

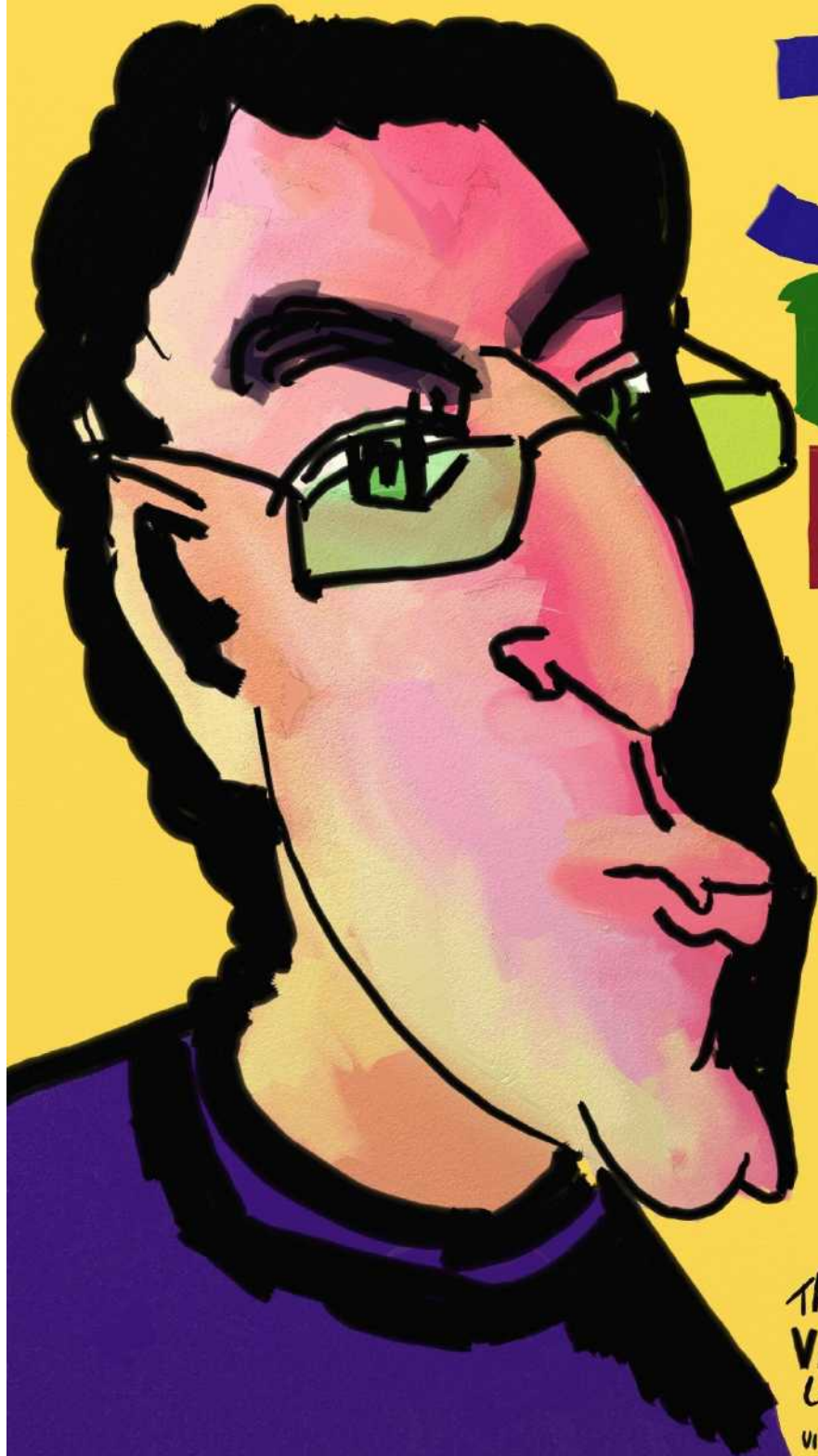
VideoLAN



Port VLC to Mobile OS

Jean-Baptiste Kempf

mercredi 14 janvier 2015



JEAN BAPTISTE- KEMPF • VLC •

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

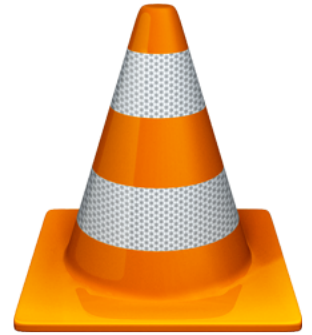
The world's most downloaded video player:
VLC: www.videolan.org/vlc
(free and open source)

