

Making Digital Video Subtitles

Presented by John Krout
For PATACS + OPCUG
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Why is this subject useful to you?

- Subtitles help the **hearing impaired**, especially when the face of the person speaking is tiny, or not visible.
- Subtitles are valuable for **everyone** when watching a video in any **noisy environment**, on a plane or train, or sometimes at the office.
- You will learn how to **use VLC to watch and adjust subtitles**.
- You will learn how to **create subtitles automatically** for videos, and how to **add subtitles to video files**

Agenda

- The meaning of the terms Subtitle and Closed Caption
- Using the VLC player application to watch and adjust subtitles for Windows, iOS, and Android
- Automatic generation of subtitles using speech-to-text
- Editing automatic subtitles
- Merging a subtitle file and a video file

Closed Captions and Subtitles

- Technically, **Closed Captions** means text in the same language as the spoken dialog in the video.
- **Subtitles** are in other languages.
- You may have seen English subtitles in foreign movies on Netflix and Amazon Prime Video.
- In this digital video era, both Closed Captions and Subtitles are created using exactly the same digital tech for embedding text in a digital video file.
- As a result, the two terms are now **synonyms**.

Part 1.
Watching Subtitles
using the VLC media player

Obtaining VLC

- VLC is a free media player for computers, smart phones and tablets.
- VLC has easy controls for turning on and off subtitles, and for changing subtitle font and size.

Download VLC for Mac/Win/Linux from:
<https://www.videolan.org/vlc/#download>

Use the QR code!

- Or download from your favorite App store.



Obtaining VLC

The screenshot shows the VLC media player download page on the VideoLAN website. The browser address bar displays <https://www.videolan.org/vlc/#download>. The navigation menu includes VideoLAN, VLC, Projects, Contribute, and Support. A donation button is visible with a value of €4.00. The main heading is "Official Downloads of VLC media player". Below this, there are three columns of links for different operating systems: Windows, GNU/Linux, and Other Systems. Red circles highlight the "Windows" and "GNU/Linux" headers, and the "Mac OS X" link under Apple Platforms.

VideoLAN ORGANIZATION VideoLAN ▾ VLC ▾ Projects ▾ Contribute ▾ Support €4.00 donate

Official Downloads of VLC media player

- Windows**
 - Get VLC for **Windows**
 - Get VLC for **Windows Store**
 - Get VLC for **Windows Phone**
- Apple Platforms**
 - Get VLC for **Mac OS X**
 - Get VLC for **iOS**
 - Get VLC for **Apple TV**
- GNU/Linux**
 - Get VLC for **Debian GNU/Linux**
 - Get VLC for **Ubuntu**
 - Get VLC for **Mint**
 - Get VLC for **openSUSE**
 - Get VLC for **Gentoo Linux**
 - Get VLC for **Fedora**
 - Get VLC for **Arch Linux**
 - Get VLC for **Slackware Linux**
 - Get VLC for **Red Hat Enterprise Linux**
- Other Systems**
 - Get VLC for **Android**
 - Get VLC for **Chrome OS**
 - Get VLC for **FreeBSD**
 - Get VLC for **NetBSD**
 - Get VLC for **OpenBSD**
 - Get VLC for **Solaris**
 - Get VLC for **QNX**
 - Get VLC for **OS/2**

Watching subtitles using VLC for **Windows**

- Load the video into VLC, and pause the video
- Pull down the VLC **Subtitles menu**.
- If the **Sub Track** choice is ghosted, then the video contains no subtitles.
- Select **Sub Track**, and choose the desired **Track #** from the sub menu; or choose **Disable**
- Resume video playback

dBrake Subtitles 1080P-25Fps-1.m4v - VLC media player

Subtitle Tools View Help

Add Subtitle File...

Sub Track ▶

Disable

Track 1 - [English]

