

DVD Authoring On Linux

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Tools of the Trade

- A DV camcorder and lots of disk space
- IEEE1394 Support (aka Firewire, iLink, DVLink)
- Kino
- Gimp
- mjpegTools
 - jpegtopnm, ppmtoy4m, mpeg2enc, mplex, spmux
- dvdauthor
- mkisofs and dvdrecord

Capturing and Editing

- Kernel modules
 - ieee1394, ohci1394 – transport and hardware
 - raw1394 – camera control
 - dv1394 – DV in/out
- Use Kino to capture and edit
- Export from Kino as:
 - MPEG file format 8 (DVD)
 - mp2enc option -r 48000
 - mpeg2enc option -b 4000-10000

DVD Menu Structure

- Titleset
 - Highest level menu on disc, all discs have at least 1
 - Files for a titleset are VTS_nn*
- Title
 - Single movie
- Chapter
 - Defined during authoring process
 - One follows on from the next within a movie

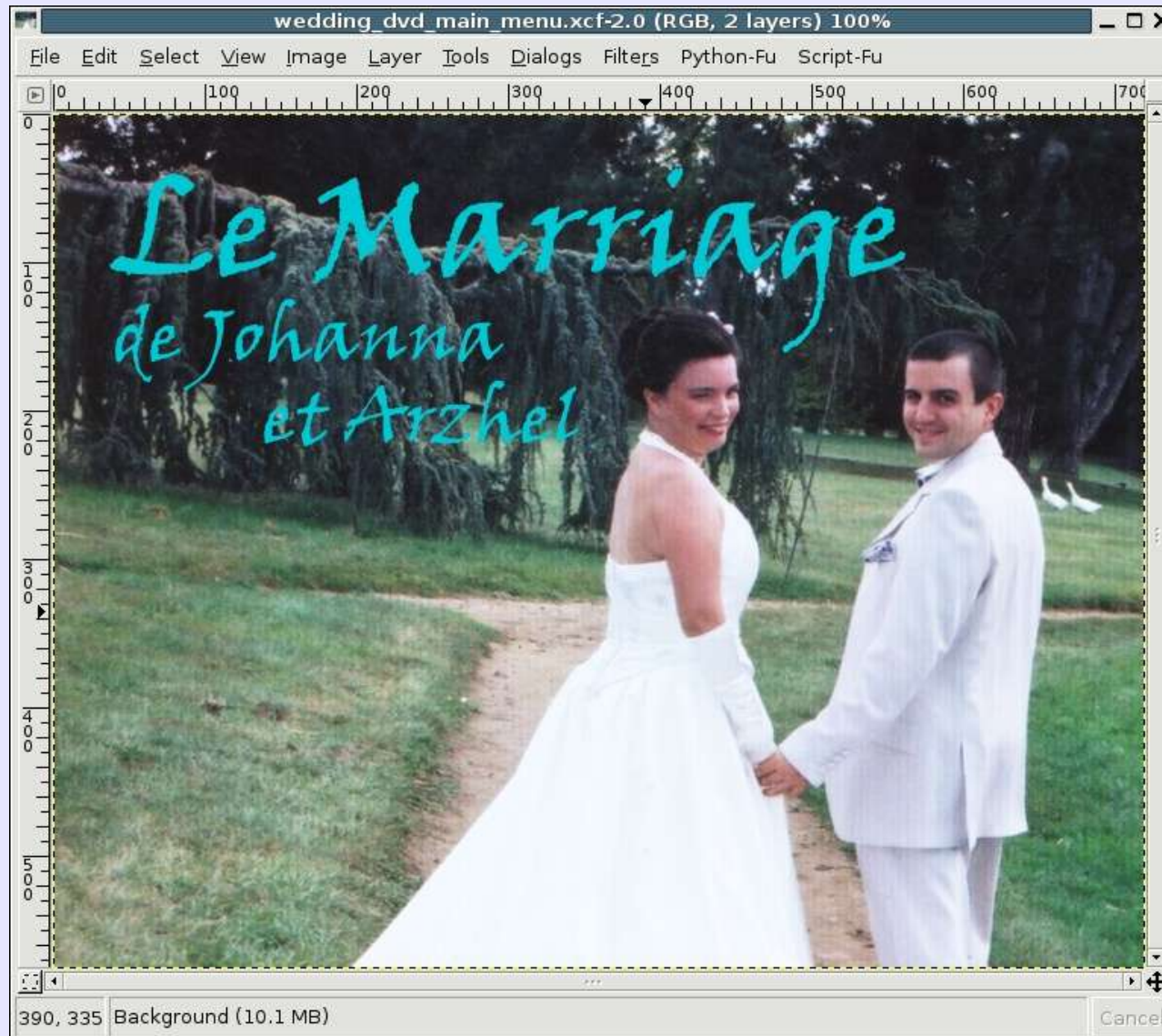
DVD Menu Structure

- Whole disk (VMGM) or titleset (VTSM)
- VMGM menus can jump to:
 - Another VMGM menu
 - The first VTSM of a titleset
 - The beginning of a titleset
- VTSM menus can jump to:
 - A different VTSM within the same titleset
 - The start of a title or chapter within the titleset
 - The first VMGM on the disc

Creating the Menus

- Menus are a movie with a soundtrack
 - Might only be one frame, or a single frame repeated
 - Soundtrack might be silent
 - DVD PAL resolution is 720x576 both 4:3 and 16:9
- Create a background JPEG
- Create button PNGs for 3 states
 - Normal
 - Selected
 - Active

Create the Menu Using Gimp



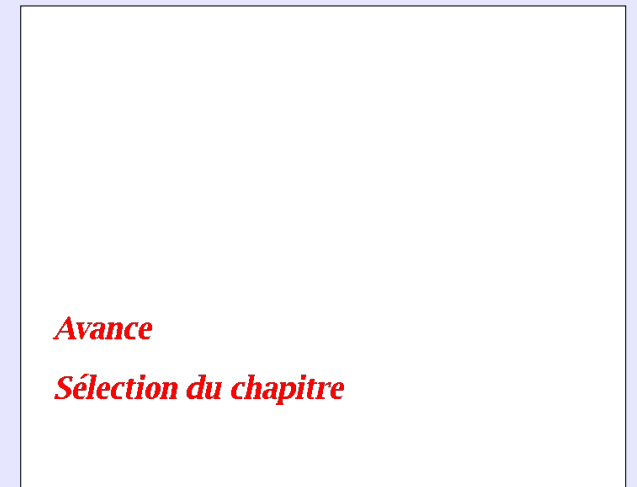
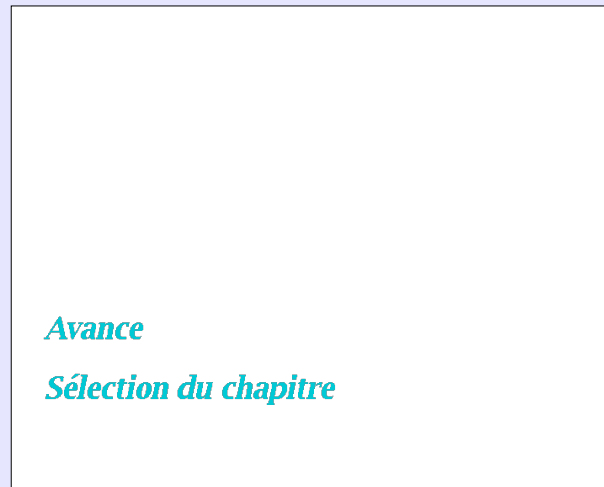
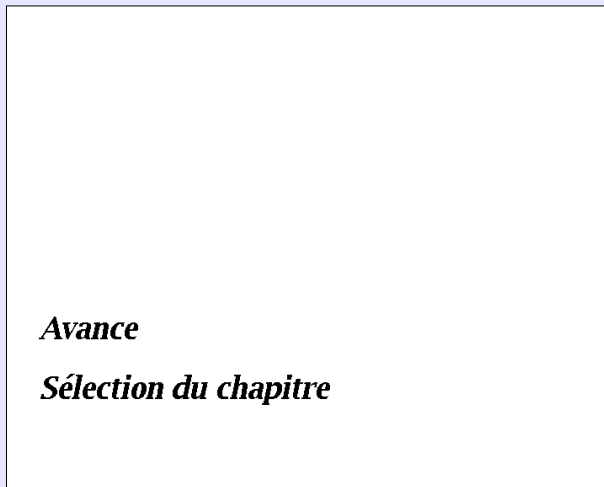
Add The Buttons



