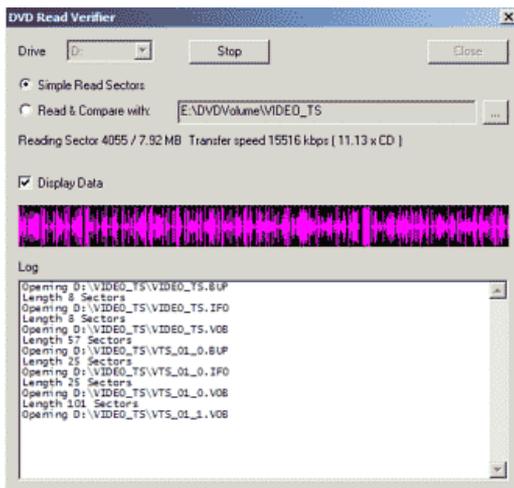
---

**Congratulations** – now it is up to you to enjoy the DVD.

## Verify DVD

Menu: *Project – Verify Burn DVD*

When you are done recording the DVD, you can use this tool to verify the burned data.



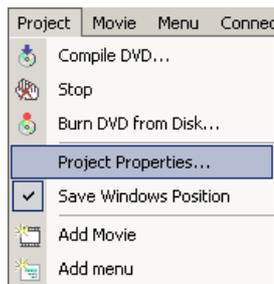
**Simple Read Sectors** – this is a simple way to test any DVD. Each sector will be tested and you will see a visual representation of the data being transmitted from the DVD. This will assure you that all data can be read.

**Read & Compare** – a more advanced verification where the written sectors will be compared with the original Project on your hard-drive. This will assure you that all data can be read and they are same as the original data.

## Project and General Properties

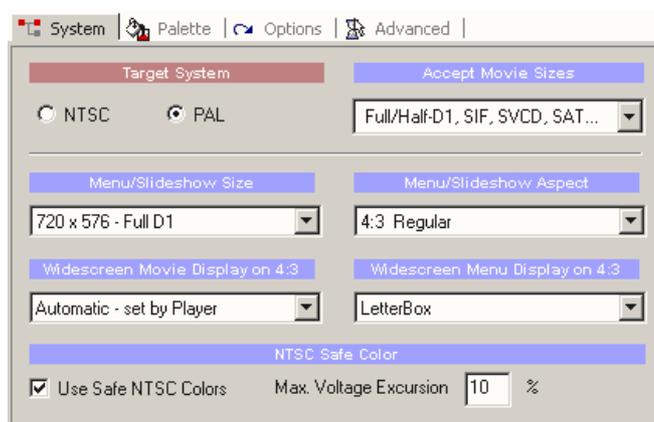
Menu: *Project – Project Properties*

Here you can set Project, Palette and General Properties



### ▶ System properties

These are project properties setting for the DVD System:



### Target system

NTSC or PAL. Select the system you want to create the DVD for. This setting will be remembered for all future sessions.

### Accept Movie Sizes

DVD-lab allows you to add any DVD acceptable NTSC/PAL MPEG-2 and MPEG-1 files. It also allows you to add MPEG files with non-DVD frame sizes for special purposes.

The Accept Movie Sizes option is here to more define the area of DVD specifications and compatibility that you can use.



The items in the 'Accept Movie sizes' towards bottom will put more restrictions to the files you can import. For example if you choose *Strictly Full-D1*, only 720x480 or 720x576 will be accepted and all other frame sizes will throw error message during importing.

Here is a list of normally accepted MPEG1/MPEG2 files by DVD-lab:

	NTSC	PAL	Comment
<b>MPEG-2</b>			
Full-D1	720x480	720x576	Best frame size

Full-D1 (broadcast)	704x480	704x576	
Half-D1	352x480	352x576	(1)
SIF	352x240	352x288	(1)
SVCD	480x480	480x576	(2)
SAT	544x480	544x576	(2)
<b>MPEG-1</b>			
VCD	352x240	352x288	(3)

- (1) Some player may have trouble to display subtitles
- (2) Out of DVD-specs. It may play on some DVD players but it will not play others
- (3) Very low quality

**Menu/Slideshow Size**

This is setting for the target Menu/Slideshow size.

