

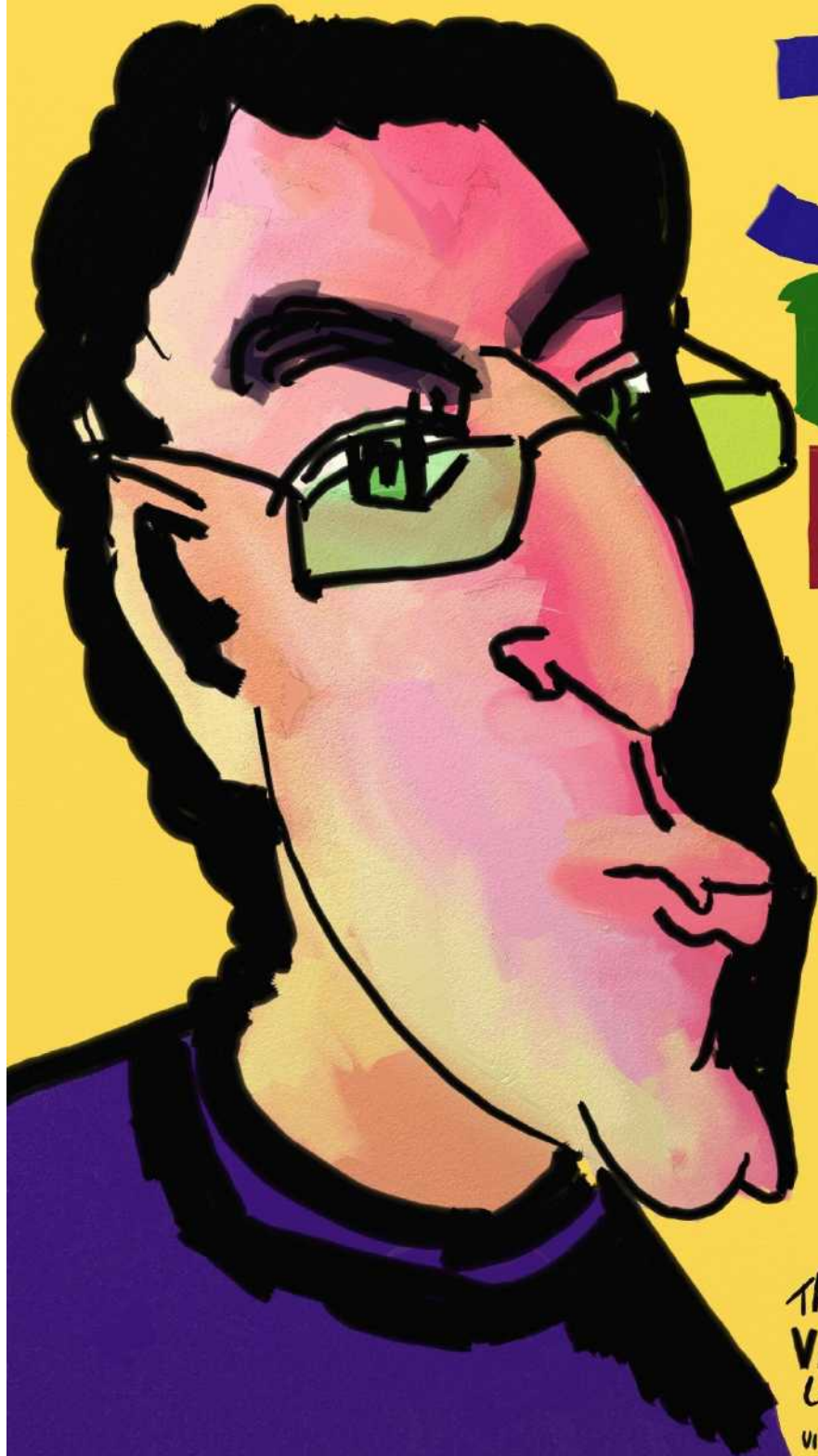
VideoLAN



VideoLAN & VLC

Jean-Baptiste Kempf

jeudi 15 janvier 2015



JEAN BAPTISTE- KEMPF •VLC•

I'M EXCITED TO
ANNOUNCE THE
RELEASE OF
VLC 1.0!

The world's most downloaded video player:
VLC: www.videolan.org/vlc
(free and open source)



VideoLAN.org



Ecole Centrale Paris

VIA Centrale Réseaux

- › Campus student association
- › Internet acces through RENATER
- › Token Ring

Network Upgrade

- › How to pay for our new network?
- › How to justify the needs for a faster network?
- › 1995 : let's do video streaming!

Early history

1995 – 96 first project

- › 2 years to complete

1998 project reboot

- › Open Source
- › Modularity
- › Cross-Platform
- › Network oriented
- › Student project

2001 License Change

- › ECP headmaster Agreement
- › GPL v2 (*or later*)

VideoLAN Projects

VideoLan Client, VLC media player, VLC

VideoLan Server, VLS (*dead*)

VLCS (*dead*)

libdvdcss (DVD CSS decryption)

libdts, libdca (DTS decoding)

x264 (H.264 encoding)

libdvbpsi (TS files management)

libdvdplay (*dead*)

libdvbcsa (dvd encryption decoding)

VLMA (VLC automation)

VLC Skin designer

libbluray, libaacs (BluRay playback)

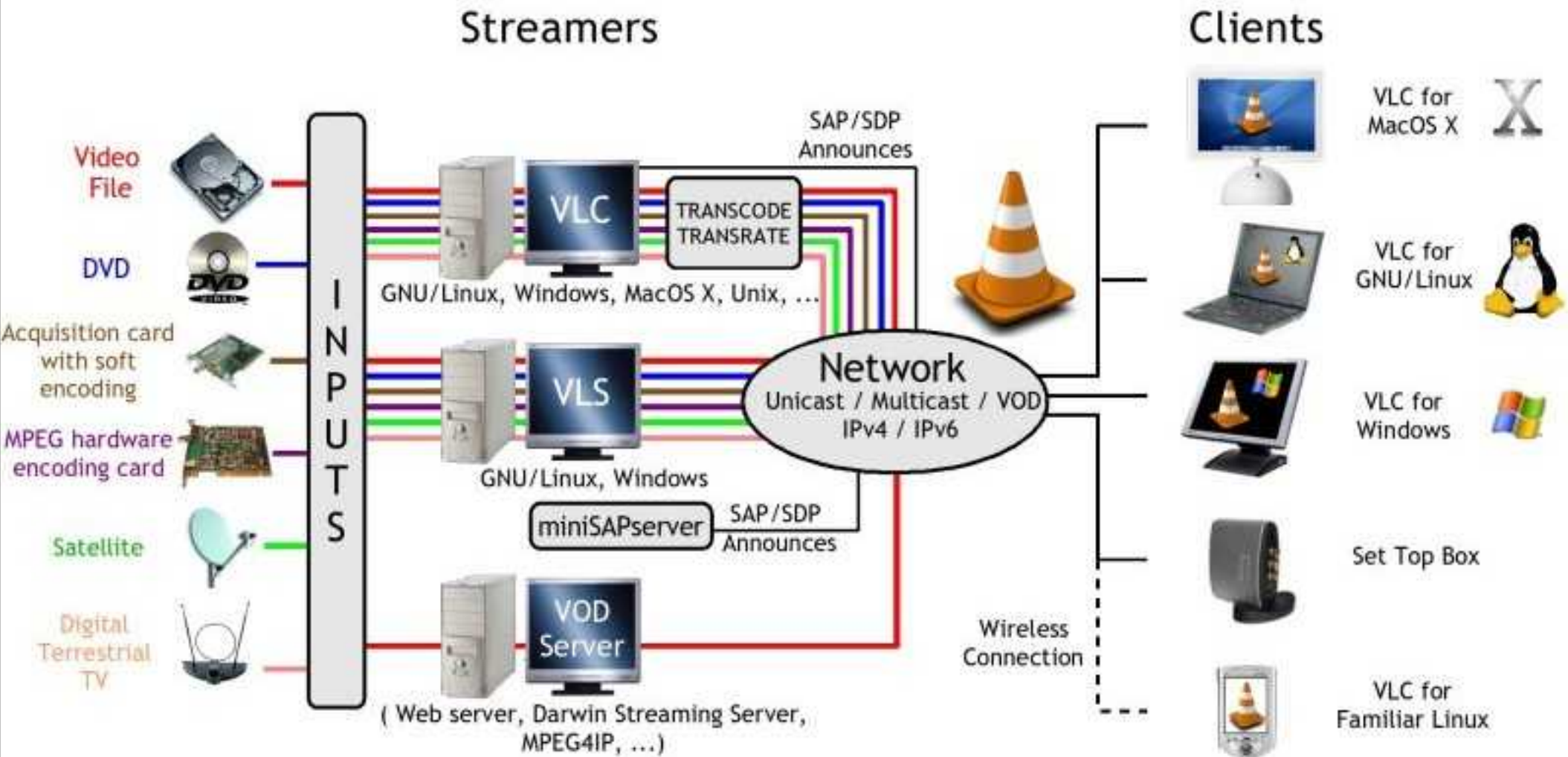
DVBlast, Multicat (DVB streaming solution)

VLME (Video editor)

x262, x265

Streaming Solution

VideoLAN Streaming Solution



Working with Multimedia

STUPIDITY At MAX



Stupidity level :
Over 9000

Rule #1

In multimedia, if there is a stupid way to do something, someone will do it (badly) and complain until it is standard and supported.

Rule #2

In multimedia, everyone thinks he understands everything...

But actually noone does...

Everything is broken

NIH syndrom

42 ways !

Container

- › All containers are between complete crap to somehow broken, except mp4 / mkv
- › The worst are AVI, FLV and Ogg

Codec

- › Many codecs have bad designs
- › Most codecs are badly encoded
- › Wrong containers
- › Too many codecs and profiles

Everything is broken 2

Metadata

- > Ogg, FLV
- > H.264 NAL SPS/PPS

Subtitles

- > WebVTT
- > Line-21 CC

Protocols

- > HTTP everywhere
- > WebSocket RTP

DRM

- > All layers

So many other fails...