VLC for Windows

Subtitle Size Range



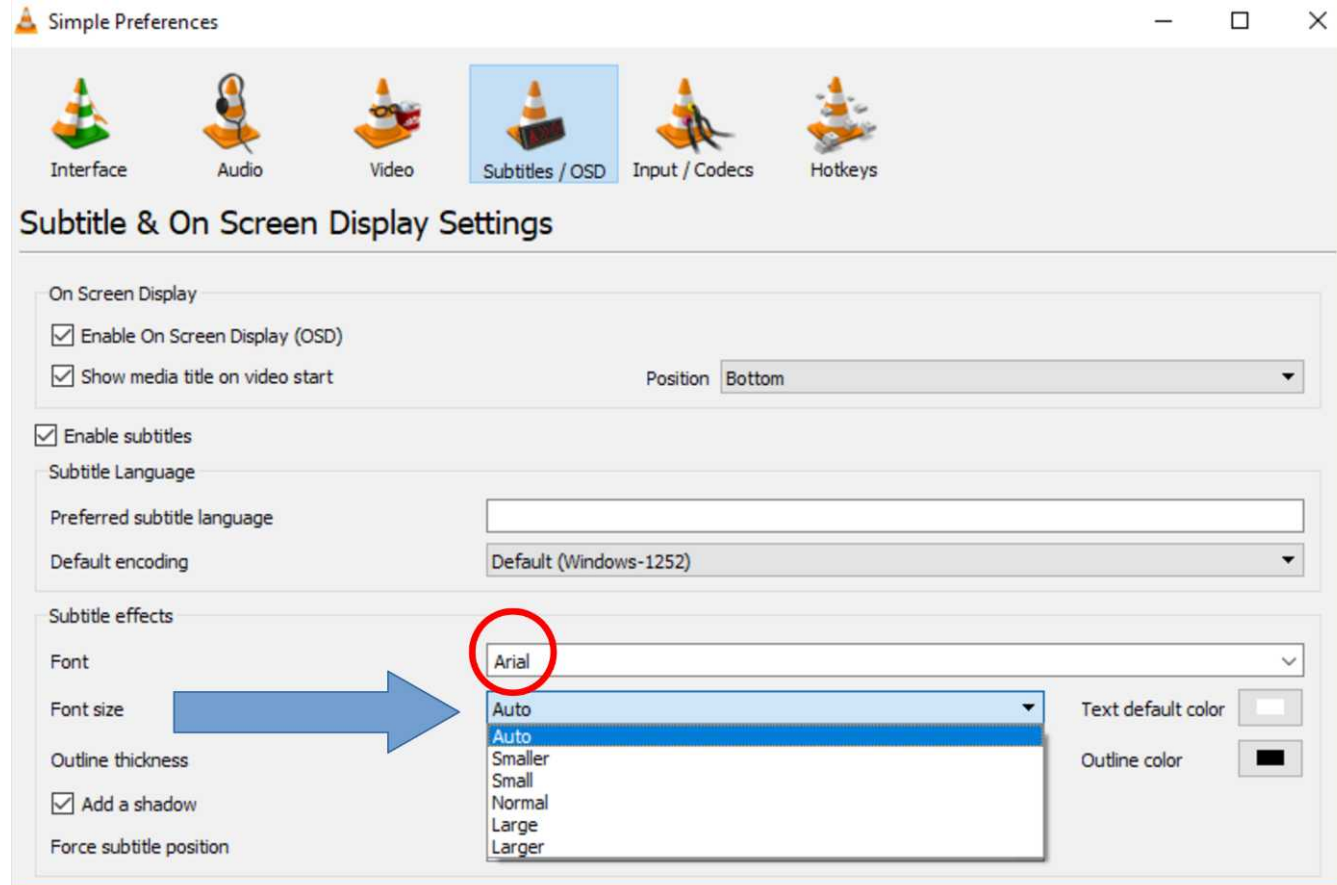
This photo is wider than the HD video



**This photo is wider
than the HD video**

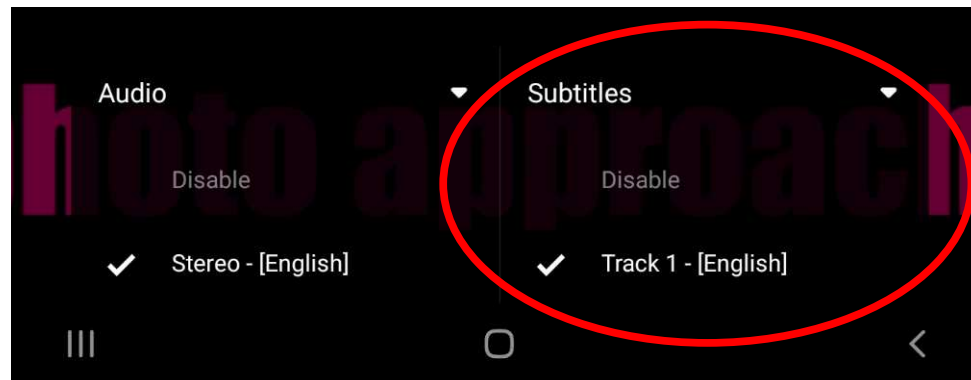
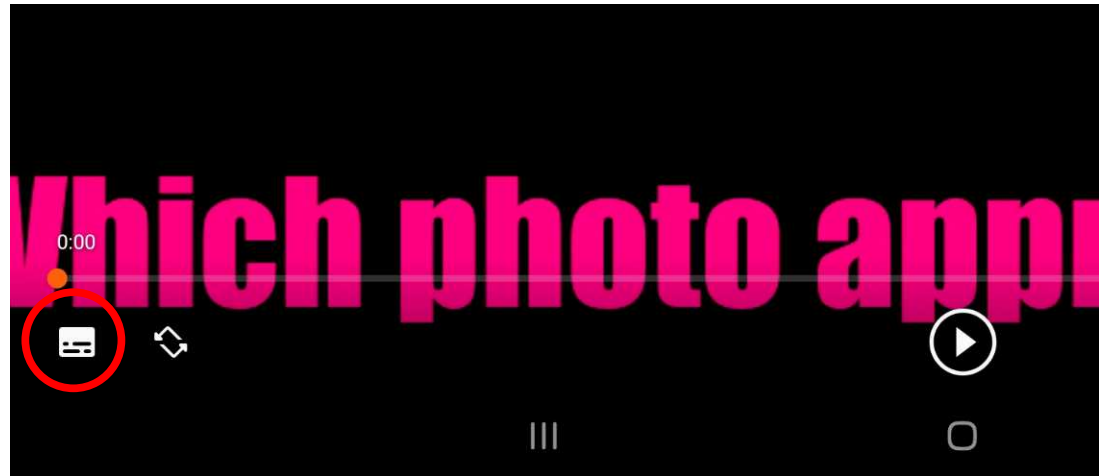
VLC for Windows: subtitle font and size

- Adjust font name if you wish
- Five sizes available in the menu
- Color, outline color, outline thickness, and shadow can be adjusted too



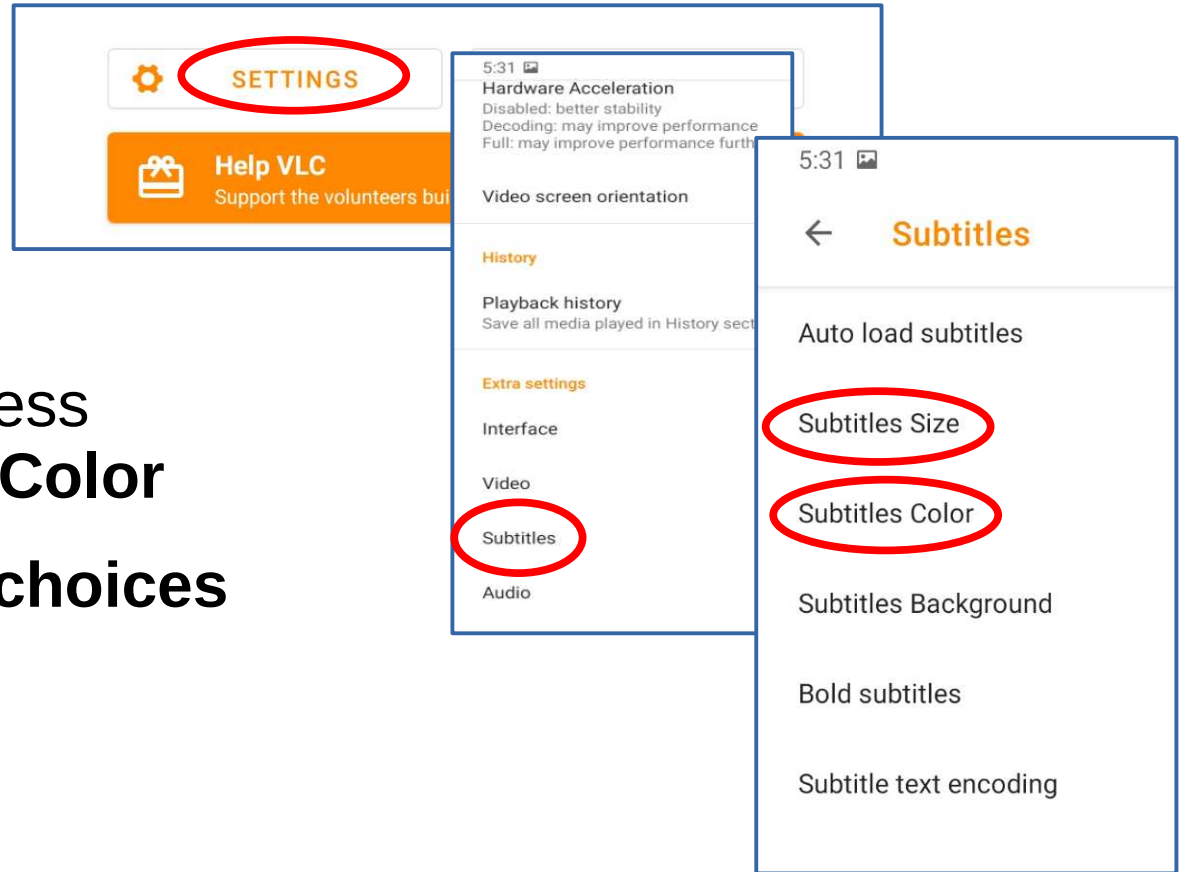
Watching subtitles using VLC for Android

- Start the video, and tap the screen
- Pause the video
- Tap the **circled button**
- The controls pop up; select **Subtitle track** or **Disable**
- Resume video playback



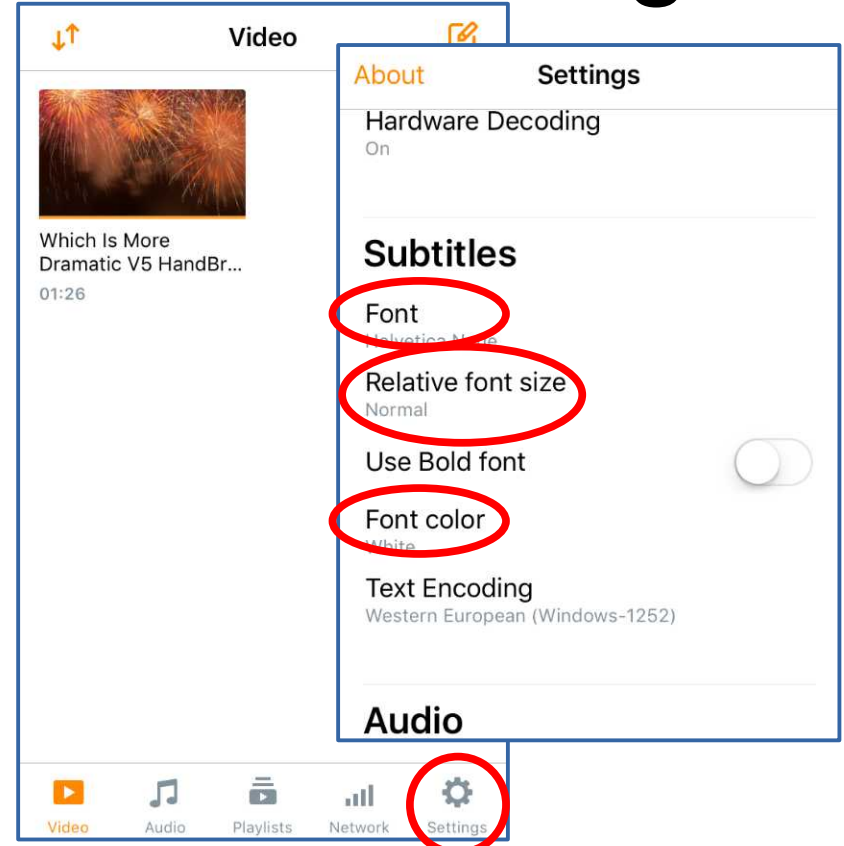
VLC for Android: subtitle font size and color settings

- Before starting a video, tap the **Settings** button
- In Settings, scroll down and tap **Subtitles**
- In Subtitles, you can access sub menus for **Size and Color**
4 size choices, 6 color choices