The Menu/Slideshow size will affect only the **creation of menus and slideshows** and has nothing to do with movies you can add to DVD.



The far most common setting is to have menus always **Full D1** (even if you have Half D1 videos). However a few DVD players may be confused playing such discs so in this case, you can set the Menu/Slideshow Size to the same size as the movies. Most of the DVD players will be able to play this fine, but a **small misalignment** of background and subpicture in menus may be produced in some players.



**Image 1** – the correct alignment on **Full-D1** menu. **Image 2** – Few players may show a misalignment if the Menu is **not Full D1**. The misalignment is most likely due to the poor scaling algorithm in the DVD player. Some cheaper brands may have such a flaw.

▶ **Always the best is to use Full D1 menu size** regardless of the movie frame size – such discs should perform the best

If you are very concerned about playability on all possible systems you can always put non-standard or non-Full D1 movies into separate VTS and access them only through standard Full-D1 VMG menu.

**Non-Standard Sizes.**

There are sizes which are not in DVD specs, but many DVD players will play them. (Sadly, sometimes they will be played better than some supported modes)

DVD-lab will allow you to add these files. In a questionable case it will produce a warning and let you to continue. That means you can for example add a SVCD movie (480x480) to a DVD. You can have about 3 SVCD movie on one DVD-R. (Normally SVCD should be recorded on CD – hence its name Super-Video-CD). Many players supporting SVCD will play such DVD just fine and they will not care that it has been recorded on DVD. Also some players which explicitly say they don't support SVCD may play it.

▶ **For best compatibility across many players use only Full-D1 MPEG-2 movies.** Never even consider non-standard size for a release that goes to many people

**Menu Aspect**

Menus can be 4:3 or 16:9, please read more in the [menu](#) section.

**Widescreen Movie Display on 4:3**

This is a flag telling your DVD player how to play 16:9 movies on 4:3 TV. It doesn't affect widescreen TV's nor it affect the 4:3 movies on either TV.

See [Aspect Ratio](#) chapter about the 16:9 movies.

You can leave it on Automatic – the player will use its internal setting to display the movie as Letterboxed or Pan&Scan. Other common setting is to use Letterbox (this will add the black bars on top and bottom on 4:3 TV)

### Widescreen Menu Display on 4:3

This will tell your DVD player how to display widescreen menus on 4:3 TV. You can choose either Letterbox or Pan & Scan.

### Default DVD Volume Name

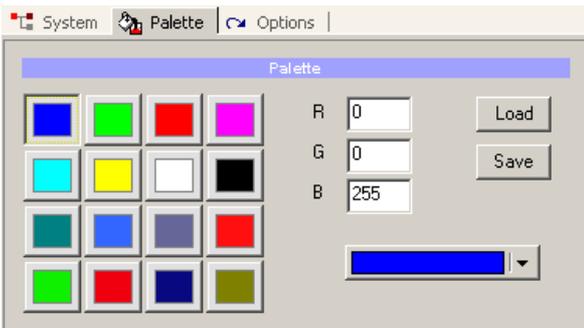
This is a default DVD name which will be recorder to DVD during burning session. You can also change it from the Record Dialog prior the writing.

### NTSC Safe Color

Process the menus through the NTSC Safe color filter prior compiling. It doesn't affect PAL target systems. Read more about the [NTSC safe colors](#) in the NTSC Overheat. You should leave it selected.