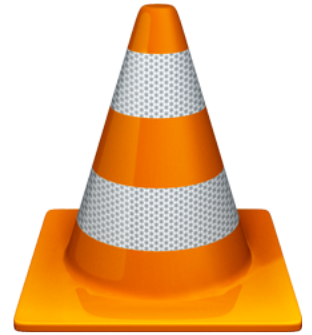
FLOSS and multimedia

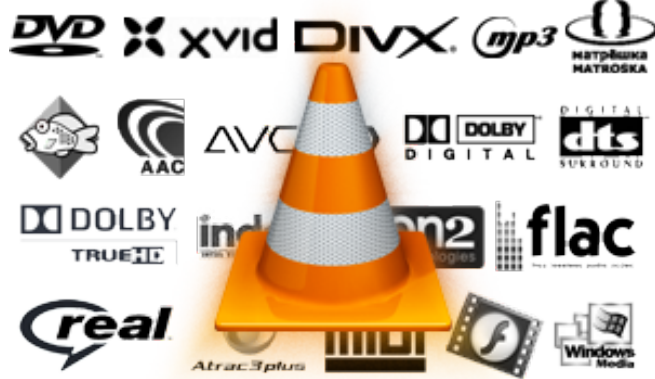
FLOSS in multimedia

- Widely used in some domains
- Large functional domains

Numerous projets, but...

- USA...
- A lot are abandonned
- Easy to use...
- Professionnal and broacast





VLC

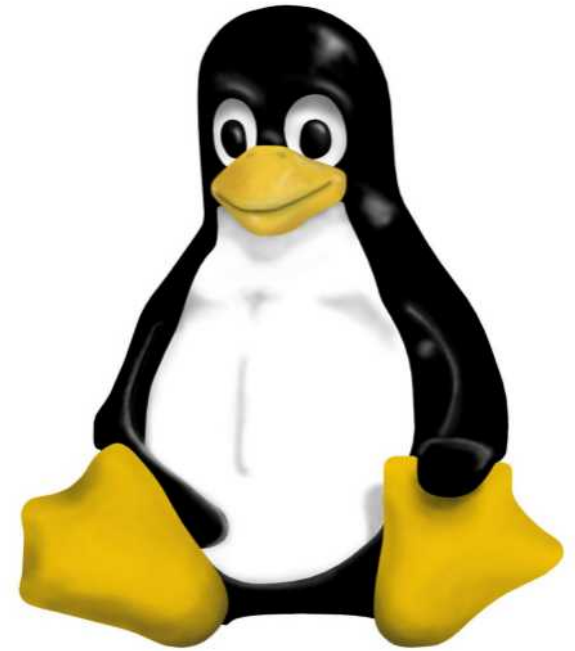
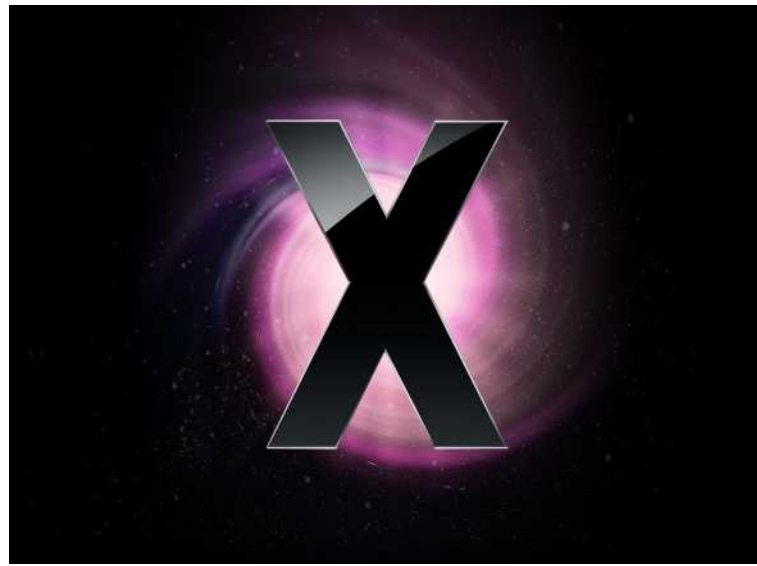
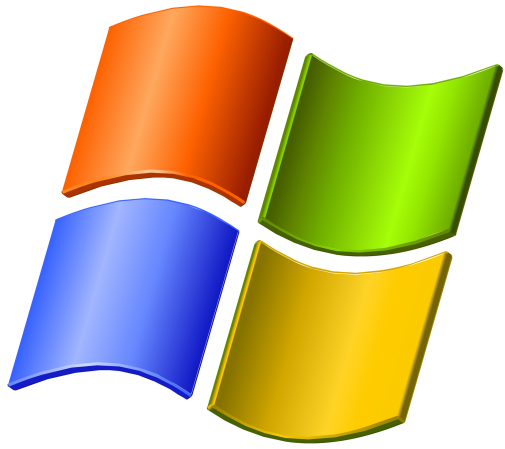


web-m

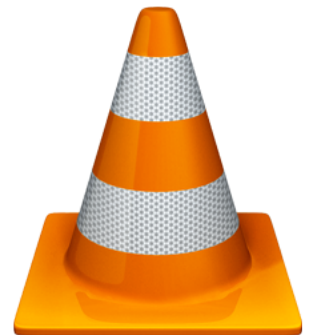


AVCHD





ANDROID



The background of the slide is a dense, repeating pattern of orange traffic cones. Each cone is mounted on a square base and has a reflective white ring around its top edge. The cones are arranged in a grid-like pattern, creating a textured, three-dimensional effect.

1M per day

**More than 2B over
VLC lifetime**

**1 every 6 Mac
Top 15 Windows**

**Most used French
software**

Support for DVDs

- › Region independent
- › Prevents forced subtitles (if desired)

... Blu Rays

- › By default, non-encrypted only

... network streams

- › Unicast, multicast, adaptive streaming


... external hardware

- › Cameras, TV input, Satellite, ASI/SDI ...



VLC media player

File View Settings Audio Video Navigation Help



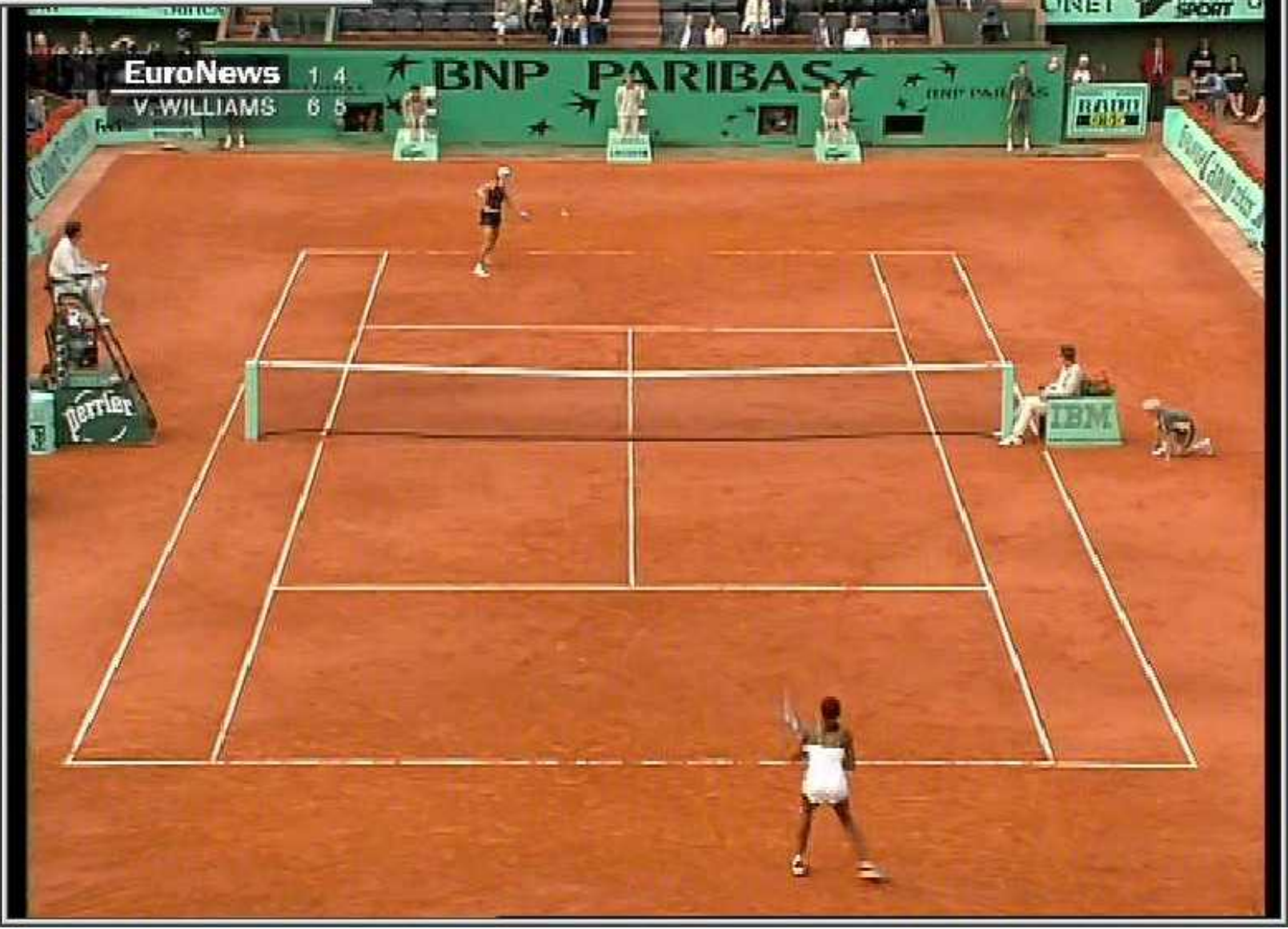
x1,00 /media/films/euronews-rolandgarros.ts