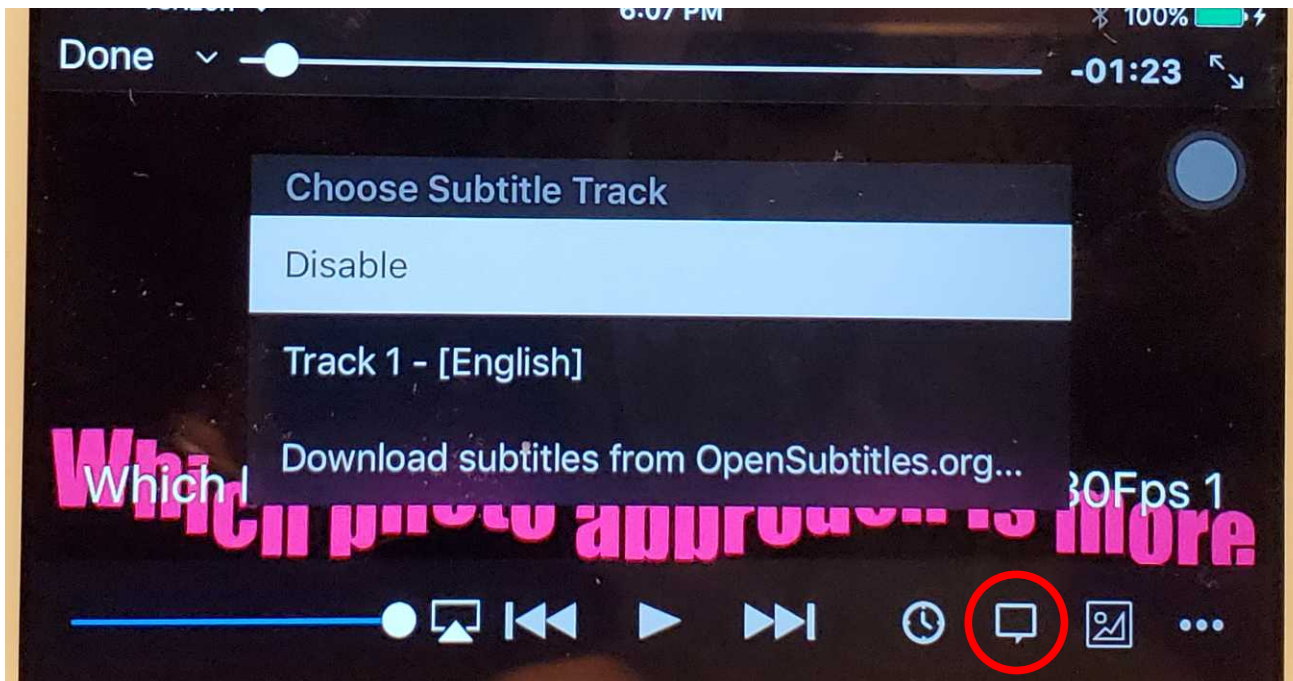
VLC for iOS: subtitle font, size and color settings

- This info was gather on an iPhone 5 running iOS 10.3.4
- In the VLC app, tap the **Gear icon** in the lower right corner to open VLC Settings.
- In Settings, scroll down to find the **Subtitles** heading.
- There, you can access sub menus for **Font**, **Size** and **Color**



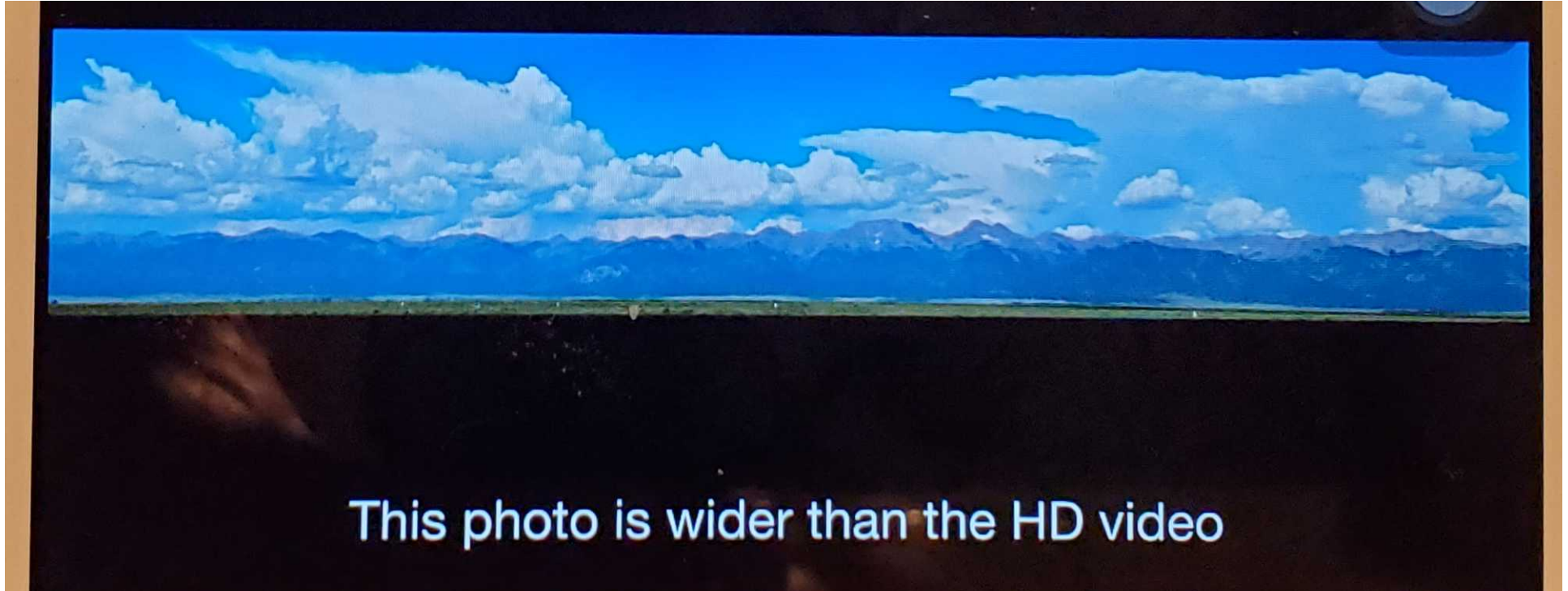
VLC for iOS: Watching Subtitles

- Start the video, and pause it.
- Tap the circled icon; a menu pops up.
- In the menu, select a **Track #** or **Disable**.
- The menu disappears.
- Resume watching the video.



VLC for iOS: Watching Subtitles

- VLC displays subtitles



Making Subtitles: 3 steps

This technique assumes the digital video file already exists

- 1 Automated **speech to text conversion**, producing a transcript file
- 2 **Edit** the transcript (no speech to text conversion is perfect)
- 3 **Merge** the text into the video file

AUTOMATED SPEECH TO TEXT, producing a Transcript file

Automated speech to text: **Zoom**

- For Zoom paid licenses greater than Pro, **Zoom Cloud recording** enable Zoom to produce a **transcript file** including start time of each line of speech.
- The transcript file is named **closed_caption.txt**
- Transcript is largely accurate, including sentence case and sentence punctuation, but not perfect.
- **Otter.ai** provides speech to text conversion for Zoom

Automated speech to text: Zoom

- Here is a sample of speech to text from PATACS 2/24/21 Zoom meeting.
- Sentences are not always recognized correctly.

19:00:34 So we're hoping that the transcript gets saved, and he finds a way to append it to a recording. So, I think that probably ought to be the next thing I do is find the record button and record.

19:00:57 And since we will be recording and we don't usually do that. Be sure you don't do anything that embarrasses you.

19:01:04 Okay, otherwise we will be sorely tempted to package it into a nifty video and hold you for ransom, or something. Anyway, I'm going to lose the transcript because it's writing all over Rogers face Hello.

19:01:23 Who said we could move it. Where's Mr Emery I saw him.

19:01:27 Yeah, you can move he can just click and drag it know, there goes, Oh Okay how about that, what would you do.

19:01:36 I guess yeah that that's only for your workstation for everyone else it you know stays where they have it. If they have it on and on. Okay.

Automated speech to text: Otter.ai

https://otter.ai/login

Otter.ai Product Resources Company Log in Sign up

Otter is where conversations live

Generate rich notes for meetings, interviews, lectures, and other important voice conversations with Otter, your AI-powered assistant.

Get started

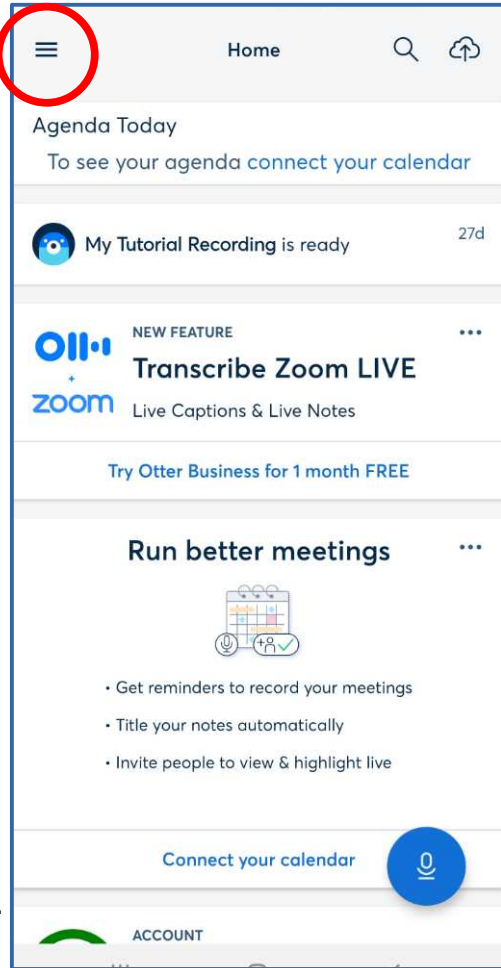
Otter.ai in the news

Forbes

"Google Meet Gets One of Zoom's Best Features: Live Otter.ai Transcription"