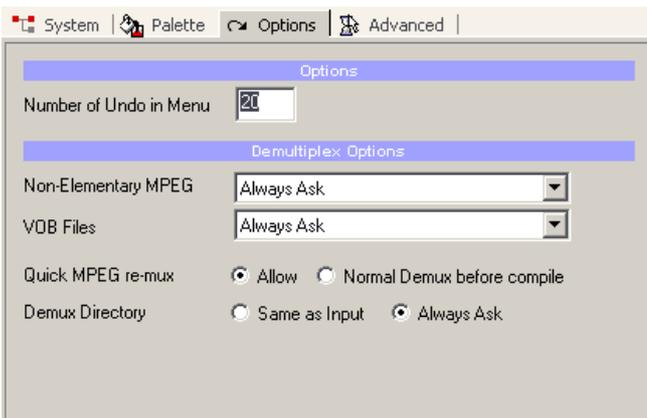
### ► Palette

The DVD allows you to have palette of 16 colors from which you can choose colors for menu subtitle highlighting.



This is the place where you define the palette. Read more in the [Color Map](#) section of Menu. The new Color Palette will be available for future sessions.

### ► Options



Here you can set other DVD-lab options such as Number of Undo for menus, Demultiplex options and Errors & Warnings.

**Non-Elementary MPEG/ VOB Files** – what to do if you import [System MPEG or VOB files](#) – Ask, Demultiplex or use without demuxing.

**Quick MPEG re-mux** – This sets how the multiplexed MPEG will be used during compilation. If you use input MPEG files without demultiplexing then:

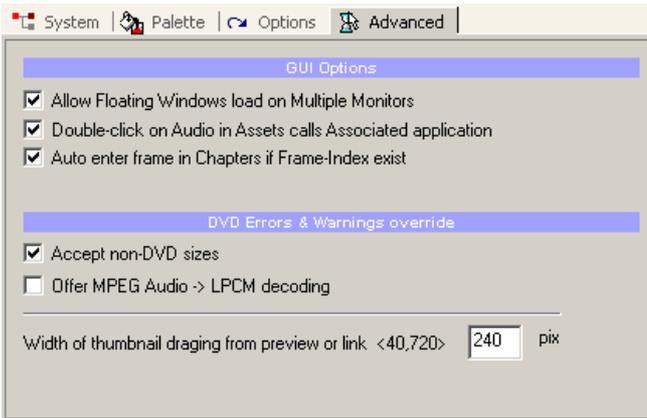
- if set to **Allow**, the files will be re-multiplexed in parallel mode (on-the-fly) during compile to DVD (faster, uses less space)
- if set here **Normal Demux before compile**, the files will be normally demultiplexed during the pre-compile operation. (slower, more space, more safe)

The default is set to **Allow** (re-muxing on-the-fly) which in a case when an MPEG has a different mux ratio, may cause audio loss (the compile is not getting audio data fast enough). As an option, you can then switch this to perform in a "Normal" mode, that means demux the files quietly first, then use them as elementary streams in further compiles.

If you use MPEG encoders which are DVD compatible (MainConcept, TMPGEnc etc.) then the **Allow** option should work fine. If the MPEG is questionable, then either demux it first or use the Normal mode.

**Demux Directory** – What directory to use for demuxed files – the same or ask for new.

### ▶ Advanced



#### GUI Options:

**Allow Floating Windows load on Multiple Monitors:** – If you have multiple monitors then this option will let you to remember window position also on the secondary monitors. If unchecked, all floating windows will be moved to the first monitor next time you load the software.

**Double-Click on audio assets calls Associated application:** When you double-click on an audio file in Assets, it will be played by running the associated application for that file type such as WinAmp (default). If unchecked, the audio will be played through an MCI call to Windows Media Player. While this is faster option, the WM MCI are known to cause problems which may even lead to crash.

#### DVD Errors and Warnings

**Accept non-DVD sizes** – If the frame size of the video is not in DVD standard the software will issue only a warning but will let you to continue.

**Offer MPEG ->LPCM encoding** – If imported MPEG Audio files are encountered, DVD-lab will offer you to transcode it to LPCM.

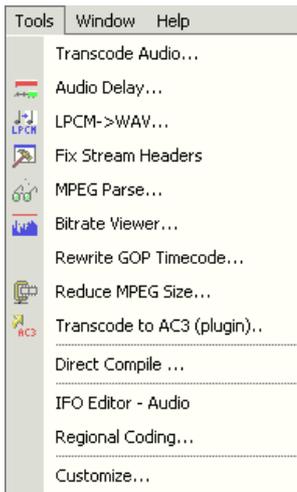
#### Width of thumbnail dragging from preview or link <40,720>

Width of the still image created in menu that you drag from preview or from Properties.