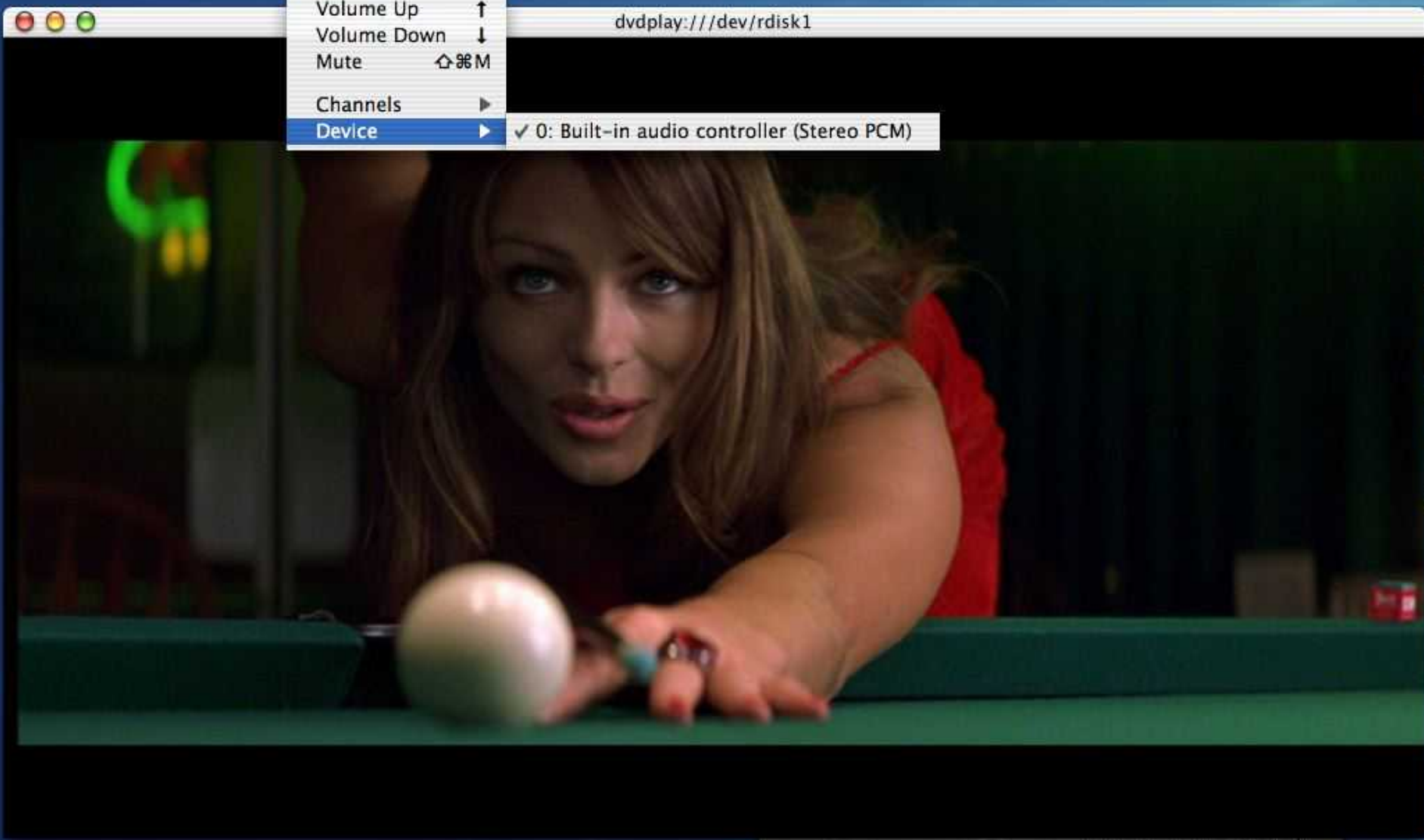


Démarrer ici



Corbeille





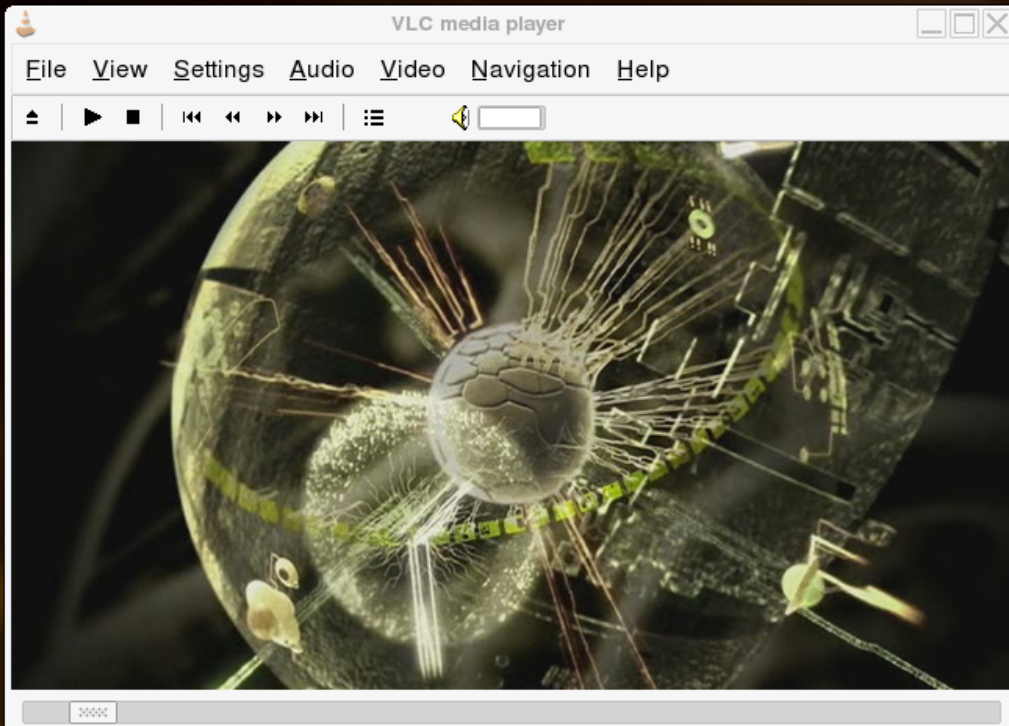
- Volume Up ↑
- Volume Down ↓
- Mute ⌘ M
- Channels ▶
- Device ▶ **✓ 0: Built-in audio controller (Stereo PCM)**

VIDEOLAN
client • mac os-x

0:09:49

www.videolan.org

A set of playback controls for the VLC media player. It includes a play/pause button, a stop button, and buttons for previous and next track. There are also volume control sliders and a progress bar. The text "VIDEOLAN client • mac os-x" and "www.videolan.org" are visible.



Messages

mpeg_audio debug: emulated startcode (no startcode)

Playlist

Manage Sort Selection View items

Search

- General
 - home/jb/Ghost In The Shell 2 - Innocence.avi (1:39:05)
- /mnt/musique/Musique/Eric Clapton
 - Unplugged - 1992
- /mnt/musique/Musique/Daft Punk
 - daft club
 - Discovery
 - Homework
 - Human_After_All
- /mnt/musique/Musique/Air
 - Talkie Walkie
- /mnt/musique/Musique/Evanesence
 - Fallen (Retail)
 - Fallen (Retail)
- SAP

102 items in playlist

0:05:09 / Preferences

Filters

Video filter module

- Video transformation filter
- Invert video filter
- Image properties filter
- Distort video filter
- Wall video filter
- Clone video filter
- Crop video filter
- Motion blur filter
- Deinterlacing video filter
- Video pictures blending

Video filters are used to postprocess the video stream

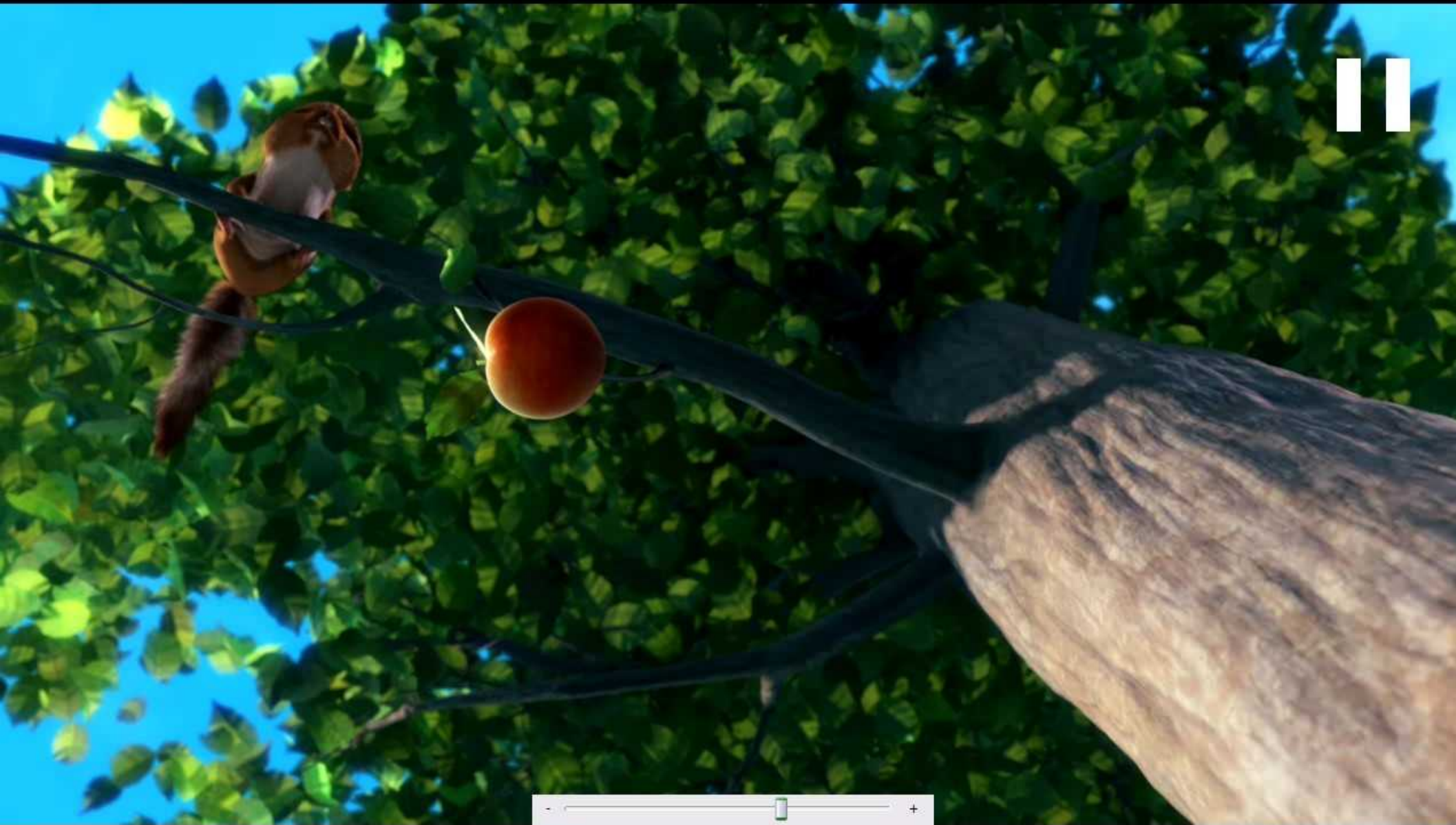
Valider Annuler Enregistrer Reset All

Stream 0

- Codec: XVID
- Language:
- Type: Video
- Resolution: 640x352
- Frame rate: 23.976000