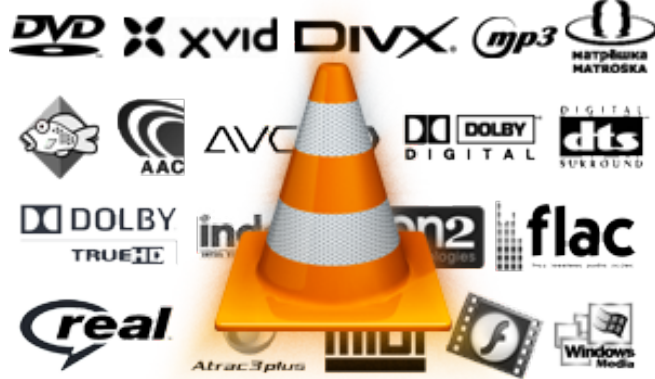


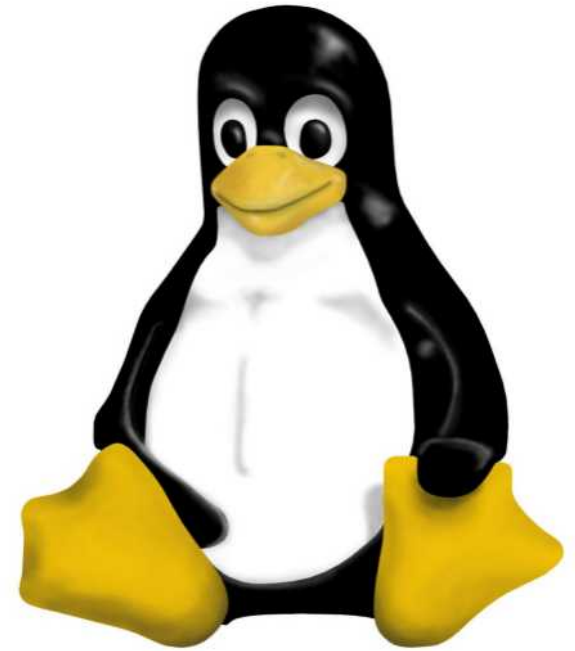
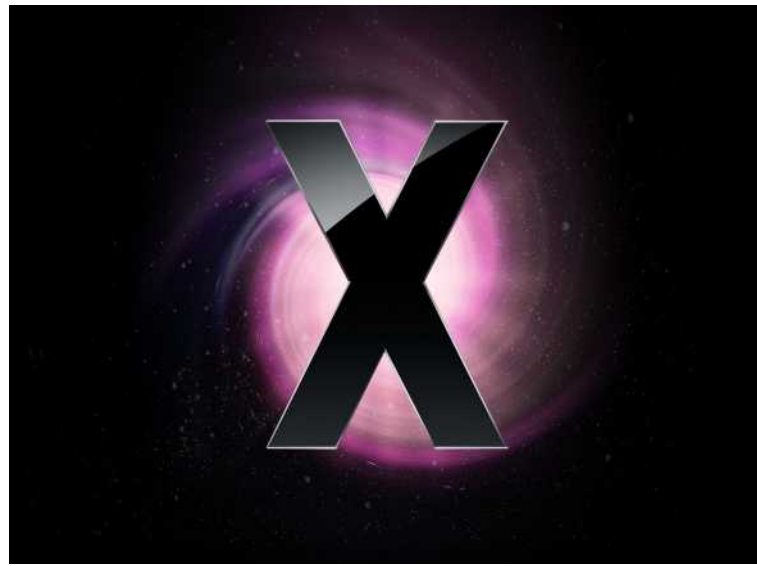
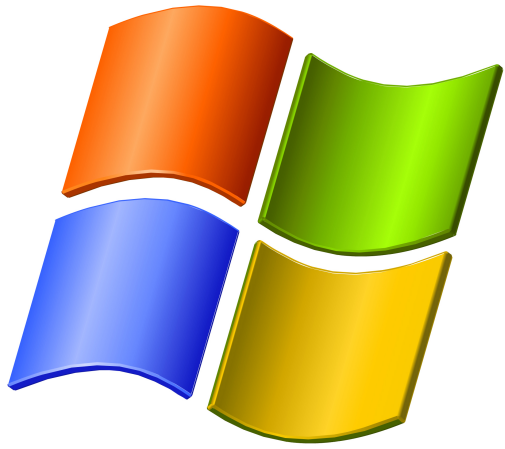
VideoLAN.org



