



# Video Editing with Open Source Tools

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# Cross-Platform and Free Open-Source Software

- **Libre vs. gratis ( 自由 / 免費 )**
- **No Vendor Lock-In**
- **No OS/Platform Lock-In**
- **Open Formats**
- **Easier Collaboration**

# Cross-Platform and Free Open-Source

- **OpenShot** – <https://www.openshot.org/>
- **KDENLive** – <https://kdenlive.org/>
- **AVIdemux** – <http://avidemux.sourceforge.net/>
- **FFMPeg** – <https://ffmpeg.org/>
- **Blender** – <https://www.blender.org/>
- **Natron** – <https://natrongithub.github.io/>
- **OBS Studio** – <https://obsproject.com/>

# Cross-Platform but not Free Open-Source

- **DaVinci Resolve**

<https://www.blackmagicdesign.com/products/davinciresolve>

- Free version and “Studio” version (mainly about collaborative features); \$299

- **LightWorks**

<https://www.lwks.com/>

- Free version (requires registration) and “Pro” version (Advanced features, notably UHD 4k export); monthly/yearly subscription (\$25/\$175), or permanent license (\$438)

- **WeVideo**

<https://www.wevideo.com/>

- Web-based video editor

# Auxiliary Software

- **VLC**

<https://www.videolan.org/>

- “A free and open source cross-platform multimedia player and framework that plays most multimedia files as well as DVDs, Audio CDs, VCDs, and various streaming protocols.”

- **Handbrake**

<https://handbrake.fr/>

- “A [free and open source cross-platform] tool for converting video from nearly any format to a selection of modern, widely supported codecs.”

# General Notes

- **Non-Linear Video Editing**
- **Hardware**
  - CPU/GPU horsepower, but also screen real-estate, a mouse, etc.!
- **Video Formats and Proxy Editing**
  - Our drones are outputting a QuickTime MOV wrapper, containing one video stream:
    - H.264, 29.97 fps (NTSC) @ 2704x1520 (2.7k, 4.1megapixels) ~45 Mb/s,
- **Editing takes time!**
  - Watching footage, storyboarding etc.
  - Conversion and export takes time

# Shotcut – <https://www.shotcut.org/>

- **Version 19.07.15**
- **Pros**
  - **Powerful but relatively simple interface**
  - **Great built-in, customizable audio and video filters**
  - **High-resolution transcoding and exports (system-codec independent)**
  - **Wide support for export formats**
  - **Fast FPS video manipulation 180fps+**
- **Cons**
  - **Limited official documentation**

# ShotCut Resources

- <https://www.shotcut.org/>
  - Tutorials
  - FAQs
  - Forum
- **Lots of other help/tutorials on the web, especially on YouTube.**



# Overview of the ShotCut Interface

- **Viewer**
- **Timeline**
- **Scopes**
  - **Audio Loudness**
  - **Audio Peak Meter**
  - **Audio Spectrum**
  - **Audio Waveform**
  - **Video Histogram**
  - **Video Waveform**
- **Playlist**
- **Filters**
- **Properties**
- **Export**
- **Recent**
- **History**
- **Jobs**



# Video Editing with Open Source Tools II

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# ShotCut Tutorial – Part II

- **Some Interface Tips**
- **Recap of Yesterday**
  - More on Text and an Introduction to Keyframing
- **Audio Tracks and Audio Filters**
  - Voice-Overs
- **Stills and Slide-Shows**
- **Split-Screen / Video-in-Video**
- **Slow-Motion / Time-Lapse**
- **Dynamic Zoom**
- **Spot Removal**
- **Exporting**
  - Codecs and Video Formats
- **Proxy Editing**