Stream 1

- Codec: mpga
- Language:
- Type: Audio
- Channels: 2
- Sample rate: 48000 Hz
- Bitrate: 128 kb/s



My Little Pony Friendship Is Magic S01E25 - VLC media player

Media Playback Audio

| Nom | Taille | Modifié |
|-----------|---------|------------|
| test.mkv | 1,7 Mo | 22/12/2011 |
| test1.mkv | 22,3 Mo | 21/08/2010 |
| test2.mkv | 20,2 Mo | 02/06/2011 |
| test3.mkv | 20,1 Mo | 21/08/2010 |
| test4.mkv | 20,3 Mo | 21/08/2010 |
| test5.mkv | 30,3 Mo | 21/08/2010 |
| test6.mkv | 22,3 Mo | 21/08/2010 |





Volunteers



Association VideoLAN

Creation

- › 2009, decided in the VDD '08
- › Libre/**Free Software** and **Multimedia**

Members

- › VLC's core developers
- › Important members

Supports

- › Hardware for development
- › Travel, Servers, Legal
- › VideoLAN Dev Days

Collaboration

Collaboration

- Teams meeting twice per year
 - FOSDEM
 - VideoLAN Dev Days
- Using git since early 2007
- Use of trac, phpBB and mediawiki
- IRC and Mailing Lists
- Simple rules
- Code of conduct

Decisions

VLC Contributors

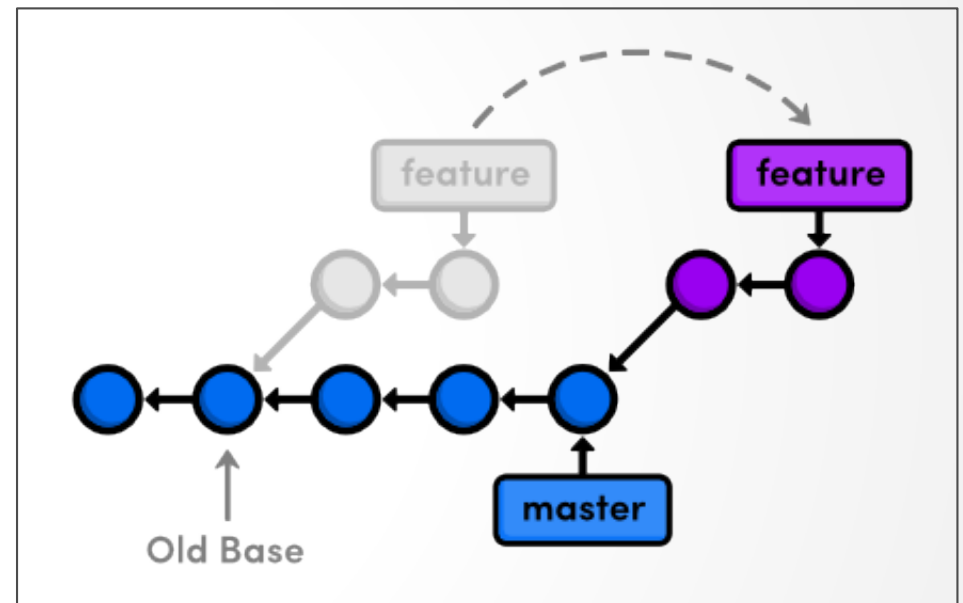
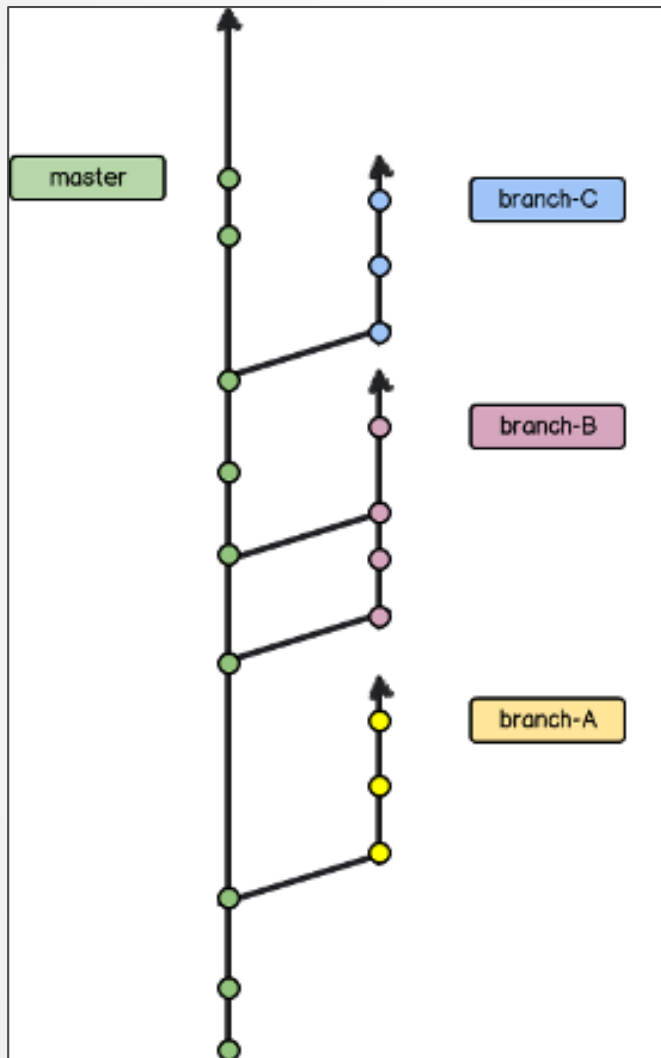
- Core Team 5~10 people
- 600 over the lifetime
- 150 per year

Decisions

- Maintainable !
- Technical and standard compliant
- 0 marketing, 0 legal
- Code = > Power
- Consensus or Fork

Code

➤ Stable, Dev, OldStable



➤ Always rebase !

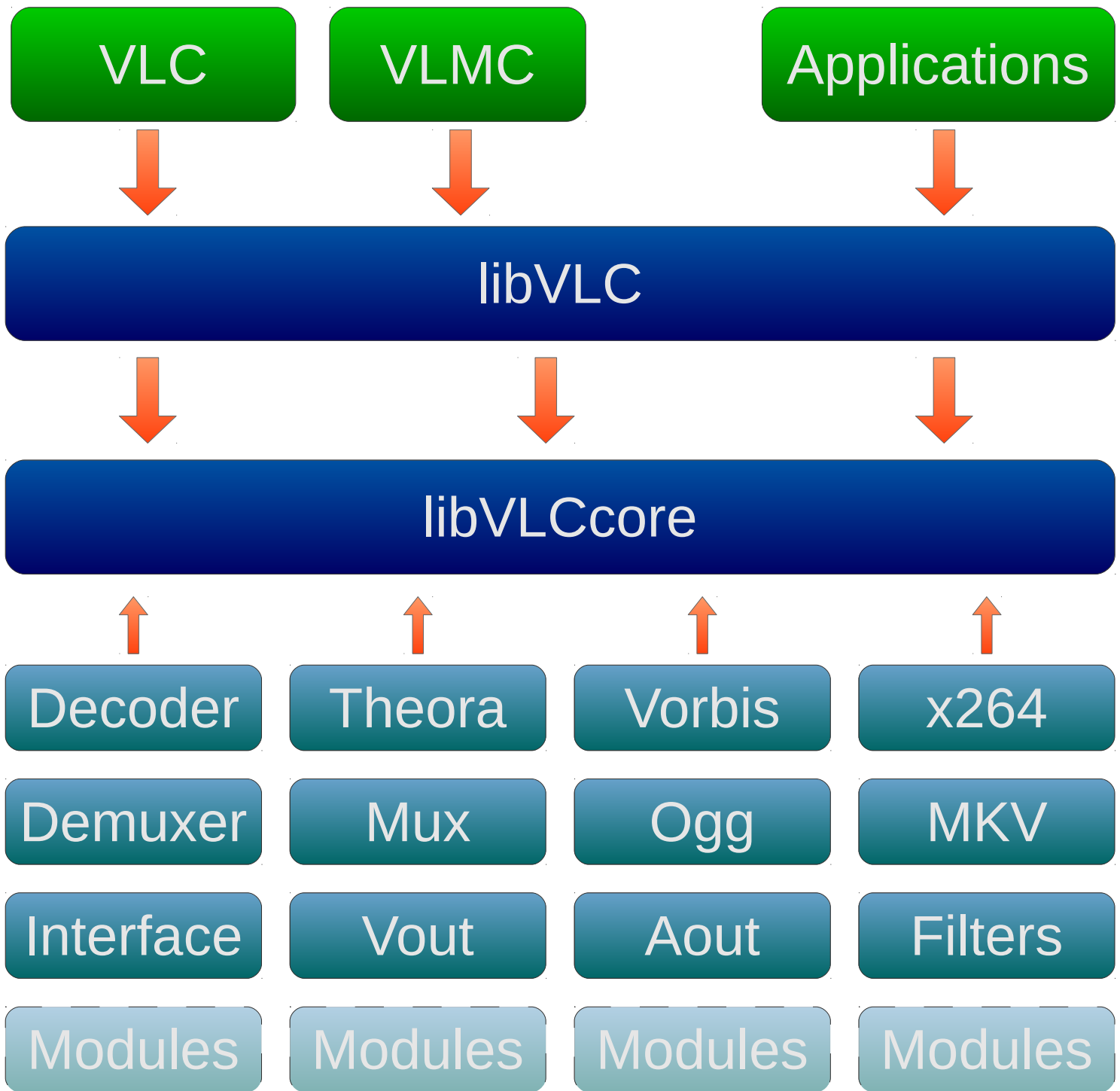


**Why is VLC popular ?
Technical reasons:)**

Modules

C--

Network oriented



Architecture

Small Core

- › libVLCCore
- › Light
- › Memory, Network and Threads handling
- › Module loading
- › Clock / Synchronization

Simple Multimedia Framework

- › LibVLC
- › bindings for C++, C#, Objective-C, Java, lua, Perl, Python, Node.JS

Completely modularized

- About 300 modules in a default installation
 - Codecs, IO, outputs, (de)muxers, filters, ...
- Interested in adding new features ? Add a module.

