A DVD Menu Design Primer

Introduction

While Cubist Post & Effects offers complete Static and Motion Menu Design for DVD, we realize that some of our design savvy clients and partners may be interested in a more hands-on approach. We have created this DVD Menu Primer for your use.

A high-level of professional design ability in one or more of the following areas is assumed: Interactive CD-ROM, Web Design, and/or Broadcast Graphics. The user of this guide should be comfortable using industry standard design software including Adobe PhotoShop, Illustrator, and AfterEffects.

This primer assumes that the DVD created will be NTSC (Domestic Distribution). There are additional design guidelines for International Standards (PAL and SECAM) that are addressed in an addendum to this guide.

The topics covered in this guide include:

1. Television Display Guidelines
2. DVD Menu Concepts
3. Subpicture Guidelines
4. Creating a DVD Menu (4:3 Aspect)
5. Creating a DVD Subpicture (4:3 Aspect)
6. Creating a DVD Menu (16:9 Aspect)
7. Creating a DVD Subpicture (16:9 Aspect)
8. Creating a Motion DVD Menu
9. Input Formats
10. Naming Conventions

Television Display Guidelines

The following guidelines will help insure that your design will look as planned when viewed on a television monitor. All DVD menus, even if the primary playback will be on a computer, must follow these rules. The best way to test a menu is to feed it through a scan converter and view it on a television monitor.

Colors

- Avoid over-saturated colors because they can bleed and flicker on a TV monitor.
- Photoshop offers a NTSC filter that may be used, that will pull colors into an acceptable range.
- Do not let your colors go beyond the RGB value of 234. For example, the RGB value of 234,0,0 would appear as a true red on TV Color display.
- "Safe White" is the RGB value of 220,220,220
- "Safe Black" is the RGB value of 10,10,10.
- High contrast designs, having a very bright color against a very dark color, can cause flickering, as would very thin lines in your design.

Text

- Thin text will cause flicker and illegibility.
- Keep text above 16-18 pts
- Avoid serif fonts that have a strong difference in its thick areas and its thin areas.
- If you are going to use a serif face, try to keep it above 24 pts.
- Thin lines that are very close together will also cause a flicker, so it is recommended that a space is left between the letters. (It is best to keep ruled lines above 2pts).

Layout

- All readable text must stay within the NTSC title safe boundary in your design. This is approximately 20 percent of your screen size.
- Do not place important text close to the edge of your document because most monitors will not display all the way to the edge.
- To create a guide for your text, take the size of your working space, and scale it by 80 percent. For example, if your Photoshop document is 720x540, make a new layer and select "all" of the layer. Stroke the layer, and then scale it 80 percent. Use this layer as a guide and do not let the text go beyond it.

Square v. Rectangular Pixels

Although computer monitors and video monitors both display images using pixels, they are not quite the same.

- Computers monitors display in square pixels.
- Television monitors display in rectangular pixels.
- A graphic created on a computer with a square pixel display will look incorrect on a television monitor unless certain correction techniques are used. For instance, a circle that appears round on a computer display will look like an oval on a television monitor.
- In order to create a 4:3 NTSC DVD menu you must work in 720x540 and then resize the graphic to 720x480. You are essentially transforming a graphic created in square pixels to one that will display properly in rectangular pixels.

DVD Menu Concepts

A DVD Menu can be thought of as having two layers. The bottom layer that the designer creates can be millions of colors and essentially contains your full design. The top layer is called the subpicture or an overlay. Subpictures are a necessary element for a DVD to be interactive. They define the "selection" as well as an "action" state of a button on a menu. They are the DVD equivalent to the ubiquitous "mouse rollovers" in CD-ROM or Web design.

When a button is selected on a DVD using the remote control (or the mouse if viewing on a PC), it turns a different color or different opacity. This is the "selection" state of the button and it tells the viewer that it has been selected. When the enter button is pressed on the remote, the menu button will flash in another color. This is the "action" state of the button.

