



In this issue:

Forum Musings

h.264 .v. h265

AV1 and JEVT

HEIF and HEIC

The Newbie Room

Free Things and Interesting Info.

Places to Visit



Snippets

Evomotion have announced the launch of the [Wunder360 S1 AI camera](#), a dual-lens 360° camera with 3D reconstruction, real-time in-camera stitching, and deep learning AI technology that allows AR/VR developers to easily develop 3D content.

Have a read—the price might temp you?



Fuji have just announced the [XF10 compact](#) with a full APS-C 24Mp sensor. It shoots 4k but only @15fps, with full HD @ several frame rates.



I'm a bit of a fan of small compacts, they can do a great job when travelling!

Not strictly video stuff—but well worth a look

[Awesome high-speed photography](#)

Editor's Note.



Once again, I'm late. I don't know about the rest of you out there, but this northern hemisphere summer is just too busy—maybe it's the good weather here in the UK? And my office gets way too hot! So apologies.

This edition has a heavy focus on codecs and such. Mainly because there are advances (and therefore choices) in the pipeline, but also they are much less well understood by most folk and therefore misunderstandings can easily arise and lead editors down blind alleys.

For instance: Most codecs use a comparison and prediction algorithm to “see” the differences in frames that will need changing. A video of a blank wall doesn't change much, so encoding can be quick and “simple”! In a talking head documentary against a blue sky it needs mainly the head bit to be analysed for change, not the sky. Codecs do that sort of analysis in different ways and therefore produce different results. The internals of different codecs are very sophisticated.

So a basic appreciation of codecs may help editors cut through some of the complexity and allow fewer misunderstandings??

The next issue will be less technical—I promise!

[Convert streaming videos to audio files with this App](#)

This got me thinking - again—on the legality of some of the areas we come across. The app is apparently [fully legal](#) and, if so, would it be a useful tool in the box??

Any thoughts?

[Large Format Video Camera](#)

Don't know how I came across this one but it's quite cool!

Watch on [Youtube](#) here.

[AWS DeepLens](#)

Amazon moves a step closer to taking over the world? \$249

[Watch the video](#)

Rejoice or weep??



Forum musings

Over the years I've participated in the Forum, at times I've been very active, other times just an "average" member and in latter years a bit of a voyeur.

Partially, this reflects my own changing interests and life events—where they impact on time and resources available for "discretionary" things like forum participation!

But partially it also reflects the changes in technology that take place and being able to contribute meaningfully and constructively. That also goes in cycles, perhaps when I invest in new systems and new interests arise.

It has always been a fascinating (and humbling) experience to realise how much some folk know about particular facets of editing and just as fascinating how little some folk know, and are prepared to do, in order to become more adept at editing.

The forum is a brilliant resource for regular participants but it does suffer in some respects - for instance it's search facility is pretty basic—it's facilities are also limited. Nonetheless, it is a serious repository of user knowledge and well worth keeping up to date with.

I've also noted the growth in more "instant" feedback channels such as fb.

For me, I have never really got on with fb, I watched it morph from an interesting social media addition to a data gathering behemoth with a focus on exploiting user data for profit (not surprisingly) and so my own fb participation has been deliberately kept very limited. However, it can be extraordinarily useful in so many circumstances, particularly for adept users, and so it is with PDR questions. It provides a much more instantly interactive platform and that can be both appealing and useful for a section of folk.

I started PDN a while ago, really as an experiment to see if there would be any interest in a traditional, but hyperlinked, "newsletter", and to see what feedback might be generated and if it might find a place in the resources available to PDR editors. As of the end of June the 9 issues so far have resulted in 11,694 views and 5,840 downloads, although I have received very few direct comments or suggestions—is that good or bad, I wonder??

However, following a particularly lengthy topic on the PDR16 Forum, I wanted to draw attention to the debate, the content and the knowledge of contributors to the topic.

It is a very useful and interesting read. It demonstrates that the forum is probably the only platform to enable this sort of thing to happen, it illustrates the positive contributions that can be so useful, it shows how constructive debate can tease out issues and solutions and it highlights how real life experiences from knowledgeable contributors can shed light on the vast "soup" of information (and mis-information??) out there, that otherwise would be wholly confusing and contradictory.

It's my recommended reading for the week!

<https://forum.cyberlink.com/forum/posts/list/76530.page>



h.264 and h.265—what's the difference? and what has PDR's custom profile got to do with it?

Most of us are non-commercial editors—we may pride ourselves on being pro-sumers but few of us, using PDR, would consider we are commercial professionals. and so our needs tend to be different, but we still need the best system (for us) and the best quality (for us).