# Components of a Video File

- **Video Codecs**

- Theora
- H.264, H.265
- VP8, VP9, AV1

- **Audio Codecs**

- Vorbis, Opus, AAC

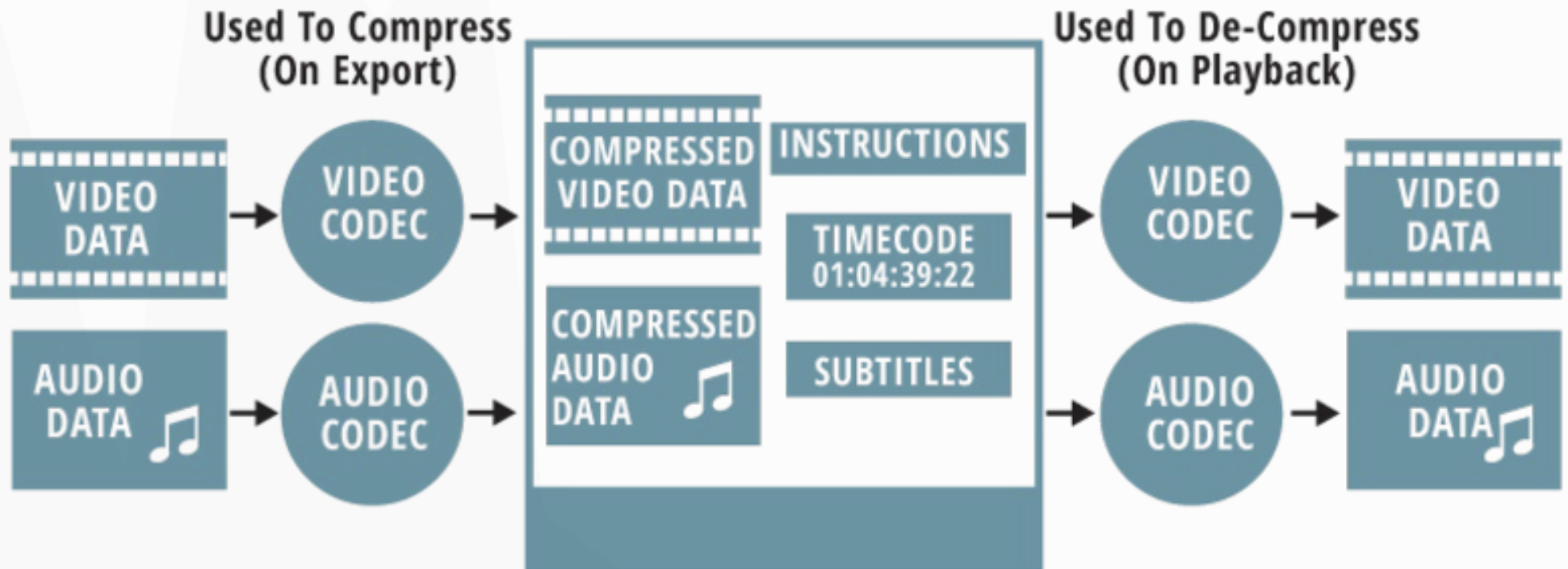
- **Subtitles / Captions**

- SubRip, WebVTT

- **Container Formats**

- **WebM Container**
  - VP8 + Vorbis
  - VP9 + Opus
  - AV1 + Opus
- **MP4 Container**
  - MPEG-4/H.264 + AAC
  - HEVC/H.265 + AAC
- **Ogg Container**
  - Theora + Vorbis

# Codecs



# Container Formats

## WebM Container

- Better compression, smaller filesize at higher quality
- Codec support:
  - VP8 + Vorbis
  - VP9 + Opus
  - AV1 + Opus
- Subtitle support:
  - WebVTT, SubRip → WebVTT
- Player support:
  - Excellent support in modern players and web browsers, but poor or no support in older software (including Internet Explorer, Edge and Safari).

## MP4 Container

- Poorer compression, larger filesize with lower quality
- Codec support:
  - MPEG-4/H.264 + AAC
  - HEVC/H.265 + AAC
- Subtitle support:
  - MP4TT, SubRip → MP4TT
- Player support:
  - Widespread support in media players and web browsers