Export the Background



Button Images



- Export 3 separate PNG files
- Indexed colour
- Maximum 4 palette entries, including transparent

Building the Menu

- Create an XML config file for spumux:

```
<subpictures>
  <stream>
    <spu
      force="yes"
      start="00:00:00.00"
      image="normal_menu.png"
      select="selected_menu.png"
      highlight="active_menu.png"
      autooutline="infer"
      outlinewidth="6"
      autoorder="rows">
    </spu>
  </stream>
</subpictures>
```

Combine All The Files

- Use `jpegtopnm`, `pnmtoy4m` and `mpeg2enc` to create the background movie file:

```
jpegtopnm background_image.jpg | pnmtoy4m -F25:1 -n 1  
-I t -A 59:54 -L | mpeg2enc -f 8 -n p -o  
menumovie.m2v
```

- Multiplex in the audio:

```
mplex -f 8 -o menumovie_with_sound.mp2 menumovie.m2v  
menusound.mp2
```

- Use `jpegtopnm`, `pnmtoy4m` and `mpeg2enc` to create the background movie file:

```
spumux -v 2 menu_config.xml < menumovie_with_sound.mp2  
> finished_menu.mpg
```

dvdauthor Configuration File

- XML Format
- Contained within outer-level tags:

```
<dvdauthor dest="/output/directory/">
```

```
  (menu entry)
```

```
  (menu entry)
```

```
</dvdauthor>
```

dvdauthor Configuration File

- VMGM (disc) menu:

```
<vmgm>  
  <menus>  
    <video format="pal"></video>  
    <pgc entry="title">  
      <vob file="mainmenu.mpg">  
        <button>jump title 1 chapter 1;</button>  
        <button>jump titleset 1 menu;</button>  
      </pgc>  
    </menus>  
</vmgm>
```

dvdauthor Configuration File

- VTSM (titleset) menu:

```
<titleset>
  <menus>
    <pgc entry="root">
      <vob file="titleset_menu.mpg"></vob>
      <button>jump title 1 chapter 1;</button>
      <button>jump title 1 chapter 2;</button>
      ...
      <button>jump vmgm menu;</button>
    </pgc>
  </menus>
  <titles>
    <pgc>
      <vob file="title1_chapter1.mpg"></vob>
      <vob file="title2_chapter2.mpg"></vob>
      ...
      <post>call vmgm menu;</post>
    </pgc>
  </titles>
</titleset>
```


Authoring and Burning

- Run dvdauthor to build the files:

- `dvdauthor -x config_file.xml`

- Test the disc:

- `xine /output/directory`

- Burn the disc to DVD+R or DVD-R:

- `growisofs -Z /dev/scd0 -V VOLNAME -dvd-video
/output/directory`

or

- `mkisofs -o /tmp/image.iso -dvd-video
/output/directory`

- `dvdrecord-v dev=0,1,0 -useinfo`

- `driveropts=burnfree -pad -dao /tmp/image.iso`