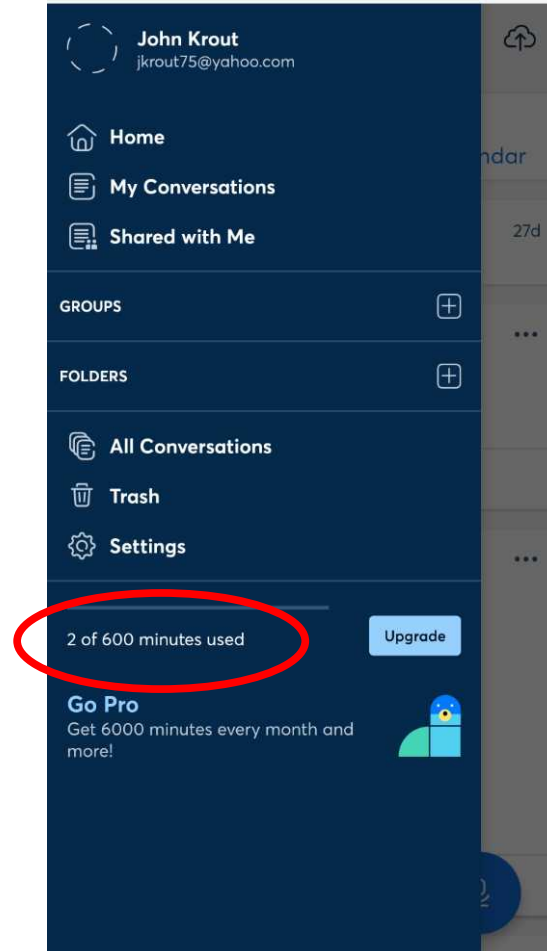
Web site
Home page

Automated speech to text: Otter.ai



Free
Android app

Also free for
iOS



Automated speech to text: **Otter.ai**

The Basic account service, available for free, has **limits**:

- 40 minutes max duration per ***recording file***
- Maximum of **3 recording files** per month (120 minutes max)
- 600 minutes transcription total per month – Otter.ai expects to be used mostly transcriptions of ***live meetings*** via microphone input.
- $600 - 120 = \mathbf{480}$ minutes of live meeting transcripts per month.

Automated speech to text: **Otter.ai**

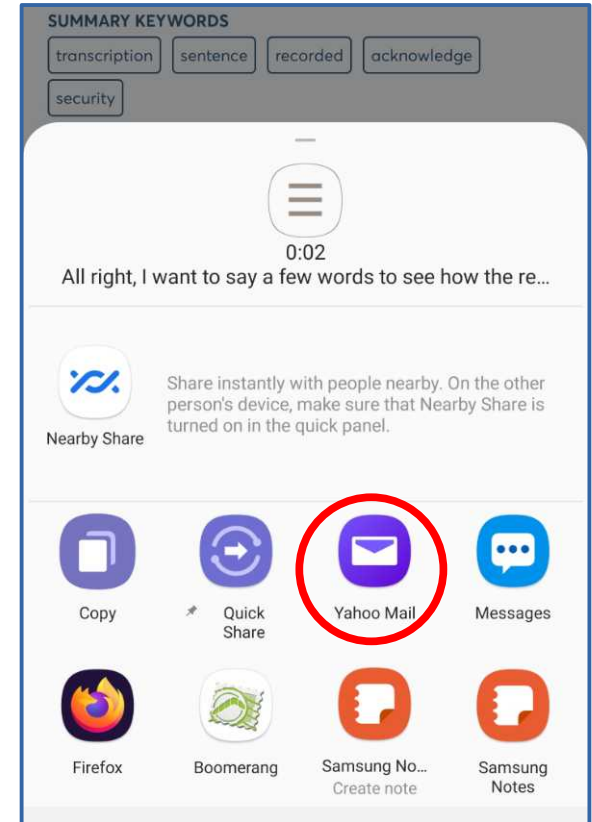
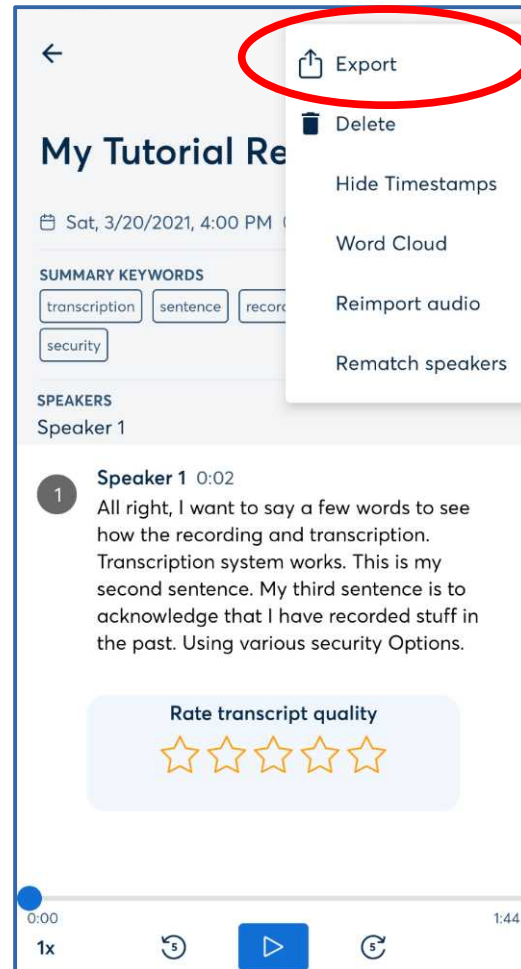
ANDROID WORKAROUND FOR LIMITS OF BASIC ACCOUNT:

- Install the **Otter** and **SoundWire** apps on your Android device
- Install the **SoundWire Server** application on your computer
- Connect the **SoundWire** app and the **SoundWire Server** application
- Start the **Otter** app on your Android device
- Play the recording on your computer. SoundWire Server sends computer audio to the Android device. SoundWire app on the Android device sends audio from SoundWire Server to the microphone input. Otter app thinks it is a live meeting!

Automated speech to text: Otter.ai

Otter Android app transcript copy process:

- A menu appears. In the menu, select **Export**.
- Export options appear.
- Select an email app to send transcript to yourself.



SUBTITLE TRANSCRIPT EDITING

Transcript Edits with a word processor

There is a lot you can accomplish using a word processor:

- Eliminate UM and UH
- Proper pronoun capitalization: i've becomes I've
- Fix technical term issues: **pad a system** becomes **PATACS**
- General spell check

Subtitle Edit screen

Subtitle Edit is **ideal for timing edits.**

Timing edits include:

- * Resolution of time-overlaps of lines.
- * Sufficient duration for display text of each line.
- * Syncing subtitle text to voices.

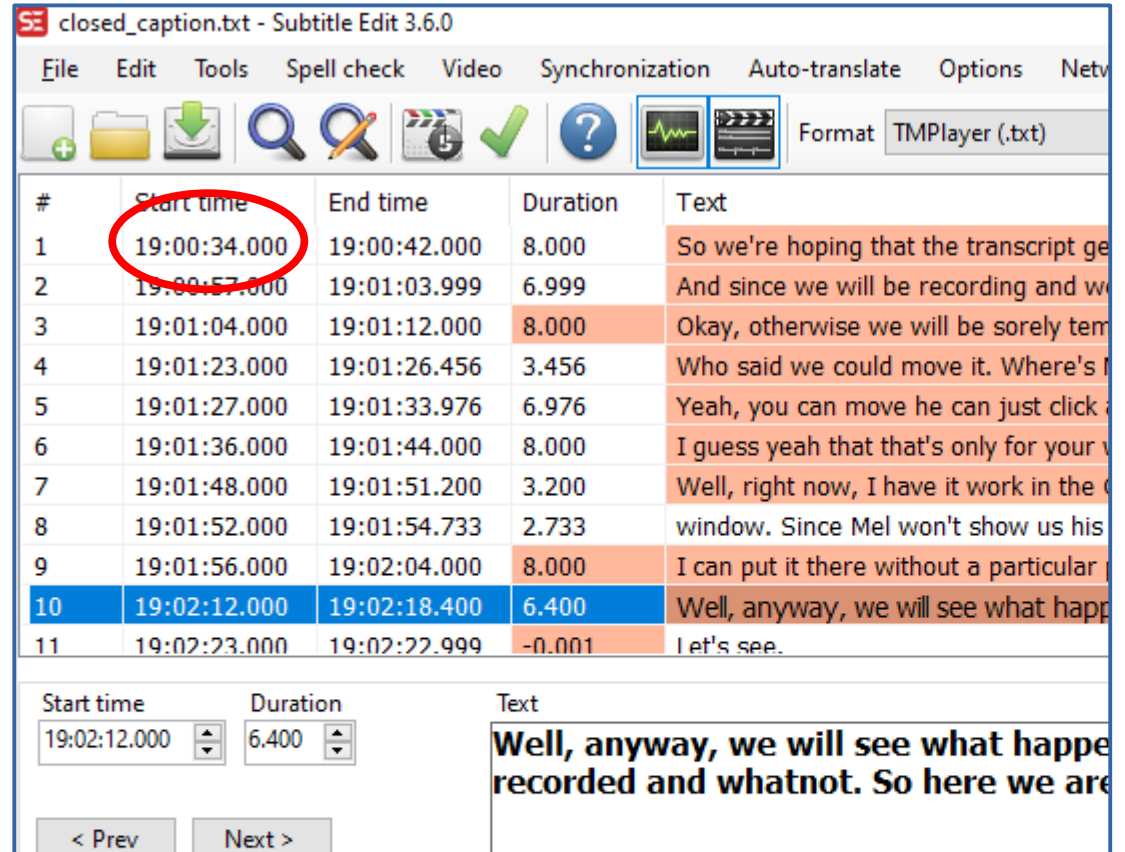
#	Start time	End time	Duration	Text
1	00:00:07.680	00:00:09.500	1.820	I call it the easy way, folks,
2	00:00:09.679	00:00:11.920	2.241	and I'm going to explain why
3	00:00:12.000	00:00:14.920	2.920	in just a moment.
4	00:00:14.920	00:00:17.920	3.000	Let's go to the next slide.
5	00:00:18.560	00:00:21.639	3.079	Okay. I've been making personal
6	00:00:21.920	00:00:25.319	3.399	customized calendars for 10 years.
7	00:00:25.439	00:00:29.320	3.881	This is a photo of a page
8	00:00:29.519	00:00:31.599	2.080	from my most recent calendar (2020).
9	00:00:31.920	00:00:33.880	1.960	This layout is called month per page.
10	00:00:33.899	00:00:35.180	1.281	What that means is that
11	00:00:35.280	00:00:38.399	3.119	is that each photo or group of photos