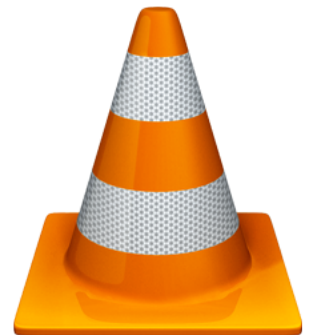
Ecole Centrale Paris







ANDROID



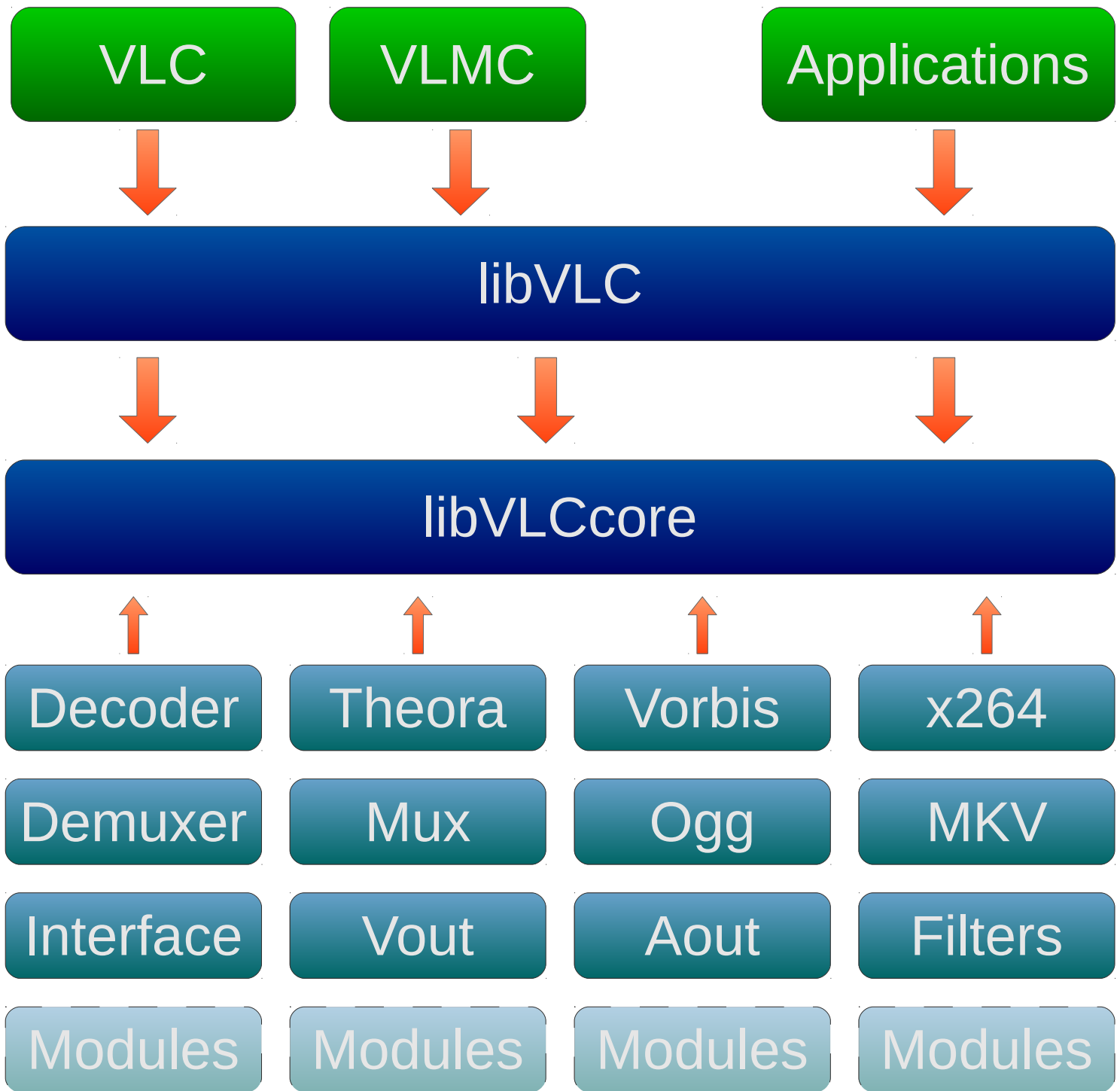
The background of the entire image is a dense, repeating pattern of orange traffic cones. The cones are arranged in a grid-like fashion, with some appearing slightly more prominent than others due to perspective and lighting. They are all pointing in the same direction, towards the top-left of the frame.