## Tools

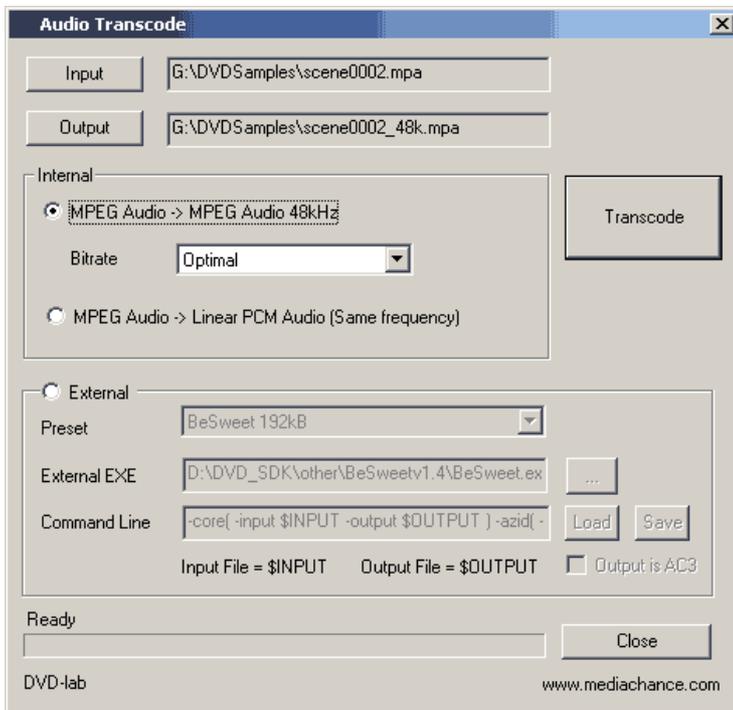
Menu: *Tools*

DVD-lab provides a number useful utilities and tools available in this menu.



### ▶ Transcode Audio

DVD-lab provide a tools to transcode audio that is not DVD-compliant into a DVD-compliant format, either by its internal engine or utilizing an using external program.



### MPEG Audio -> MPEG Audio48kHz

DVD supports MPEG audio at a sampling rate of 48kHz. You may encounter audio files that are 44.1kHz or 32kHz or other specs. Audio files in these formats are Non-DVD compliant. If you add such a file to Assets, you will get an Error message and an offer to run this transcode process. You can transcode the MPEG audio directly within DVD-lab to a 48kHz sampling rate, making it DVD compliant. This works very simply, load the original file via the Input button and click Transcode. The resulting file is added into the same folder it was found in, with "48k" appended to the original file name.

A custom selection of the Bitrate parameter ranges from 192K bits/sec to 448K bits/sec defaulting to Optimal. More bits equals

better sound and a bigger file.

### MPEG Audio to Linear PCM Audio (Same frequency)

This will decode the MPEG audio to PCM (wav) format. The frequency will be not changed, so it makes sense only if the MPEG audio is already 48kHz. We are just changing the file format here. The resulting file is added into the same folder it was found in, as the original file name with the extension ".wav".

### External

You can call external programs to transcode audio, for example to the popular Dolby Digital AC3 compression format. Within the External section as shown above, first, click the radio button for External. Next, set the location of the executable (\*.exe) file and the command line needed to run it. In the command line, specify the tags **\$INPUT** and **\$OUTPUT** in place of where the input and output file names would be placed. DVD-lab will replace those files name tags with the working file names, when this process is executed.