820,000 lines of code

- 120k in the core
- 700k for modules

80 external librairies

- Codecs, Output, Effects, Network
- 7M lines of code
 - 50 % C, 41 % C++

C-Object (C++)

```
struct audio_output
{
    VLC_COMMON_MEMBERS

    struct aout_sys_t *sys;

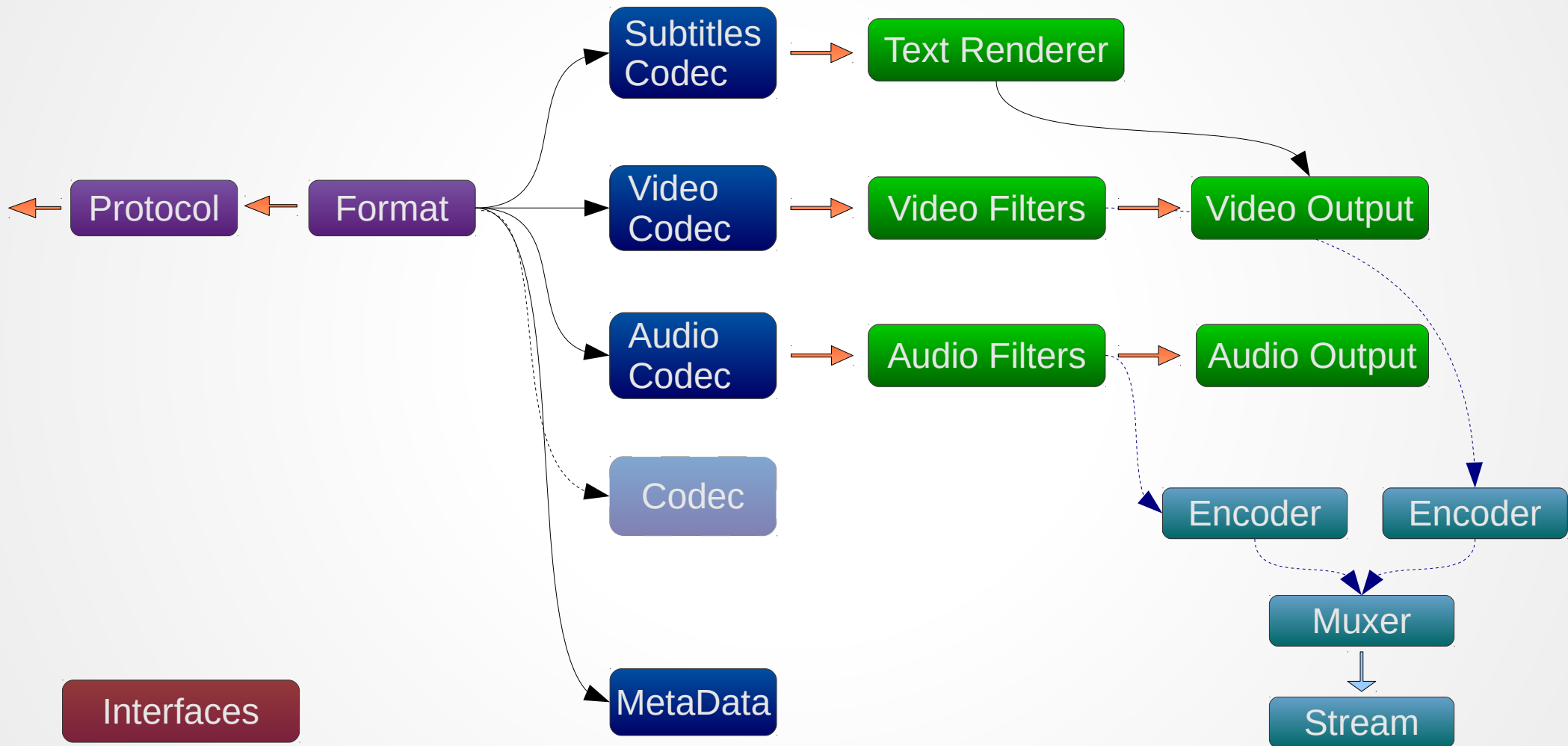
    int (*pf_start)(audio_output_t *, audio_sample_format_t *fmt);

    void (*pf_stop)(audio_output_t *);

    struct {
        void (*volume_report)(audio_output_t *, float);
        void (*mute_report)(audio_output_t *, bool);
        void (*restart_request)(audio_output_t *, unsigned);
    } event;
};
```

Also C99, C++, Obj-C, ASM, Lua

Network-oriented graph



Module Probing

Capability

- › Access
- › Demux
- › Codec
- › Filter

Score

- › Open module
 - › Right capability
 - › Decreasing score order
- › Probe function
 - › Yes/No
- › Cache

Full (!) multimedia framework

- › Playback
- › Filters
- › Control
- › Very Limited Streaming
- › DVD Ripper, Thumbnailer

Used in

- › VLC Android, iOS, Windows Phone
- › Phonon (KDE)
- › External projects

LibVLC example

Creation

```
libvlc_instance_t * vlc_inst = libvlc_new(0, NULL);
```

```
libvlc_media_player_t *media_player = libvlc_media_player_new(vlc_inst);
```

Media Creation

```
libvlc_media_t *media;
```

```
media = libvlc_media_new_location(vlc_inst, uri);
```

```
libvlc_media_player_set_media(media_player, media);
```

Media Playback

```
libvlc_media_player_play(media_player);
```

Profit !

What you don't know

What you don't know about VLC

- Transcoding, Streaming
 - latency
- Mosaic/PiP generation
- Wall display
- Screencasting
- TS encryption and decryption (DVB-CSA)
- DVD and CD ripper
- Headless versions
- Karaoke, Midi, hardware decoder
- Scriptable and extensions
- Modules

VLC's extensions

Use cases:

- Automatic subtitle downloads
- Context information from Wikipedia, IMDB or Allociné
- Sharing on Twitter

Highly customizable

- Written in lua
- Publish and get them from addons.videolan.org

Service discoveries

Detects media automatically:

- Local files
- Network services
 - UPnP / DLNA
- Internet services
 - Resolves links to YouTube, Dailymotion, Vimeo, Apple Trailers ...

Highly customizable

- Written in lua
- Publish and get them from addons.videolan.org

Media Browser

Meta channels

- Playlist
- Media Library
- > My Computer
- > Devices
- > Local Network
- Internet
 - Podcasts
 - Free Music Charts
 - Freebox TV
 - Icecast Directory
 - Jamendo Selections
 - Apple Trailers
 - Free Music Charts
 - Freebox TV
 - French TV
 - Icecast Directory
 - Jamendo Selections
 - Katsomo.fi



Arts Business Comedy Education Featured Games & Hobbies



Politics Religion & Spiritua...



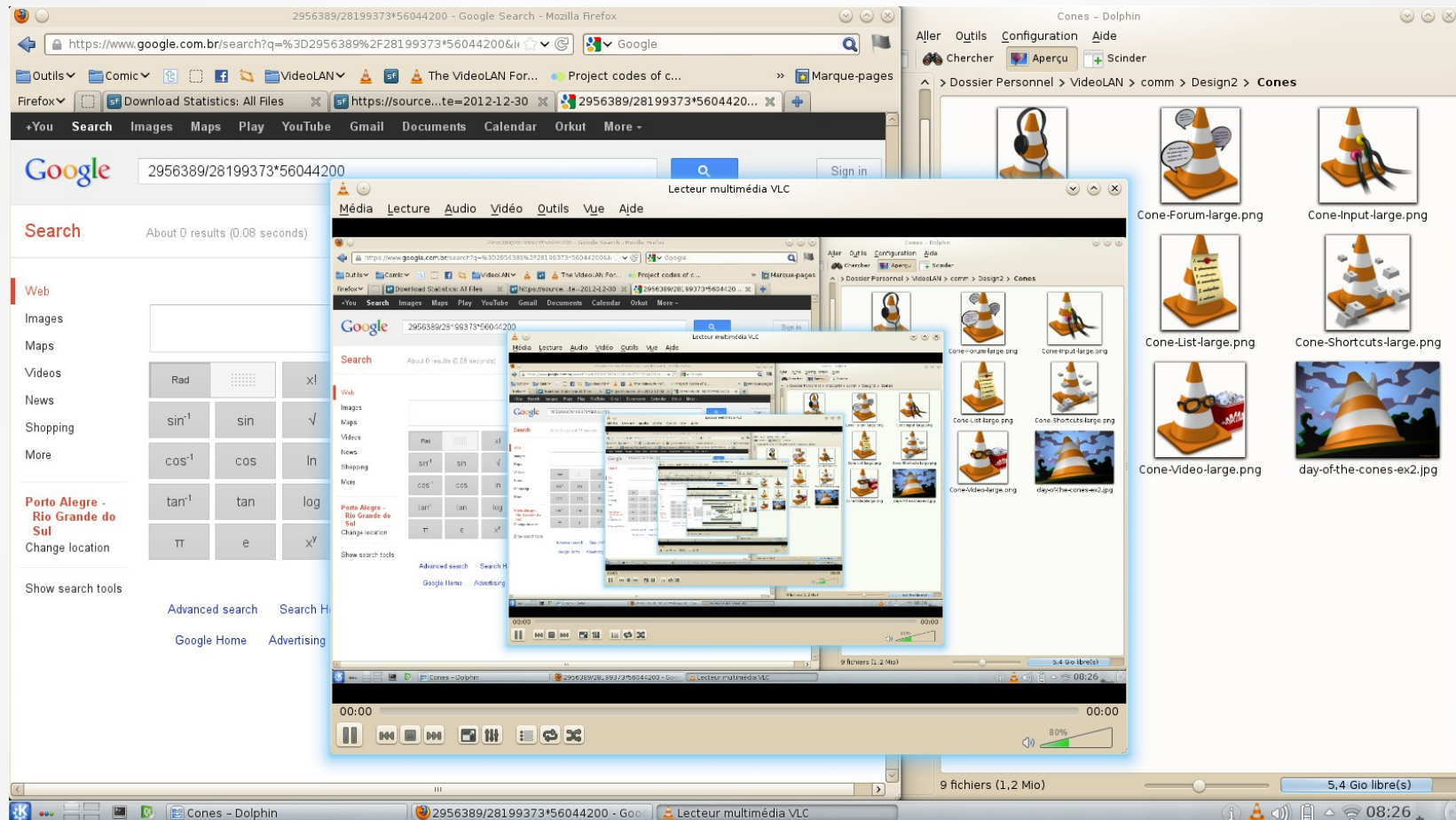
Science & Medicine Society & Culture Sports & Recreation Technology TV & Film Webisodes

Content Integration



Media playback controls including play/pause, stop, previous, next, playlist, extended settings, repeat, and shuffle buttons. A volume slider is set to 100%.