Subpicture Guidelines

- Subpictures need to be 2-bit, 4 color, non-anti-aliased files.
- Only four colors can be used in a subpicture. They are: pure white(R=255 G=255 B=255), pure black (R=0 G=0 B=0) pure red (R=255, G= 0, B=0), or pure blue(R=0 G=0 B=255).
- Pure white is reserved for the background color of your subpicture, so be sure to create a layer that is a fill of pure white in your Photoshop file, then use the other three colors for your Subpicture art.
- These RGB values can be mapped to a different color once the Subpicture file is inside of the authoring program. It is the designer's responsibility to inform what RGB colors are to be used for the two states of the button.

Note: the menu/sub-picture design, button routing, and requirements for more complex menus can add to the time needed for authoring production.

How to Create a DVD Menu (4:3 Aspect Ratio)

Design your menus within Adobe Photoshop, keeping artwork on separate layers. Since menus in your project will share certain button functioning, it is a good idea to keep artwork for that button on its own layer, so it can be copied between different Photoshop documents and keep the same positioning.

1. Create a new 720x540, 72 dpi document in Photoshop
2. After the design stage is complete, save out a flattened TIFF file
3. Re-open the 720x540 TIFF in Photoshop and go to IMAGE MENU and select IMAGE SIZE.
4. Make sure that the constrain proportions option is not clicked and then change the pixel dimensions to 720x480.
5. Then save this file. Please refer to the File Naming part of this document to see how to name your files.

How to Create a DVD Menu Subpicture (4:3 Aspect Ratio)

For example, let's say that your button is a simple rectangle, and you want your "selection" state to be a purple rule that goes around the outside of the box.

1. In the Photoshop file that has your menu artwork, create a new layer with your overlay artwork in it.
2. Turn off every layer except your artwork and another layer which is a fill of a pure white (RGB 255, 255, 255)
3. Save out a TIFF of your overlay.
4. Re-import this TIFF into Photoshop. Then, following the same directions as before, go under IMAGE/IMAGE SIZE, and with the "constrain proportions" box unchecked, change the pixel dimensions to be 720x480.
5. Change the file to Index (under MODE). Customize the palette to only include pure red, black, white and blue. Then save the file.
6. Once this TIFF file is in the authoring system, the purple that you want the overlay to be for the "selection" state can be specified, just supply us with the RGB value, as well as a color you want the action state to be.

How to Create a DVD Menu (16:9 Aspect Ratio)

The process for creating a menu for a 16:9 aspect ration follows the same steps as for a 3:4 menu but uses a different image size.

1. Create artwork in a 960x540 Photoshop file.
2. Save out a flattened tiff.
3. Re-open tiff in Photoshop, and change the image size to 720x480.
4. Subpictures for 16x9 menus will be saved in this same manner, remembering to change to Index mode before saving.

Motion Menus

DVD menus do not have to be still images. They can have video or animated graphics in them to add appeal and movement. Some of the most eye-catching menus use video to create the motion. We can accept your motion menu elements in the following formats:

1. Digital Betacam
2. Betacam SP
3. Uncompressed QuickTime (720x480 pixels)
4. Sequential D1 Frames

The following guidelines for naming files and sending media will help streamline the authoring of your DVD.

Input Formats

Cubist Post & Effects can receive removable media in the following formats:

- CD-ROM
- Jaz (1 or 2 GB)
- FireWire Hard Drive
- Zip (100 MB)
- Syquest 5 1/4" (44MB, 88MB, 200MB)
- 3.5" Floppy
- FTP File Transfer (can be arranged)

We prefer this media be in Macintosh format; however, if this is not possible we do accept PC formatted disks. Still menus and their accompanying overlay files should be saved in the TIFF format.

File Naming Conventions

The files should have a consistent naming convention. Each file name should also describe what the file is. The file name for the main menu of a DVD should have an underscore and the letters 'MM' to distinguish it as the main menu. The file names for other menus should contain a short description of the menu including the word 'menu' in the name. All overlays should be named the same as its coinciding menu with an underscore and the letters 'OVR' appended at the end that distinguishes it as an overlay.

File Naming Example:

Description of File	File Name (MAX 31 characters)
Main Menu for Cubist Post & Effects Demo	CPE_DEMO_MM.tif
Overlay for Main Menu	CPE_DEMO_MM_OVR.tif
16x9 Submenu for Cubist Post & Effects Demo	CPE_DEMO_16x9menu.tif
Overlay for 16x9 Submenu	CPE_DEMO_16x9menu_OVR.tif