Why are **bulk timing edits** useful?

- Subtitle line start times in a subtitle file tell the video player application when to display each subtitle line **relative to the start of the video**. Think of the video start as time 00:00:00.000.
- In the Zoom **closed_caption.txt file**, the first start time **19:00:34** would be interpreted by the video player application as appearing **19 hours and 34 seconds after the start of the video**.
- The video is only about 30 minutes long. None of the subtitles would be displayed by the video player application.

Bulk timing edits using Subtitle Edit

- Load the Zoom transcript file
- Don't load the video file initially
- Note the start time in the first Zoom transcript line.
- That time is the *local time at which the meeting started*. In this example, **19:00:34.000**

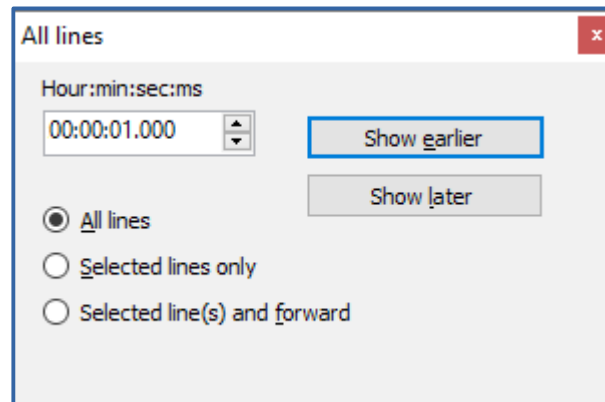
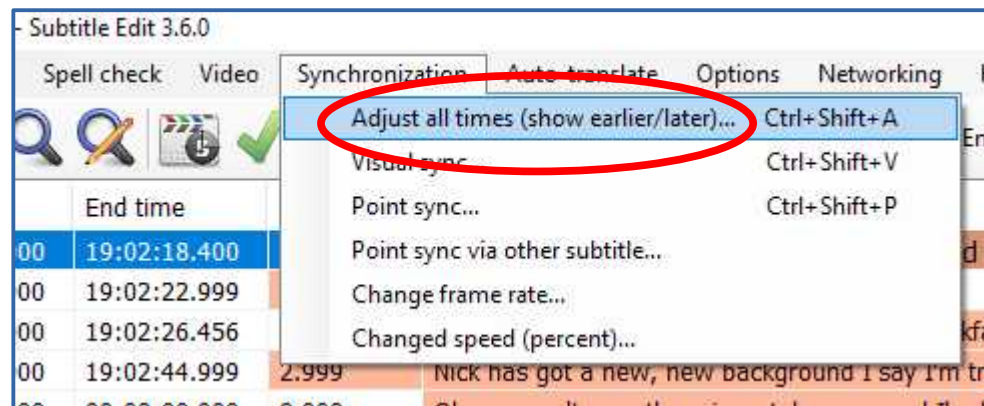


The screenshot shows the Subtitle Edit 3.6.0 interface. The main window displays a table of subtitle entries. The first row is highlighted with a red circle around the start time '19:00:34.000'. Below the table, there are input fields for 'Start time' (set to 19:02:12.000) and 'Duration' (set to 6.400). The 'Text' field contains the subtitle text: 'Well, anyway, we will see what happened recorded and whatnot. So here we are'.

#	Start time	End time	Duration	Text
1	19:00:34.000	19:00:42.000	8.000	So we're hoping that the transcript ge
2	19:00:57.000	19:01:03.999	6.999	And since we will be recording and w
3	19:01:04.000	19:01:12.000	8.000	Okay, otherwise we will be sorely tem
4	19:01:23.000	19:01:26.456	3.456	Who said we could move it. Where's M
5	19:01:27.000	19:01:33.976	6.976	Yeah, you can move he can just click
6	19:01:36.000	19:01:44.000	8.000	I guess yeah that that's only for your v
7	19:01:48.000	19:01:51.200	3.200	Well, right now, I have it work in the
8	19:01:52.000	19:01:54.733	2.733	window. Since Mel won't show us his
9	19:01:56.000	19:02:04.000	8.000	I can put it there without a particular
10	19:02:12.000	19:02:18.400	6.400	Well, anyway, we will see what happ
11	19:02:23.000	19:02:22.999	-0.001	I let's see.

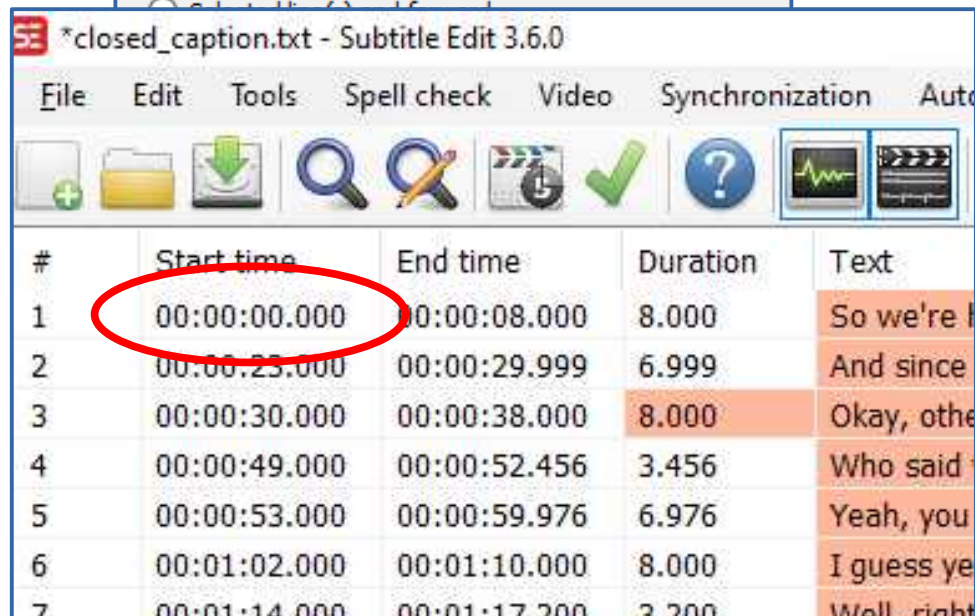
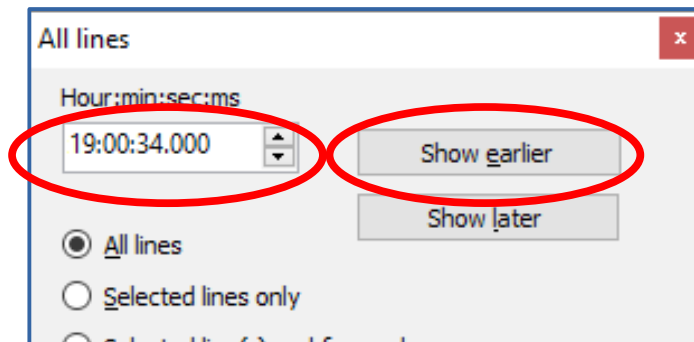
Bulk timing edits using **Subtitle Edit**