### AC3 encoding

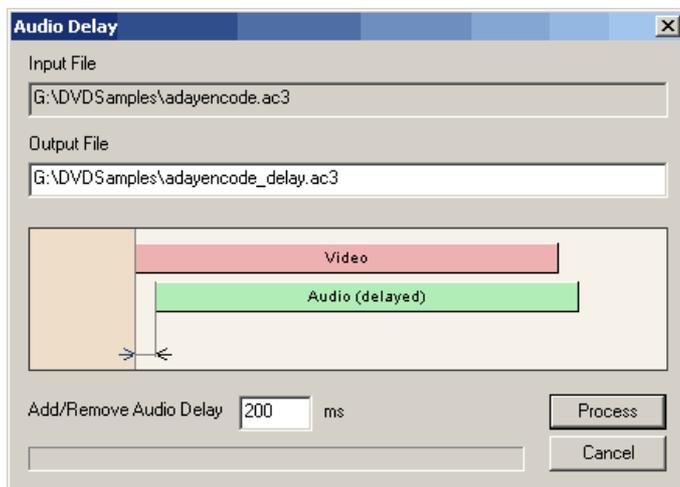
Some external tools (such as SoftCode, Nuendo, BeSweet etc) allow you to convert the audio to AC3 format. In this case, don't forget to include the **Output is AC3** flag:

Output is AC3

This will indicate that the output file will be properly named with an **ac3** extension.

 **Note:** AC3 encoders need to be certified and licensed by [Dolby Digital](#). DVD-lab and Mediachance highly endorse usage only of licensed encoders. Using unlicensed software may result in patent lawsuit from the owners of these patents. Also, if such software has not been certified by Dolby Digital it may create invalid or problematic AC3 steams.

### ▶ Audio Delay



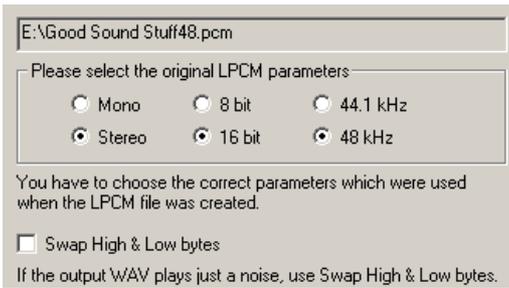
Audio Delay (AC3 only) can set a delay between the exact start time of the video and the audio. This is to match the sync between video and audio. In some cases, the elementary AC3 audio is encoded with a delay. This tool helps you to remove that delay by moving the audio in opposite direction. If there were a delay of 300 ms, then to correct this we will move the audio to -300 ms to be in perfect sync.

The tool will produce a new AC3 file with the newly added/removed delay so that the new audio file would start play at precisely 00:00 and be in sync with the video that starts at 00:00.

The only parameter is the delay in ms (milliseconds). It can be positive or negative.

### ▶ LPCM->WAV

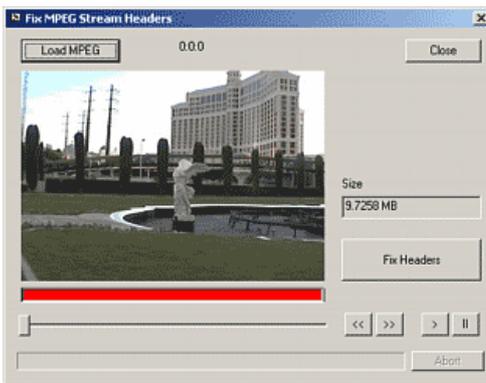
This tool converts a PCM file to WAV file. PCM files are audio data only. A PCM file has no embedded parameters, so you will have to know what specs of the PCM file are to start with. Set those parameters using the radio buttons for Mono/Stereo, 8/16 bit, 44.1/48 kHz.



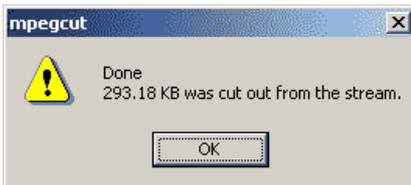
A 16-bit RAW file can be encoded in Motorola or Intel byte order. If you create a WAV file which just produces noise, then you have the wrong byte order. Try converting the original file again with PCM to WAV with the **Swap High & Low bytes** box checked.