900 000 per day

**More than 1.5B
over VLC lifetime**

**1 every 6 Mac
Top 15 Windows**

**Most used French
software**



Requirements

What we need to port VLC

- › **Compiler**
- › **Libc**
 - › Files, Unicode
- › **Threads**
 - › + cancellation
- › **Network**
 - › BSD sockets
- › **Modules**
 - › dlopen
- › **Audio output**
 - › Delay computation
- › **Video output**
 - › YUV
- › **Interfaces**

iOS

iOS

- › Technically, iOS is great :
 - › Same OS than OS X
- › But
 - › Same bugs about pthread/signal
 - › Static modules only
 - › Multicast
- › AudioUnit vs AuHal
 - › Stereo only
- › OpenGL output
 - › Limitation in YUV → RGB shaders



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

Port to Android

Technically, Android is bad,

and it's a mess (android-x platforms vs SDK versions)

- › Shared Modules

- › limits of .so shared → static like iOS

- › Bionic is broken

- › pthread_rwlock_t → AOSP android-11 + workarounds

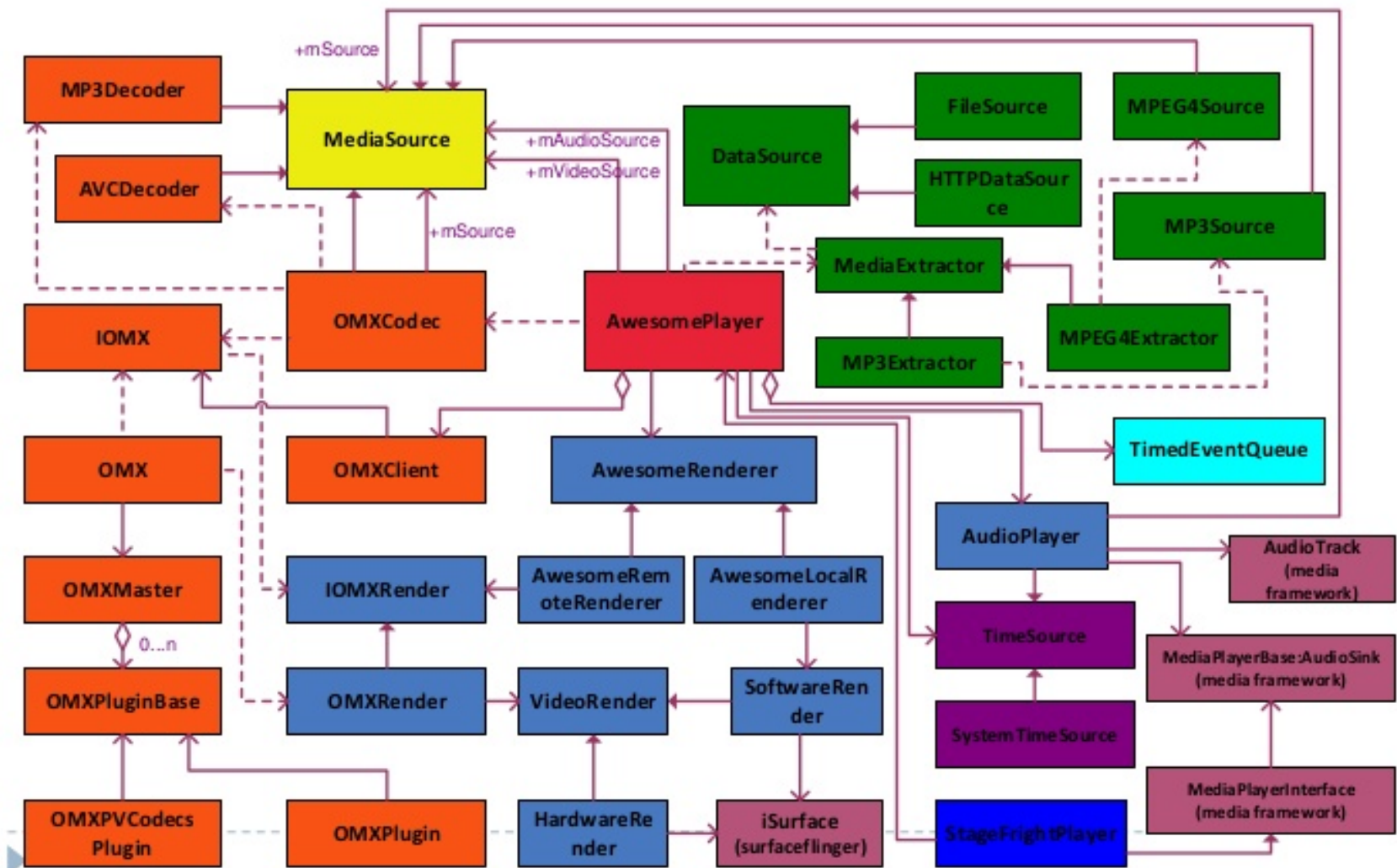
- › wchar_t functions → AOSP android-14

- › off_t 32bits... → #define

- › multicast → disabled

Android Multimedia

The scary block diagram



Port to Android : Audio

Audio

- AudioTrack Java
 - Slow
- AudioTrack native
 - Missing delay computation
- OpenSL ES
 - Buggy
- AudioFlinger
 - Not portable