- In Subtitle Edit, pull down the **Synchronization** menu.
- In that menu, select **Adjust All Times**
- The Subtitle Edit **All Lines** dialog window appears



Bulk timing edits using **Subtitle Edit**

- In the All Lines dialog window, type the start time of line 1.
- Click the **Show Earlier** button
- The start time of *every* subtitle line is adjusted by *subtracting* 19:00:34.000.
- Line 1 now starts at **00:00:00.000**

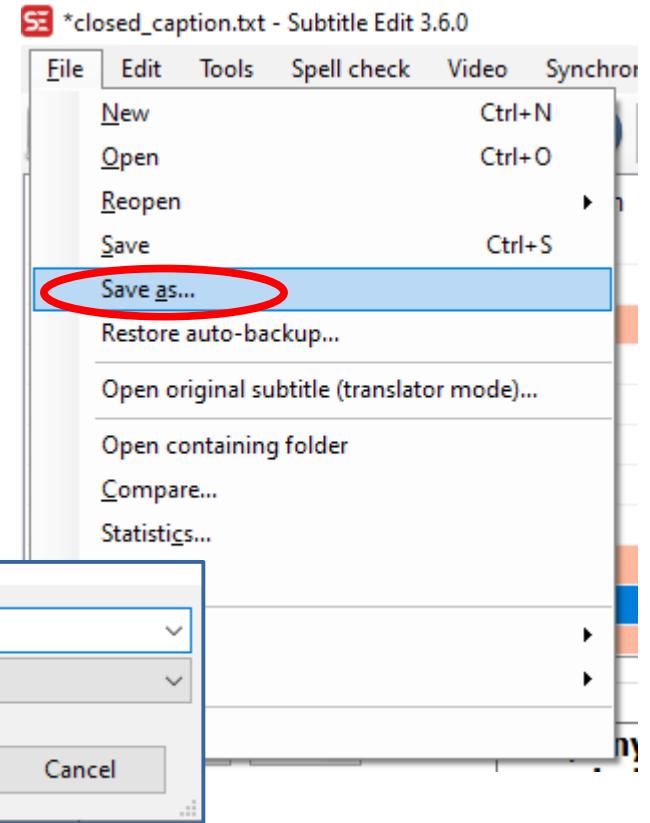


The screenshot shows the main window of Subtitle Edit 3.6.0. The menu bar includes File, Edit, Tools, Spell check, Video, Synchronization, and Auto. The toolbar contains various icons for file operations, search, and editing. Below the toolbar is a table of subtitle lines. The start time of line 1 is circled in red.

#	Start time	End time	Duration	Text
1	00:00:00.000	00:00:08.000	8.000	So we're t
2	00:00:23.000	00:00:29.999	6.999	And since
3	00:00:30.000	00:00:38.000	8.000	Okay, othe
4	00:00:49.000	00:00:52.456	3.456	Who said
5	00:00:53.000	00:00:59.976	6.976	Yeah, you
6	00:01:02.000	00:01:10.000	8.000	I guess ye
7	00:01:14.000	00:01:17.200	3.200	Well, right

Saving Edited Subtitles

- In Subtitle Edit, pull down the **File** menu.
- In the menu, choose **Save As**.
- A standard File Save dialog window opens.
- The best choice for File Type is **SRT**.
- This file is an input to the Merge activity.



MERGE TRANSCRIPT AND VIDEO

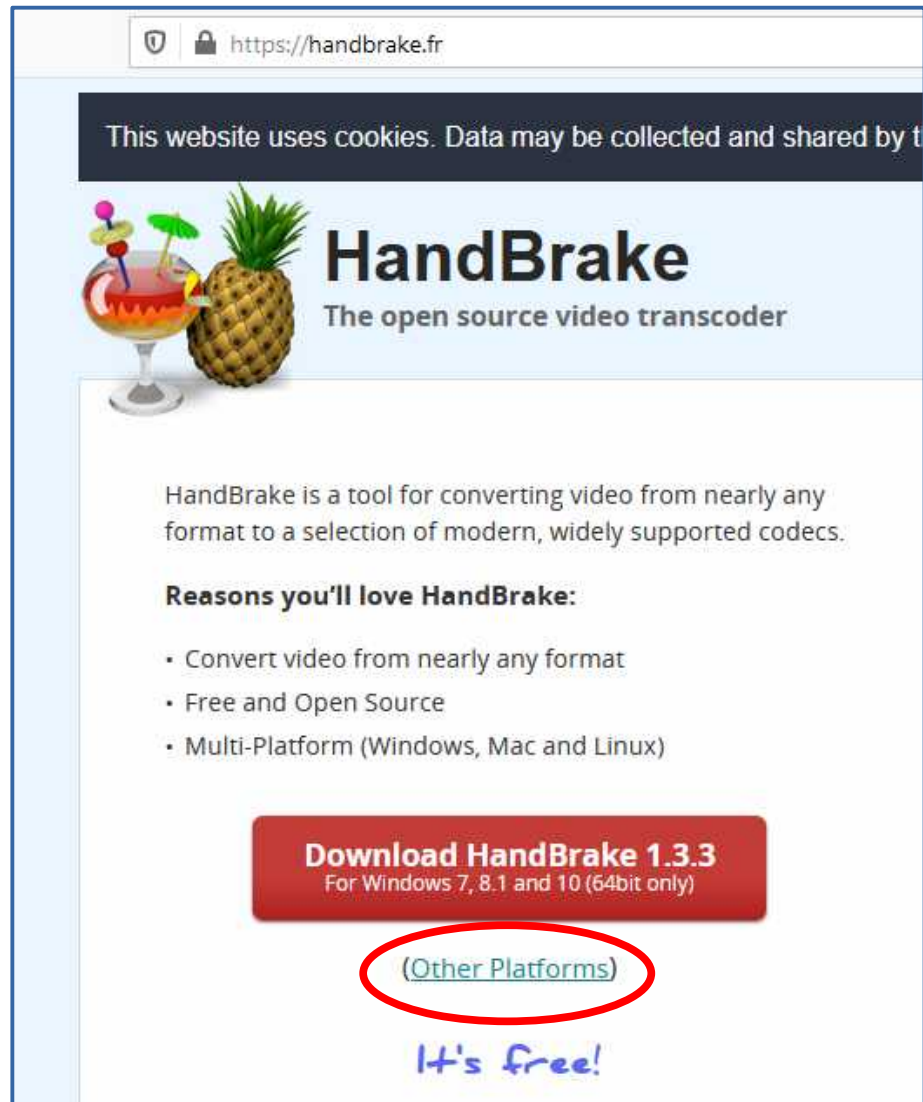
The Handbrake application

- I have been using **Handbrake** for 2+ years, to reduce video resolution (for instance, from 1080P to 720P)
- This year I learned that **Handbrake** can also merge a Subtitles file into a video file.
- **Handbrake** is a free application available for **Windows, Mac and Linux**.
- The URL is: <https://handbrake.fr/>

Use the QR code




Handbrake.fr home page



The screenshot shows the HandBrake.fr homepage. At the top, there is a dark banner with the text "This website uses cookies. Data may be collected and shared by t". Below this, on the left, is an illustration of a cocktail glass with a pineapple and a drink. To the right of the illustration is the "HandBrake" logo in a large, bold, black font, with the tagline "The open source video transcoder" underneath it. The main content area features a paragraph: "HandBrake is a tool for converting video from nearly any format to a selection of modern, widely supported codecs." Below this is a section titled "Reasons you'll love HandBrake:" followed by a bulleted list: "Convert video from nearly any format", "Free and Open Source", and "Multi-Platform (Windows, Mac and Linux)". A prominent red button contains the text "Download HandBrake 1.3.3" and "For Windows 7, 8.1 and 10 (64bit only)". Below the button is a blue link "(Other Platforms)" which is circled in red. At the bottom, the text "It's free!" is written in a blue, handwritten-style font.

https://handbrake.fr

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HandBrake

The open source video transcoder

HandBrake is a tool for converting video from nearly any format to a selection of modern, widely supported codecs.