### ► Fix Stream Headers

If you were to record content from TV with a MPEG capture card, it may happen that DVD-lab doesn't like that file. The file's header may be wrong or get corrupted and will not start within DVD-lab. Almost no software will accept such a file, you will be may not even be able to transcode it with an MPEG transcoders such as TMPGenc.



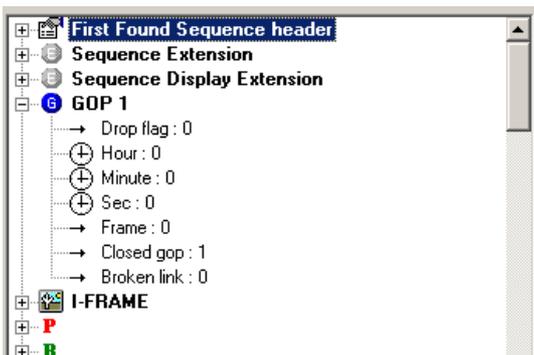
DVD-lab can fix this by cutting a part of the file. First, load the MPEG file with the **Load MPEG** button, then click **Fix Headers**. If there is something to fix, you will be notified and prompted to save new file.



The new file will usually not make any visible sync problems, since it is often cut by just few hundred kbytes.

### ► MPEG Parse

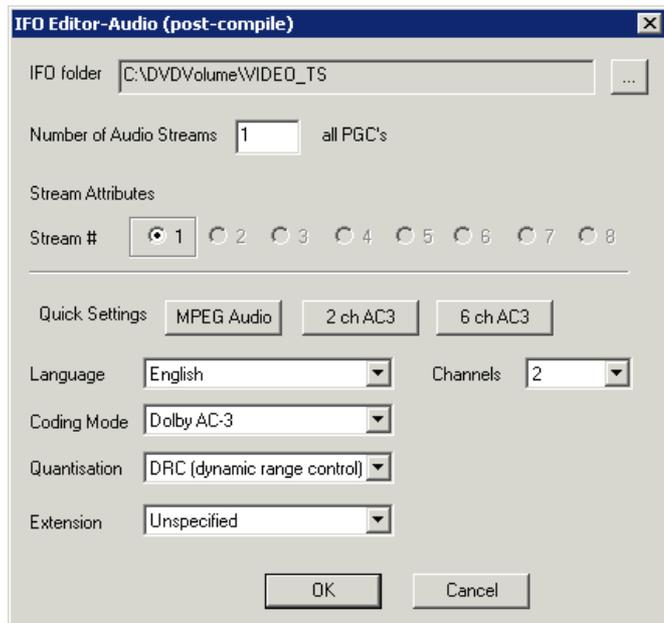
This tool works only on elementary video stream files. It will parse the file and show the headers, GOP and frames.



This is a great way to debug an invalid MPEG stream, but it requires knowledge about the complex MPEG file structure. You can also save the parsed data to a file (Save Description) and then later load the data into a second window (Compare with Description) to compare two MPEG streams.

### ► IFO–Edit Audio

This advanced tool was added to optionally adjust post–compile audio parameters in IFO files.



 **Note:** This will change the information about audio written in already created IFO files. You can change the number of audio streams and change the audio properties of each stream.

### ► Bitrate Viewer

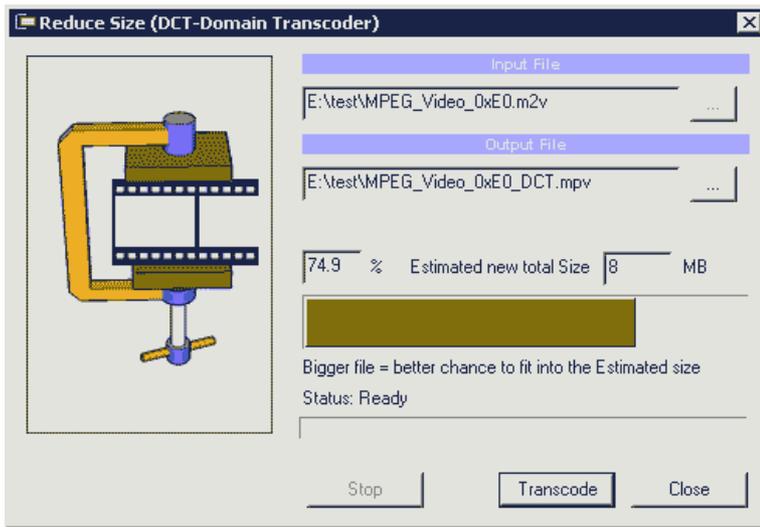
Runs Bitrate Viewer on selected movie file in asset. The tool is good to examine if the file doesn't go over the DVD maximum bitrate specifications.