Port to Android : Video

Video

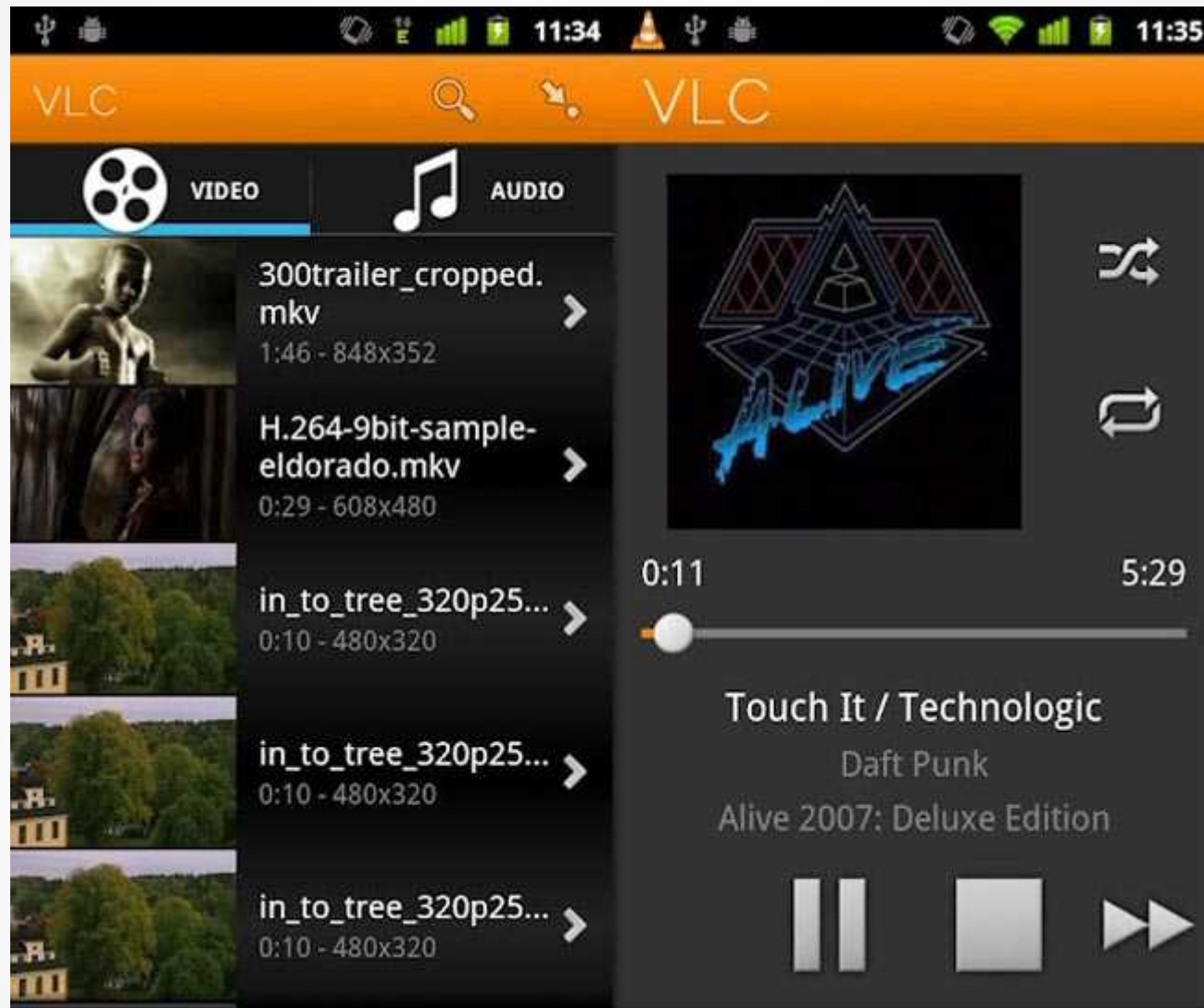
- Android 2.1, 2.2
 - SurfaceFlinger dlopen
 - Using Android-9 headers
 - RGB
- Android 2.3+
 - Android NativeWindow
 - 1 surface only, no rotation
 - Android NativeWindowPriv
 - anw.14.so
 - RGB vs YUV
 - Opaque
- OpenGL ES
 - Buggy EGL

Port to Android : Codecs

Codec

- Android 2.3
 - OMX + Binder = iOMX
- Android 3.0+
 - iOMX + gralloc
- Android 4.1+
 - MediaCodec Java
 - Broken
- Android 4.3+
 - MediaCodec Java
 - Software and hardware rendering