Reasons you'll love HandBrake:

- Convert video from nearly any format
- Free and Open Source
- Multi-Platform (Windows, Mac and Linux)

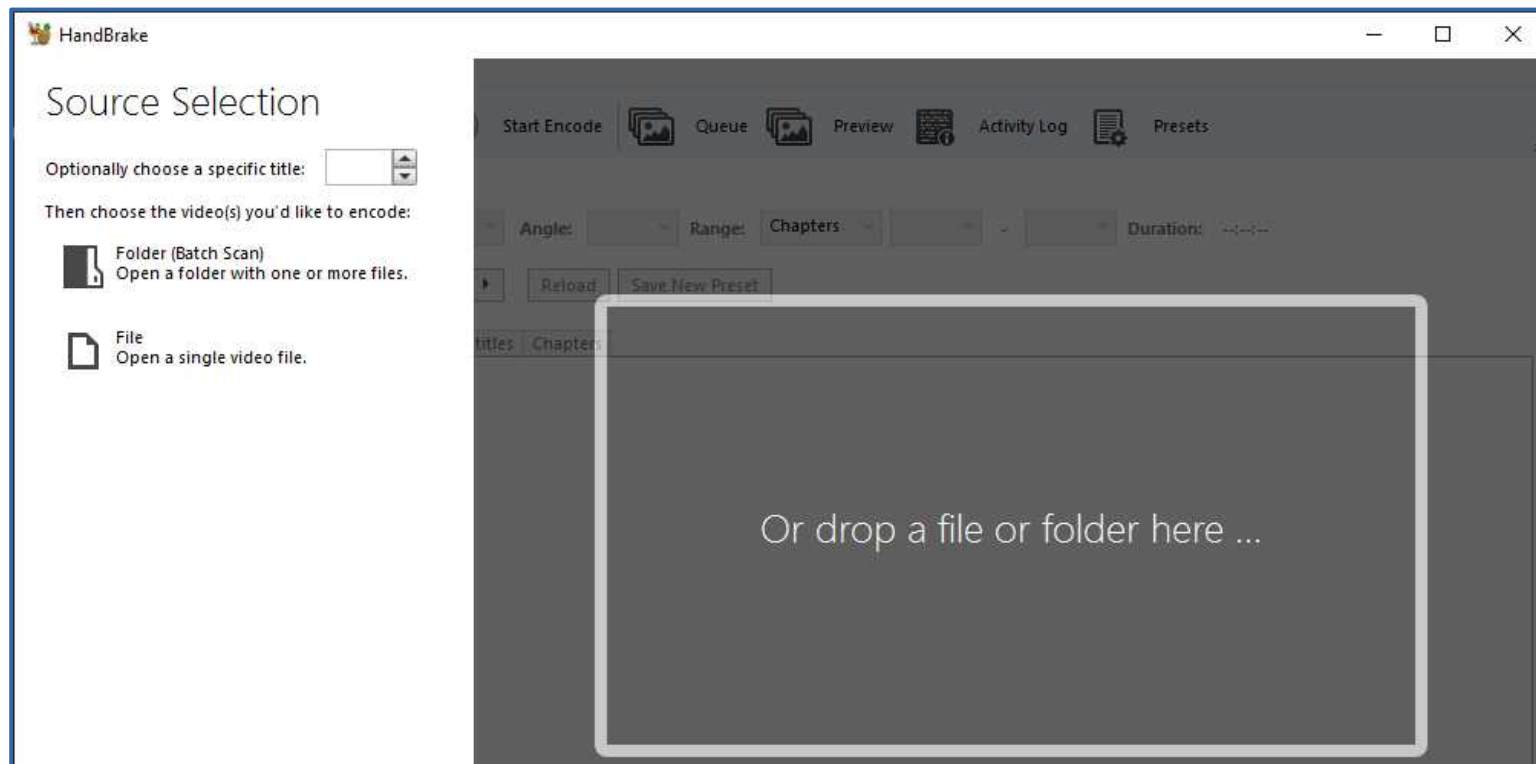
Download HandBrake 1.3.3
For Windows 7, 8.1 and 10 (64bit only)

[\(Other Platforms\)](#)

It's free!

Start up Handbrake

- Handbrake asks you to load a video file

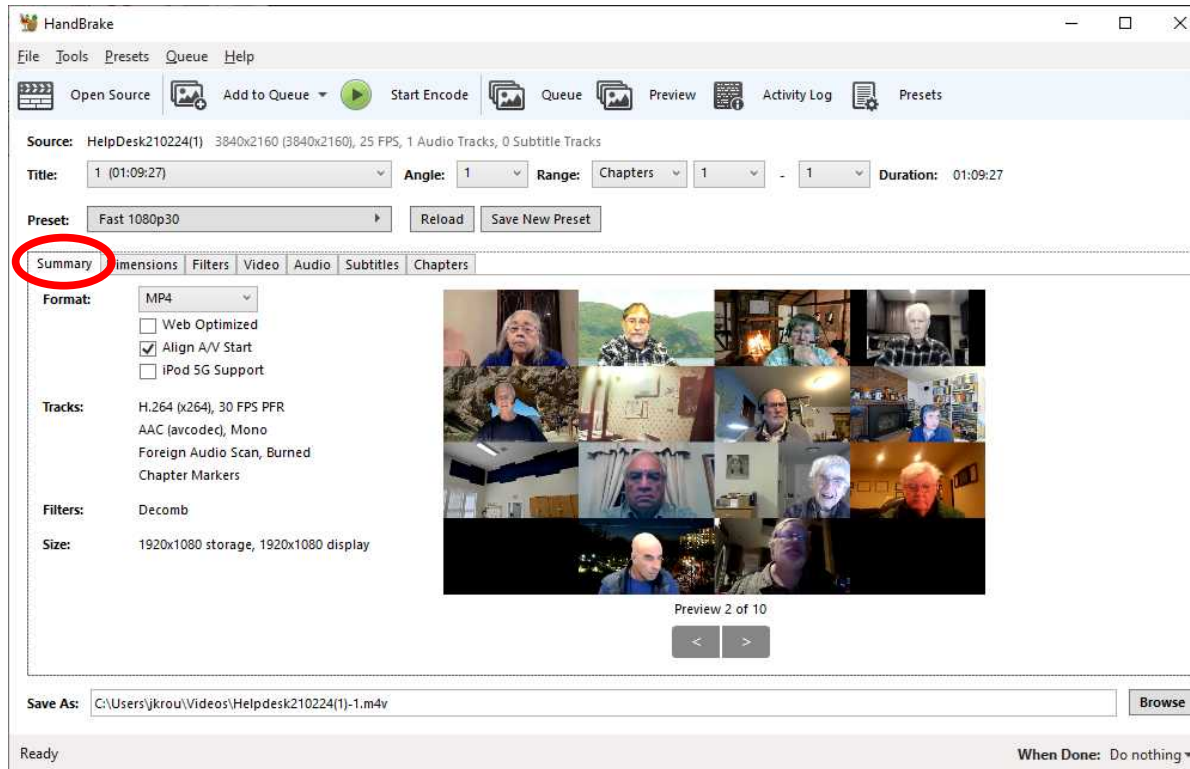


More about Zoom recordings

- Zoom teleconferences are transmitted at the rate of **25 frames per second (FPS)**.
- All **Zoom recordings** are made at the rate of 25 FPS.
- Handbrake defaults to generate a 30 FPS second output file, regardless of the input video file frame rate.
- For Zoom recordings, switch Handbrake to 25 FPS.