VLC's screen casting



Mosaic



Picture in Picture

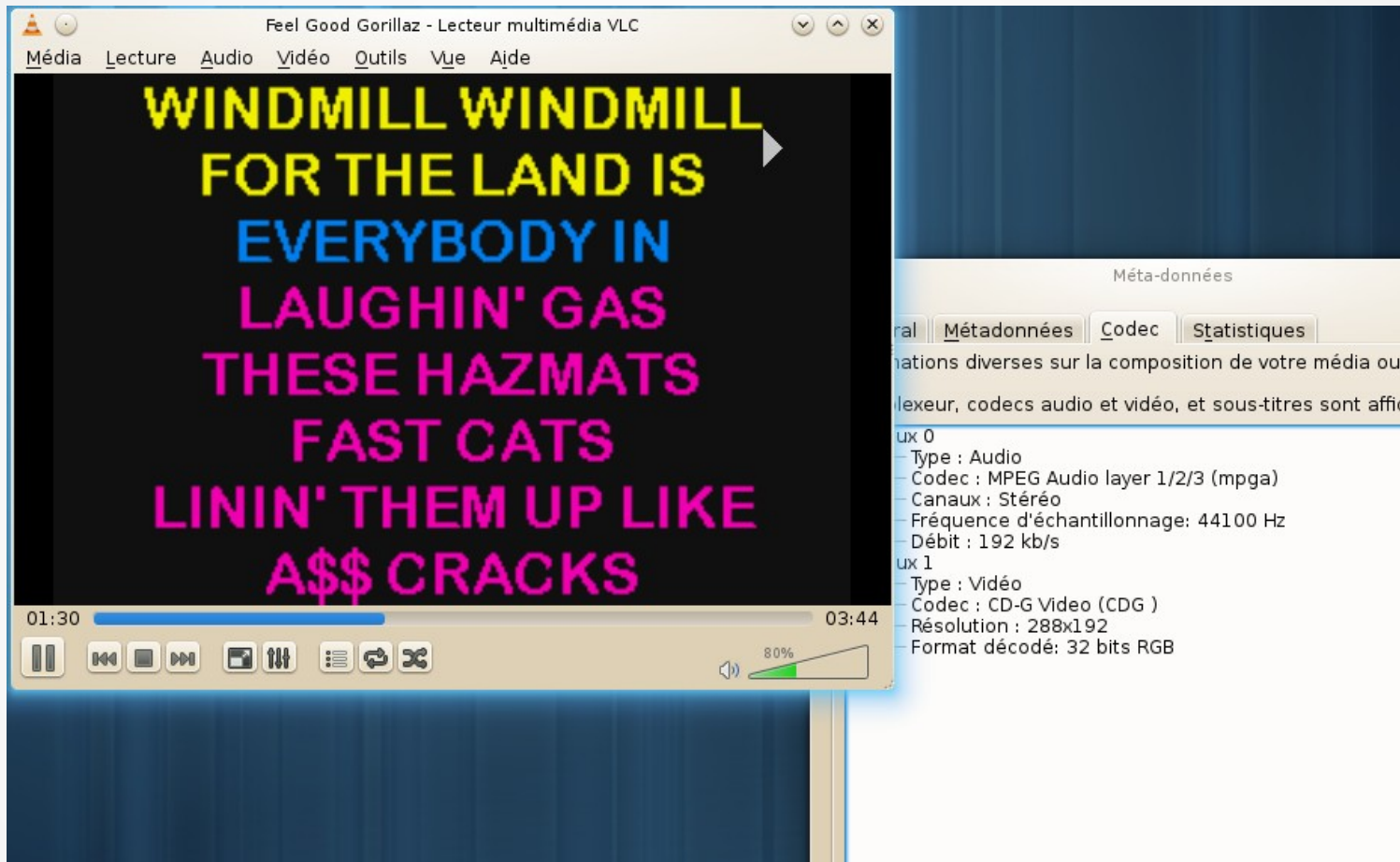
Dual webcam with alpha mask:



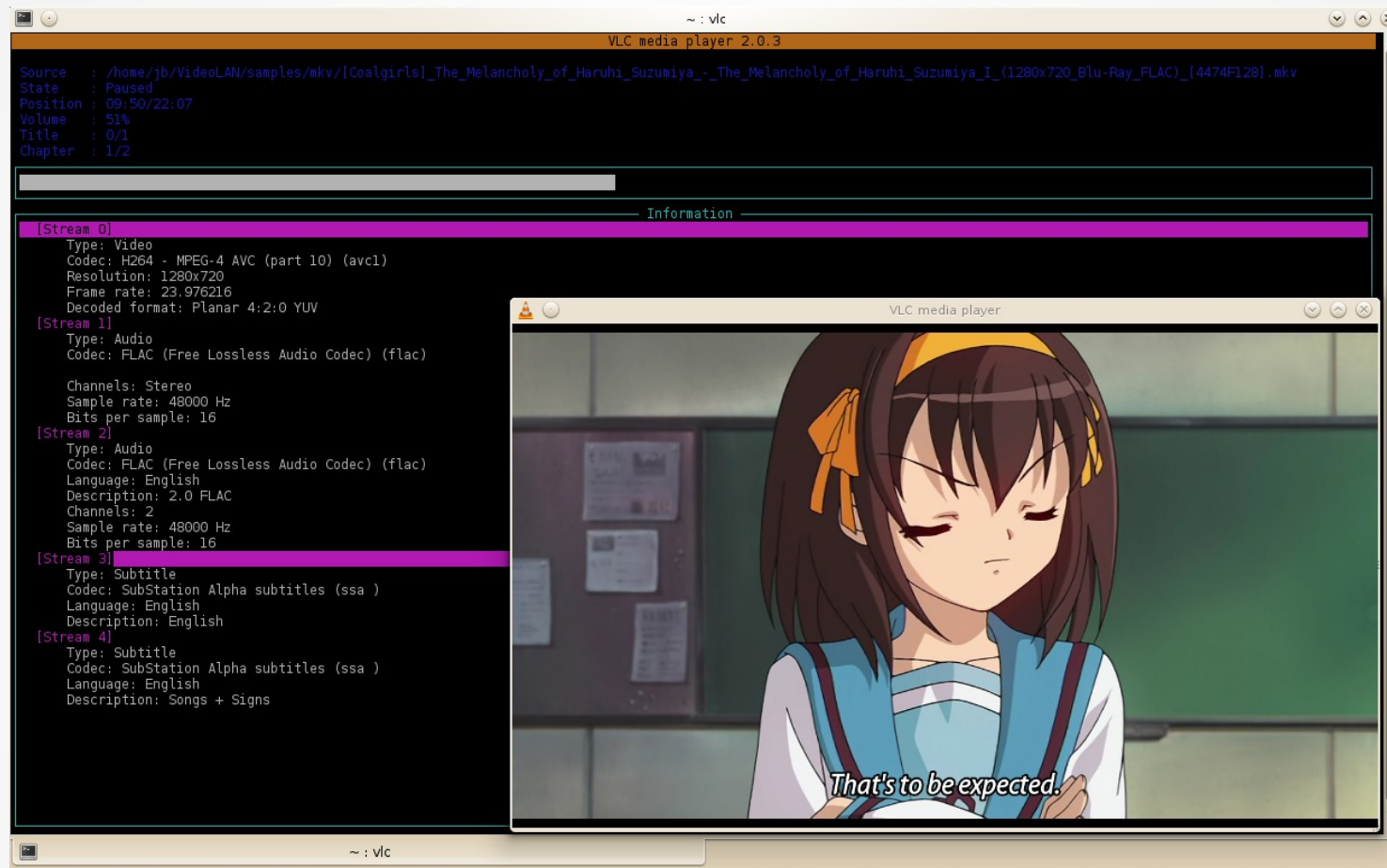
Wall Filter & netsync



Karaoke & MIDI



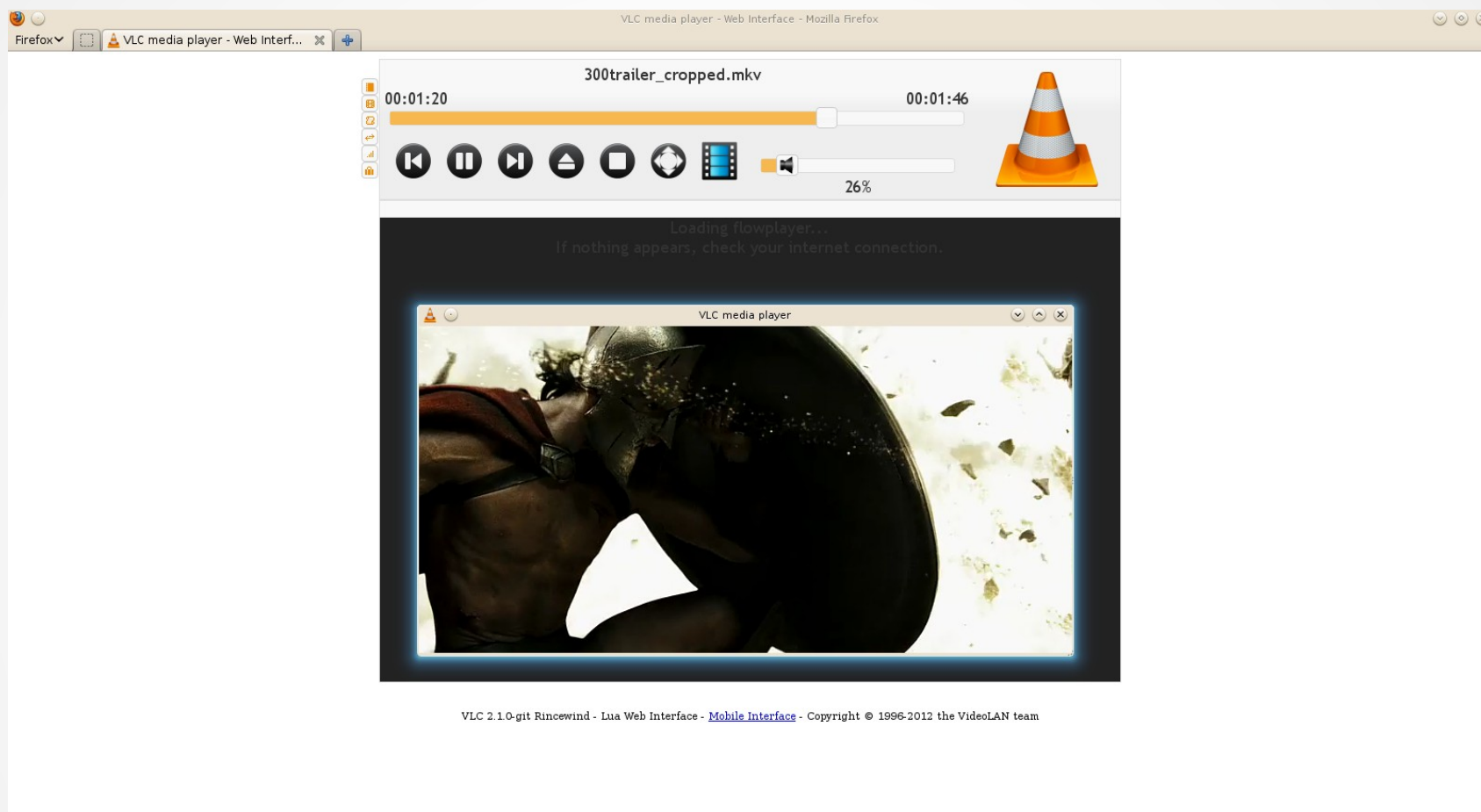
Console & headless



Libcaca



Web interface



Android



VLC for Android

100 % Open Source

‣ 2.1+

Full video player

- All codecs, formats, protocols
- Hardware and multicore decoding

Full audio player

- Media library & Indexing
- Audio Background service

Technical issues

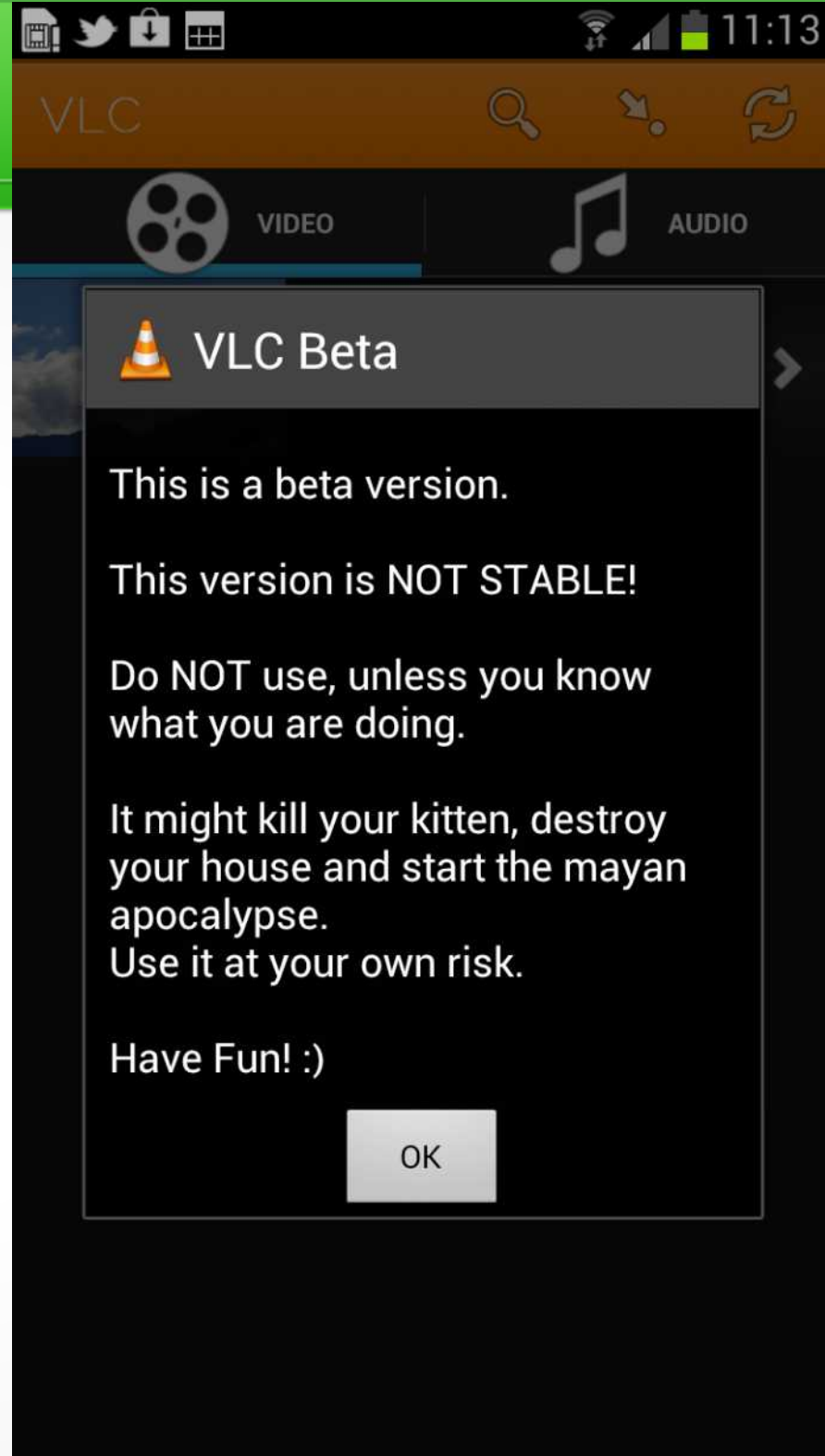
VLC for Android issues

- Shared Modules
- Bionic
 - pthread
 - wchar_t, off_t
- Audio modules
 - lipsync
- YUV / RGB
- Size
 - Arch
 - FPU / NEON

Release

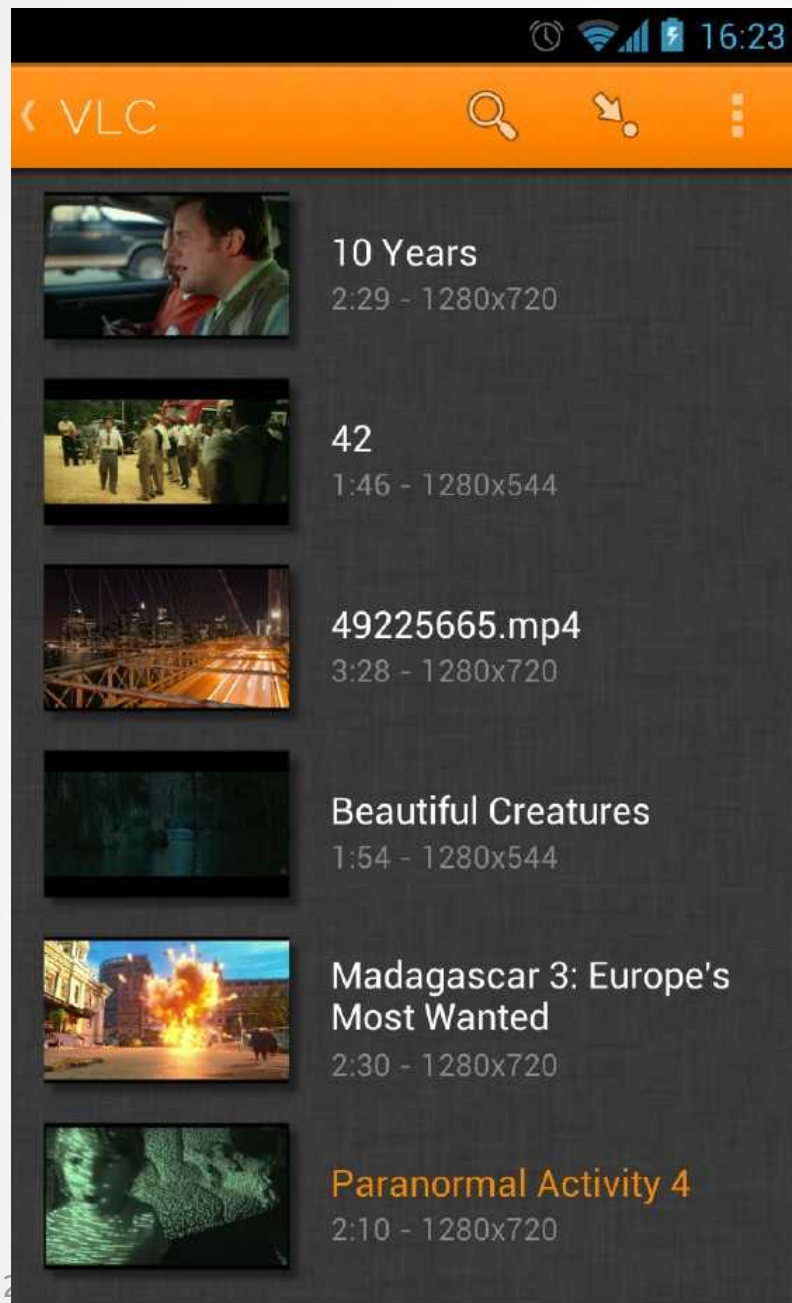
Release in July 2012

- › Beta on *Google Play*
- › Limited countries
- › ARMv7 only
- › Numerous crashes
- › Good feedback
- › GPLv3