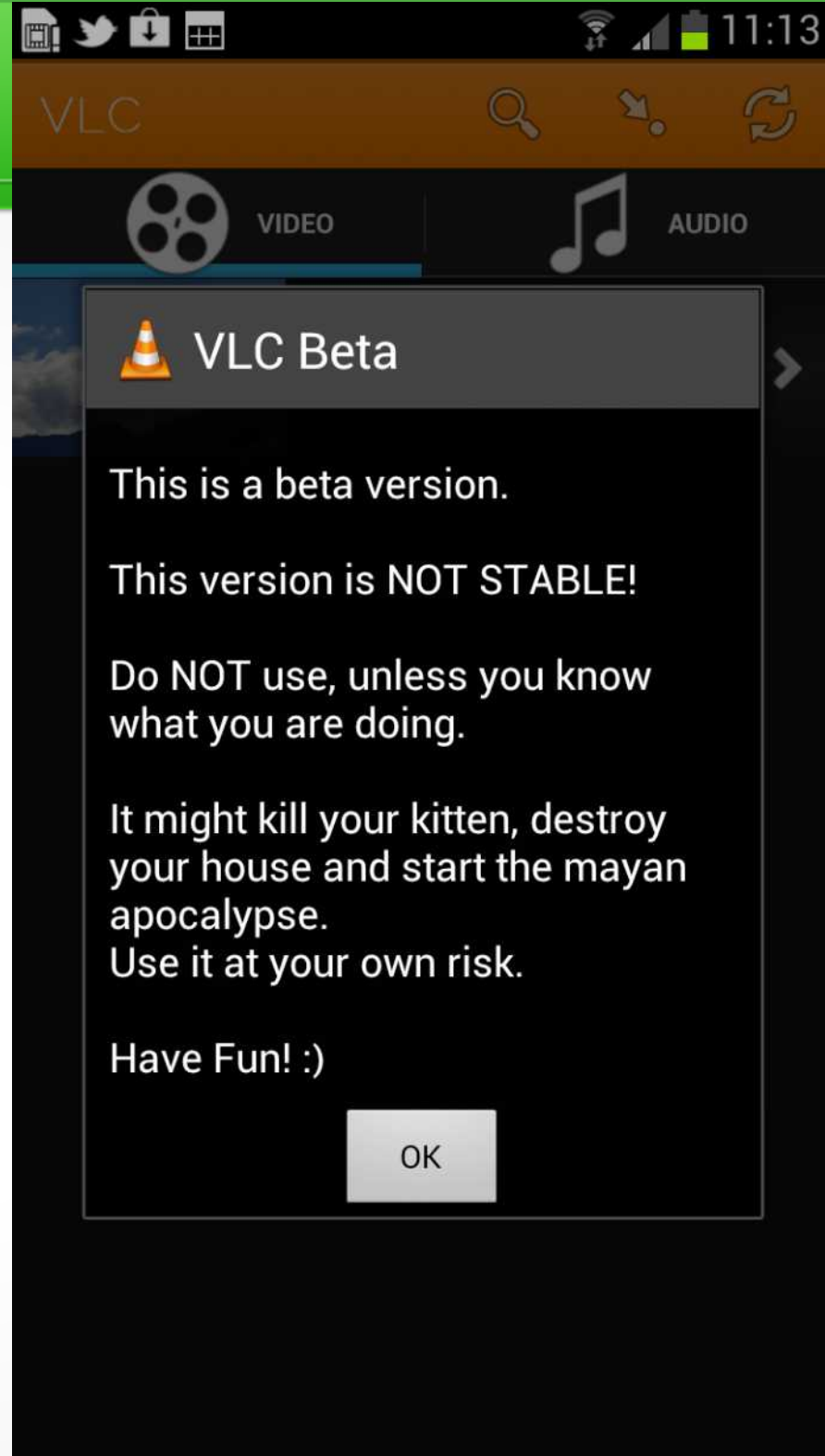
Project start



Release

Release in July 2012

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





Video