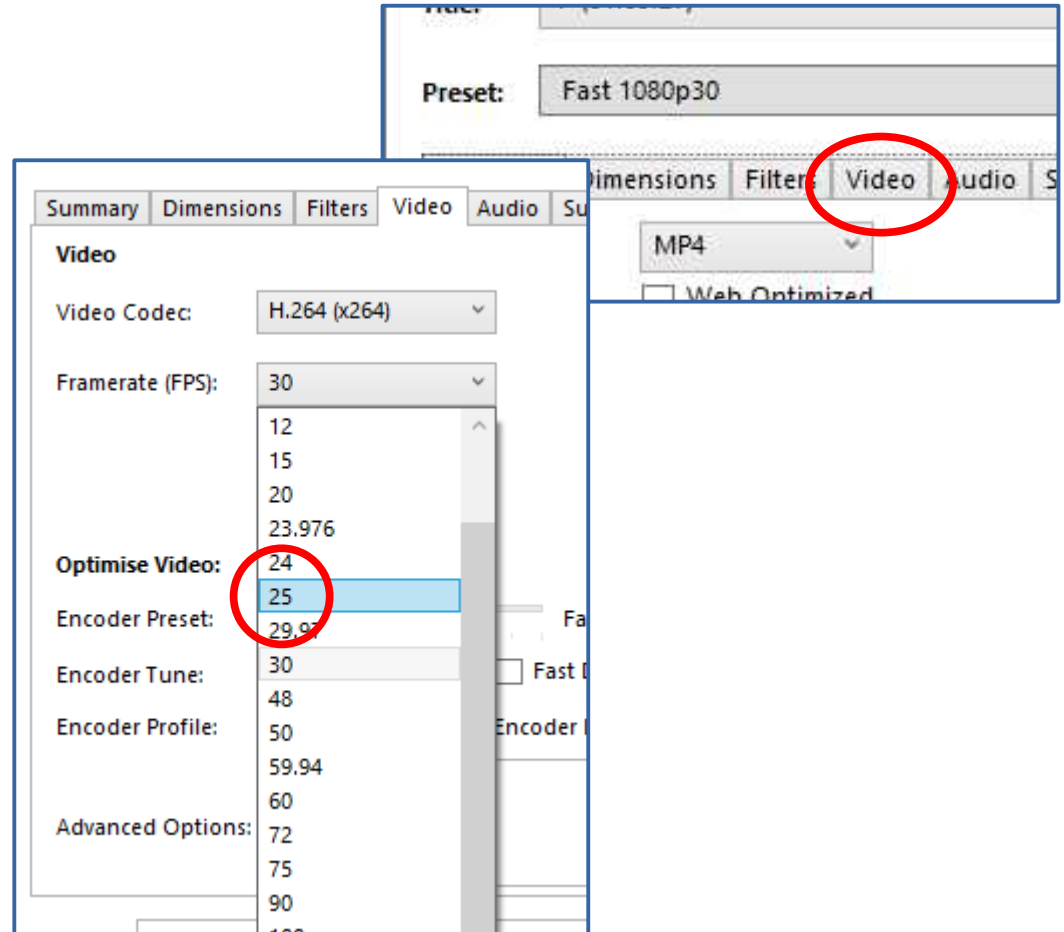
Handbrake window after loading video

- Handbrake defaults to the Summary tab



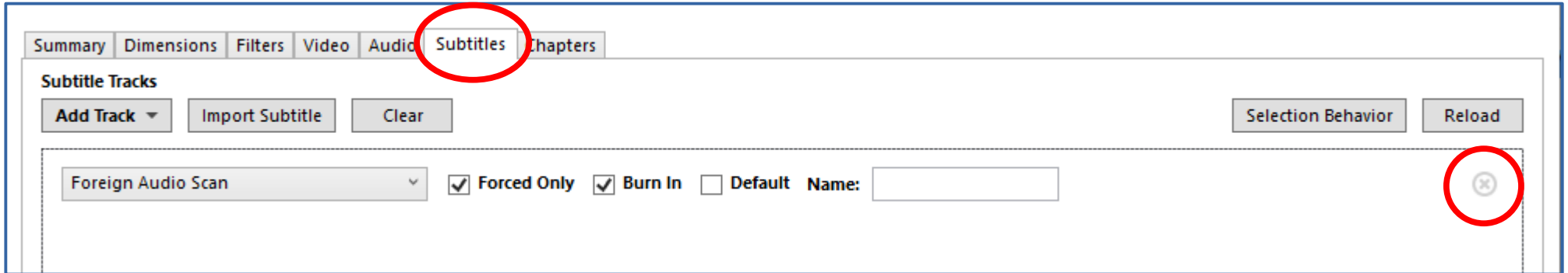
Adjusting output FPS in Handbrake

- Click the **Video tab**
- In the Video tab, find the **Framerate (FPS)** field. Note the down-arrow at the right; click the arrow to see a menu.
- In the menu, select **25**.



Handbrake Subtitles tab

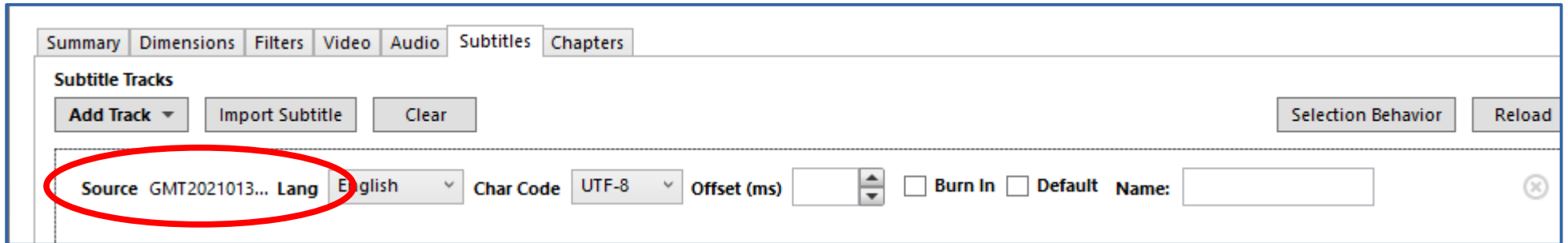
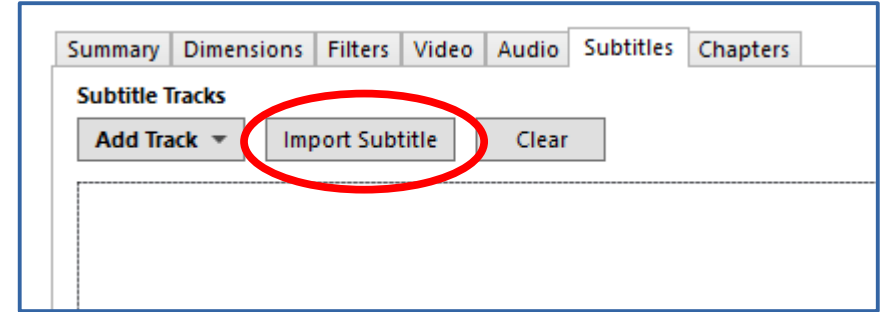
- This tab enables you to identify a Subtitles SRT file to merge with the video file.



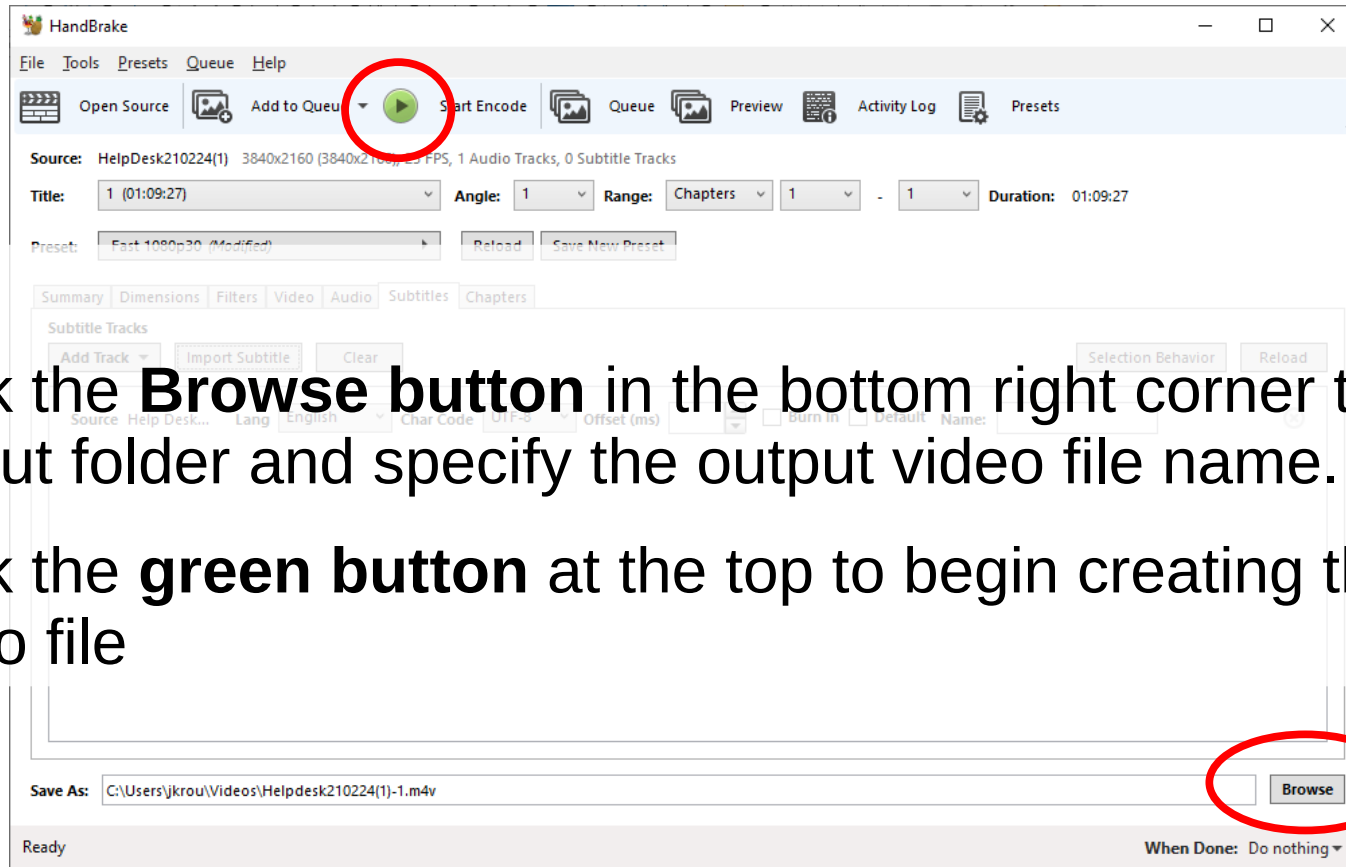
- Click the X at the right to delete the Foreign Audio Scan.

Handbrake Subtitles tab

- Click the **Import Subtitles** button.
- A **File Open** dialog window appears. Use it to select and open your SRT file.
- The SRT file is listed in the Subtitles tab.



Handbrake is ready for Merge



- Click the **Browse** button in the bottom right corner to find an output folder and specify the output video file name.
- Click the **green button** at the top to begin creating the output video file

Handbrake Tip

- Note the drive on which the video file is located.
- Record the merged output file on a different drive.

The End