Evolution



Audio v2

Arctic Monkeys

ALBUMS SONGS

Arctic Monkeys

- Brianstorm
- Favourite Worst Nightmare
- Fluorescent Adolescent
- I Bet You Look...e Dancefloor
- Leave Before...hts Come On
- Whatever Peo...What I'm Not
- When The Sun Goes Down
- Who The Fuc...ctic Monkeys

Navigation icons: back, home, recent apps

2CELLOS

ALBUMS SONGS

2CELLOS

- 2CELLOS
- In2ition

Oh, Well
2CELLOS 0:13

Navigation icons: back, home, recent apps

Highway to Hell
2CELLOS

Technical Difficulties
2CELLOS - In2ition

Clocks
2CELLOS - In2ition

Bang Bang
2CELLOS - In2ition

Voodoo People
2CELLOS - In2ition

Candle in the Wind
2CELLOS - In2ition

Orient Express
2CELLOS - In2ition

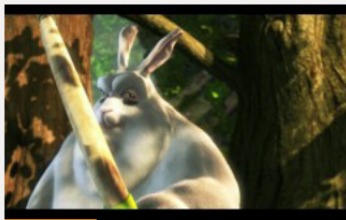
Il Libro Dell'Amore
2CELLOS - In2ition

Benedictus
2CELLOS - In2ition

0:43 3:54

Navigation icons: back, home, recent apps

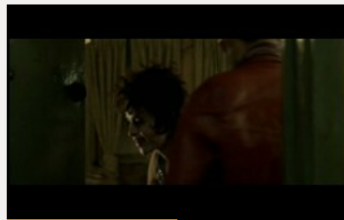
Video v2



Big Buck Bunny
2min / 9min - 1920x1080



Day after Tomorrow extract
1min



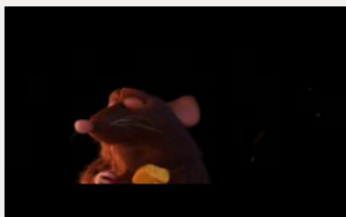
Fight Club Trailer
1min / 2min - 640x272



In to tree
10s - 1920x1080



Mr & Mrs Smith trailer
1min - 320x176



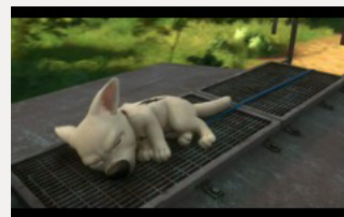
Ratatouille
1h51min - 624x256



The Big Bang Theory - S05E24 - Light
8min / 21min - 176x98



Un Mec Qui se Plaint Tout le Temps
0s / 45s - 432x336



Volt Star Malgré Lui
1h36min - 640x352



Now

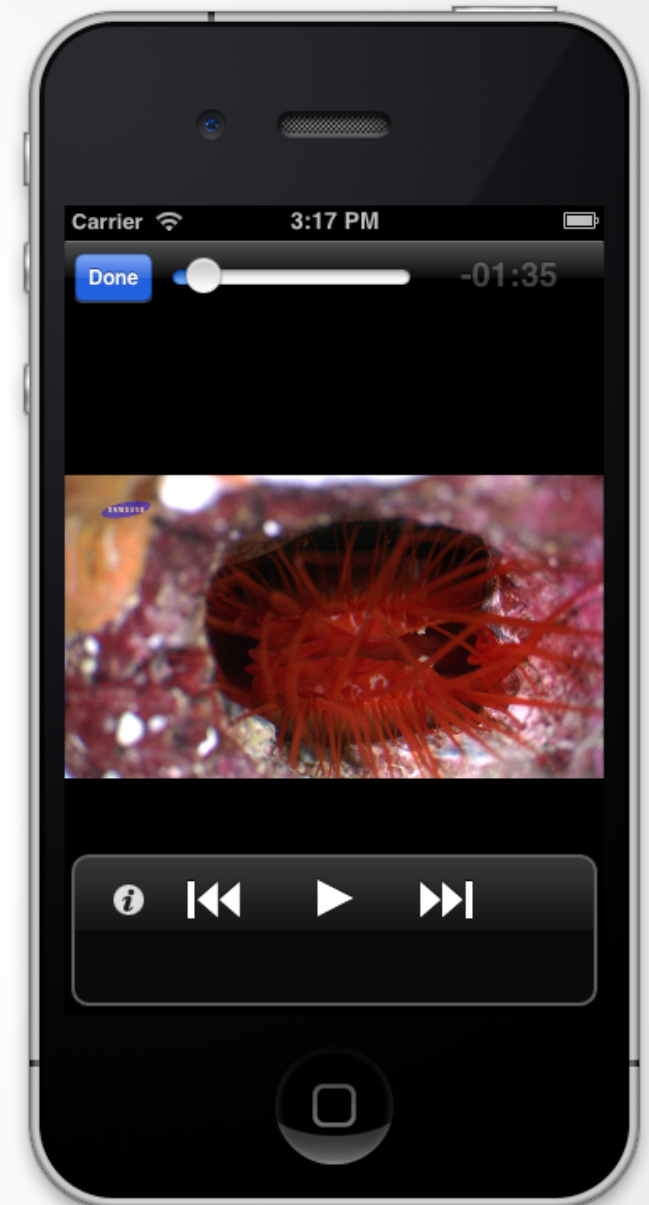
Release 1.0.0 !

- Numbers
 - 37M installed
 - 20M active
- Next
 - Hardware acceleration
 - OMX
 - Mediacodec native
 - SMB, UpnP, Facebook
 - Android TV
 - Android-L

VLC for iOS

VLC for iOS

- › Requires iOS 5.1 or later device
 - › iPhone 3GS
 - › iPad
 - › iPod touch 3rd gen.



VLC for iOS

VLC for iOS features

- › Faster
 - › Multi-core decoding
 - › OpenGL shaders
- › Retina Display
- › Higher audio quality
- › 10bits support



VLC for WinRT

 VLC media player

Search 

home

videos

music

removable devices

media servers

albums artists songs

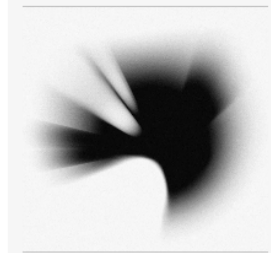
LINKIN PARK



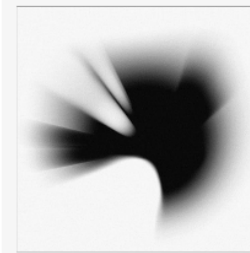
Linkin Park
[Reanimation]



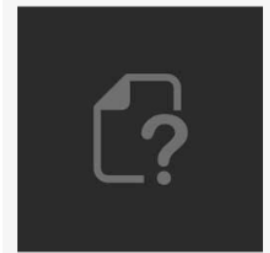
Linkin Park
8-Bit Rebellion



Linkin Park
A Thousand Suns



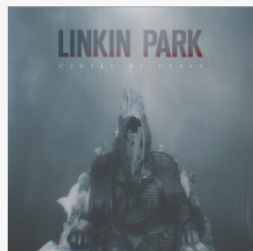
Linkin Park
A Thousand Suns (Japan...



Linkin Park
A Thousand Suns Plus...



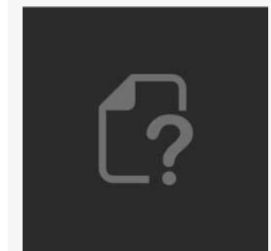
Linkin Park
A Thousand...



Linkin Park
CASTLE OF GLASS - EP



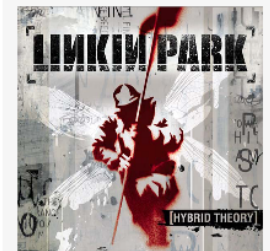
Linkin Park
Download to Donate to...



Linkin Park
Download to Donate:...



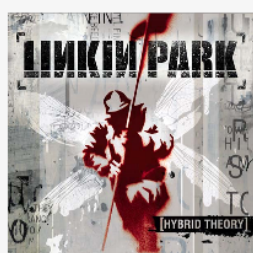
Linkin Park
FIFA 11 OST



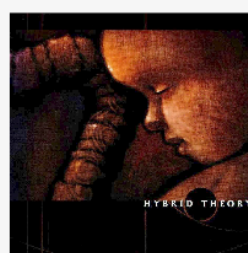
Linkin Park
Hybrid Theory



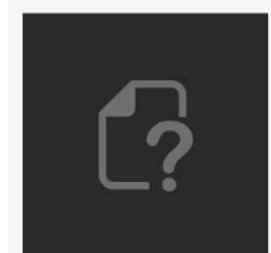
Linkin Park
Hybrid Th...



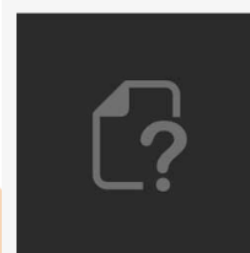
Linkin Park
Hybrid Theory [Bonus Disc]



Linkin Park
Hybrid Theory EP



Linkin Park
Hybrid Theory: Live...



Linkin Park
In the End: Live & Rare



Linkin Park
LINKIN PARK 2011 North...



Linkin Park
Live In Te...

Future projects

VLC for Mobile OS

- › Win8 / WinRT / WP8
- › ~~VLC for Firefox OS~~
- › ~~VLC for Ubuntu Phone?~~
- › BB10 ?
- › Chrome OS ?

Contribute

Use it!

- › Promote to friends, family, groups
- › Spread the word

Report bugs

Translations

- › New and fixes

Code on VLC

- › Extensions
- › Modules

Code with libVLC

A dramatic sunset over a large body of water. The sun is low on the horizon, casting a golden glow across the sky and reflecting on the water's surface. The sky is filled with dark, heavy clouds, some of which are illuminated from below by the setting sun, creating a mix of deep blues, greys, and oranges. The water in the foreground is dark with some ripples, and the overall scene is serene and powerful.

Thank You

Jean-Baptiste Kempf

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