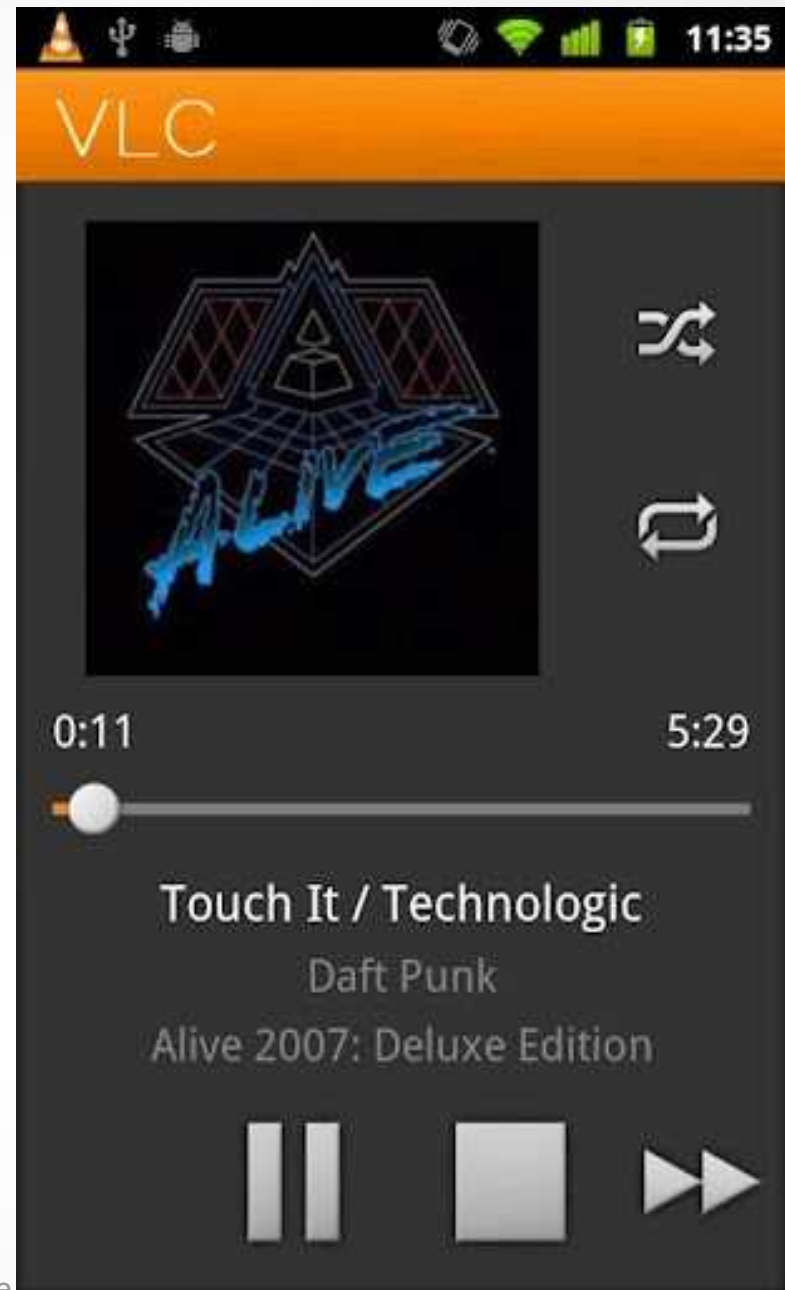
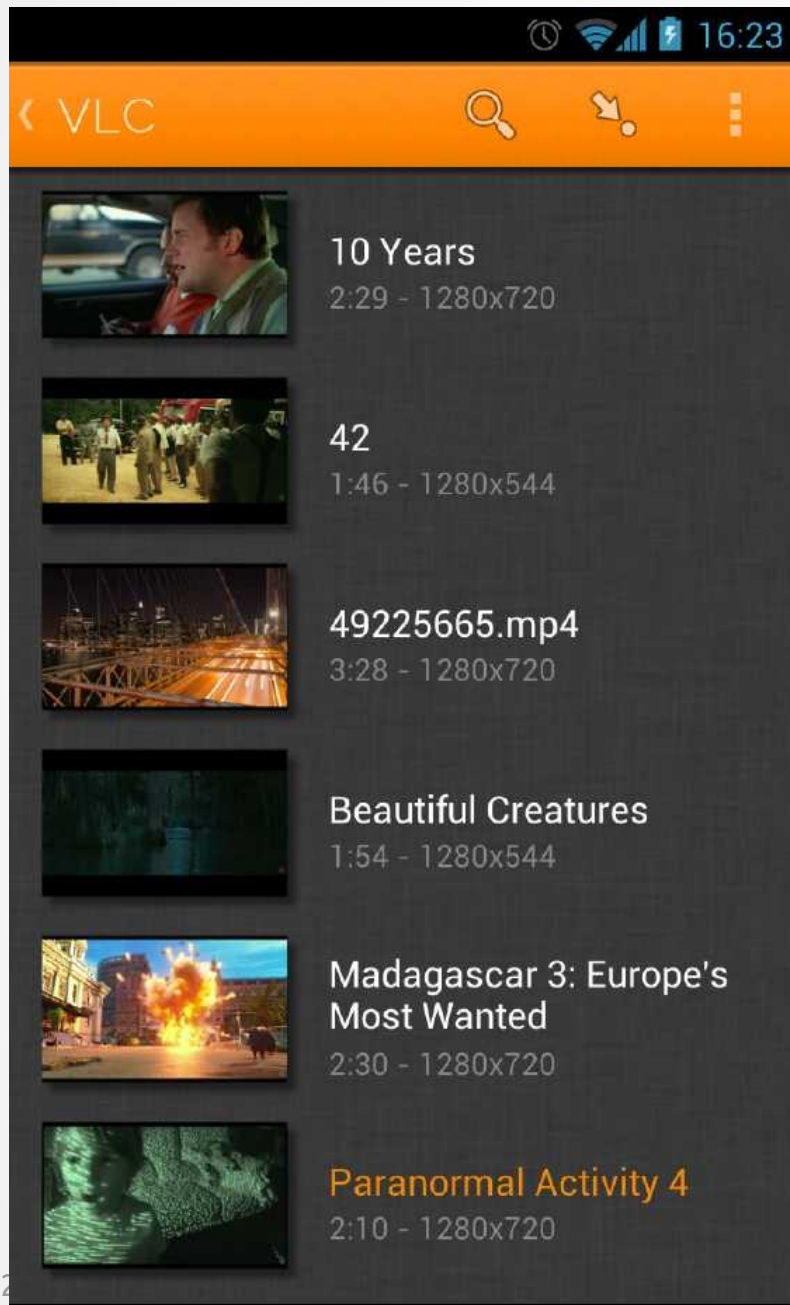
[Coalgirls]_The_Melancholy_of_Haruhi_Suzumiya_-
_The_Melancholy_of_Haruhi_Suzumiya_I_(1280x720_Blu-