### ► Rewrite GOP timecodes

This tool will rewrite a timecodes in GOP of the video file based on actual video frame count. The GOP timecode is used for displaying timeline over the movie and for placing correct chapter points (in fast GOP mode). Wrong timecode may cause problems with chapterpoints (wrong time or doesn't work at all). An alternative method to fixing GOP timecode is to use [Frame Indexing](#).

### ► Reduce MPEG size

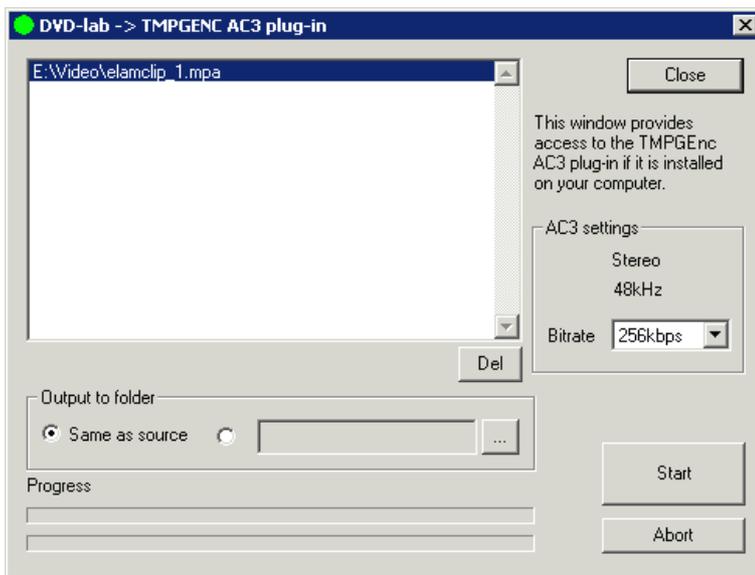
This will reduce bitrate of the mpeg file and its size using DCT–Domain Transcoder. DCT is not a full file transcoding, it reuses the existing Motion vectors and therefore the recompression is extremely fast. The reasonable resizing is up to 70%. The DCT transcoder will try to resize as much as possible to the desired new size, however this may not be actually realistic for sizes below 50% of original size, or for short movies. It works on elementary streams only.



DCT-Transcoder should be used only in extreme cases when you need quickly reduce file size/bitrate. A full mpeg transcoding will produce better result.

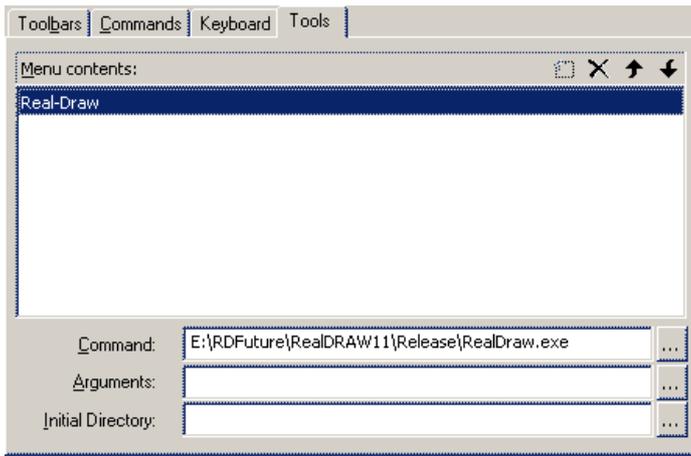
► **Transcode to AC3 (plugin)**

This is interface to TMPGENC AC3 plugin. You have to have mpa or wav files in Video & Audio bin i order for this to run and you need TMPGENC AC3 plug-in installed. (It doesn't come installed with DVD-lab)