16:44
72%

14:46 22:07

This feels like excitation.

Evolution



Evolution

17:03

VLC



10 Years

2:29 - 1280x720



42

0:22 / 1:46 - 1280x544



Beautiful Creatures

1:08 / 1:54 - 1280x544



BFMTV-SD.mpg

0:00



France2-SD.mpg

0:00



Madagascar 3: Europe's Most Wanted

2:30 - 1280x720



Paranormal Activity 4

2:10 - 1280x720



Pusher

2:02 - 1280x544



Seven Psychopaths

2:24 - 1280x544



Taken 2

1:16 / 2:21 - 1280x544



The Hobbit



The Social Network Sample.



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

14 janv. 2015

2CELLOS

ALBUMS SONGS

2CELLOS

- 2CELLOS
- In2ition

Oh, Well
2CELLOS 0:13

Jean-Baptiste Kempf

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

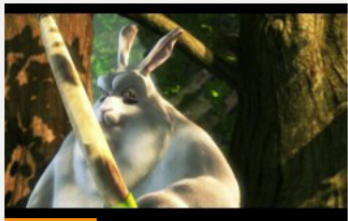
Benedictus
2CELLOS - In2ition

0:43 3:54

25

Video v2

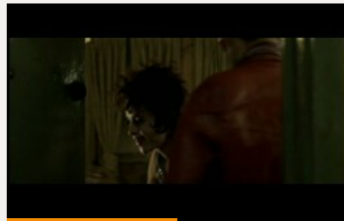
Navigation bar with icons for back, search, home, playlist, refresh, and menu. The word "Video" is displayed on the left.



Big Buck Bunny
2min / 9min - 1920x1080



Day after Tomorrow extract
1min



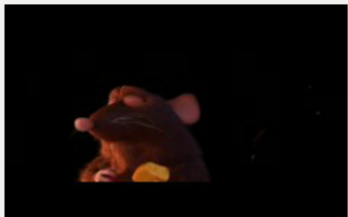
Fight Club Trailer
1min / 2min - 640x272



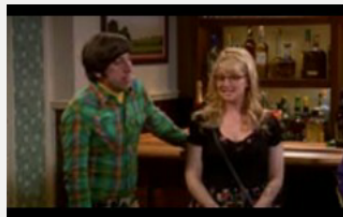
In to tree
10s - 1920x1080



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

Android navigation bar with icons for back, home, and recent apps.

Requirements

Port to WinRT

- › **Compiler**
- › **Libc**
 - › New access module, limited
- › **Threads**
 - › 50ms wake-up
- › **Network**
 - › WinRT sockets
- › **Modules**
 - › dlopen limited
- › **Audio output**
 - › Xaudio broken for delay
- › **Video output**
 - › Direct2D (RGB only)
- › **Interfaces in C#**



Thank You

Jean-Baptiste Kempf

jb@videolan.org