► **Customize tools**

DVD-lab allows you to customize it's own Tool menu, by adding menu options for running other software that you might like to use while working with DVD-lab. Using the Tools tab shown here, you can create a DVD-lab menu selection for your own software, available in the Tools menu for quick launch.



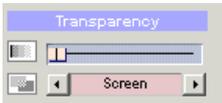
Here, we added a menu option for Real-DRAW Pro. This option will now be available within the DVD-lab Menu, under the menu Tools for our quick access.



## Appendix – Blend Modes

*Menu Editor (Color tab, Transparency section)*

The Blend Mode defines how an object is combined with other objects, such as the background image underneath it. Blending modes are a useful tool for image/object compositing in the hands of an experienced DVD Author and a fun tool for artistic experimentation.



*The Transparency Mix Control*

### Normal



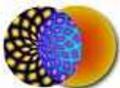
The default mode and the most often used blend mode. It simply blends the objects with a transparency value set by the Transparency Mix.

### Multiply



Multiplies the background and the object color. The resulting color is always darker. Multiplying any color with black produces black. Multiplying any color with white leaves the color unchanged. The effect is similar to looking at two overlapping slides.

### Difference



Subtracts either the Object color from the background or the background color from the Object color, depending on which is brighter.

### Screen



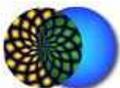
Multiplies the inverse of the objects and background. The resulting color is always lighter than the background or object. Screening with black leaves the color unchanged. Screening with white produces white. The effect is similar to projecting two slides on the same screen.

### Overlay



Combines Multiply and Screen modes – depending on the background color. The background color is not replaced, but is mixed with the Object color.

### Darken



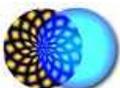
The resulting color is background or Object – whichever is darker.

### Lighten



The resulting color is background or Object – whichever is lighter.

### Hard Light



Multiplies or screens the colors, depending on the Object color. That's the difference from Overlay. If the Object color is lighter than 50% gray, the image is lightened (screened). If the Object color is darker than 50% gray, the image is darkened (multiplied).

### Soft Light



**If Lighter**

Darkens or lightens the colors, depending on the Object color. The effect is similar to shining a diffused light on the image.  
If the Object color is lighter than 50% gray, the image is lightened and if the Object color is darker than 50% gray, the image is darkened.



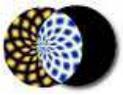
**If Darker**

The Object Color will appear on the areas where the Object is lighter than the Background.



**Negative**

The Object will appear on the areas where the Object is darker than the background .



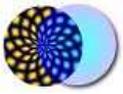
**Tint**

Creates a negative of the background.



**Colorize**

The object is more visible on a dark background than on bright background. It will disappear on white!



It will take the color from the object but will use the intensity from the background. The background under the object will appear colorized by the color of the object.

## Short DVD History

During the early 1990s there were two high density optical storage standards in development:

- Multimedia Compact Disc (MMCD) backed by Philips and Sony
- Super Disc (SD) supported by 8 major consumer electronics giants including Toshiba, Matsushita and Time–Warner.

IBM led an effort to unite the various companies behind a single standard to avoid the format war between VHS and Betamax

DVD format was announced in September of 1995. The official DVD specification is maintained by the DVD Forum, formerly the DVD Consortium

### Founding members

Hitachi  
Matsushita Electric Industrial Co  
Mitsubishi Electric Corporation  
Pioneer  
Royal Philips  
Sony  
Thomson (RCA, Grass Valley, Technicolor)  
Time Warner  
Toshiba  
Victor Company of Japan (JVC)

Today, membership includes more than 230 companies.