The technical theory and the precise optimisation of our systems for video editing gives rise to much debate and testing but generally no definitive “off the peg” answers. For those who are interested, this [forum thread](#) is particularly valuable

Without minimising the need for optimising our systems, particularly if we are investing in a new purchase, we need also to have a reasonable appreciation of the things we can't actually do much about, but which may be just as “important” to our final production.

So, having shot and edited our masterpiece, we move to the production module—what then? Which choice? What if we want something not on the menu?

Before we can make an informed choice maybe we should try and gain a rough understanding of what our choices really mean?

However, before venturing further, we should also understand that much of the intense technical development, in what we eventually use, is driven by the streaming end of the technology, which is where the big money is, and what we end up using for “non-streaming” use is the fortunate by-product. Think F1 technology, the multi-millions spent on the track, filters down to the domestic production model somewhere!

So, a simple (relatively!!) summary, from a mix of sources.

<https://www.deltadigitalvideo.com/wp-content/uploads/H.264-vs-H.265.pdf>

<http://www.fallenempiredigital.com/blog/2013/02/08/a-guide-to-common-video-formats-containers-compression-and-codecs/>

<https://www.arxys.com/video-surveillance-h264-vs-h265/>

<https://www.bbc.co.uk/rd/blog/2016-01-h-dot-265-slash-hevc-vs-h-dot-264-slash-avc-50-percent-bit-rate-savings-verified>

Video File Basics

To understand the difference between a container, a compression scheme, and a codec, first we need to break down the parts of a video file. Think of a video file as a bookshelf filled with books. It may not be the most exact analogy but it does lay a foundation.

Multimedia Container – The Bookshelf

The multimedia container is like the bookshelf in that it can hold many tracks of audio and video just like a bookshelf can hold many books. Common container formats include MOV, MXF, and AVI.

Compression Scheme – The Language of the Book

Inside of each audio and video track, the information is represented in the language of the compression scheme. Common compression schemes include h.264, MPEG4 part 2, ProRes, DNxHD, and so on.

Codec – The Author of the Book

A codec (encoder/decoder) is a piece of hardware or software that interprets an audio or video signal and compresses it. Each compression scheme can be implemented in different ways which creates different codecs for the same compression scheme.



h.264 and h.265 Technical Context

Conceived to boost video streaming, High Efficiency Video Coding (HEVC), or H.265, is a video compression standard designed to substantially improve coding efficiency when compared to its precedent, the Advanced Video Coding (AVC), or H.264. High Efficiency Video Coding (HEVC), also known as H.265 and MPEG-H Part 2, is a video compression standard, one of several potential successors to the widely used AVC (H.264 or MPEG-4 Part 10). In comparison to AVC, HEVC offers about double the data compression ratio at the same level of video quality, or substantially improved video quality at the same bit rate. It supports resolutions up to 8192×4320, including 8K UHD.

Technical Theory

Both H.265/HEVC and H.264/AVC use the same general approach to encoding a video sequence: the initial frame in a sequence is encoded using only intra-picture methods, and then subsequent frames use both intra-picture and inter-picture compression. The most obvious difference between the two schemes is that H.265/HEVC replaces 16x16 pixel macroblocks with a new construct, called a Coding Tree Unit (CTU). CTU's can be as large as 64x64 pixels, but critically within a CTU the image is further divided into one or more Coding Blocks (CBs). The size of a CB depends on the level of detail in an image. This, simply put, it allows the algorithm to use large blocks where there's not much detail (e.g. an expanse of wall) and small blocks where there is more detail (e.g. someone's face). Within each CB, additional techniques (compared to with H.264/AVC's macroblocks) are available to encode the image. The effectiveness of this technique is illustrated by the fact that forcing an H.265/HEVC encoder to use only 16x16 pixel CTU's increases the output bit rate by more than 25%. The next improvement lies with intra-frame prediction; H.264/AVC uses eight angular prediction modes, while H.265/HEVC increases the number of angular modes to thirty-three. Motion Vector (MV) prediction, used for inter-picture compression, is likewise enhanced; MV's use larger 16 bit values, which translates to an ability to represent four times the offset (+/- 8192 vs. +/- 2048 horizontally and +/- 512 vertically).

Clearly, all these additional variations add dramatically to the processing power required to encode a video sequence; depending on the sophistication of the encoder, anywhere from 300% to 1000% increase in CPU requirements together with significant memory accesses (in the order of gigabytes per second) have been measured

Subjective Context

With subjective considerations, H.265/HEVC offers definite advantages over H.264/AVC. First, as a BBC experiment shows, the subjective analysis (MOS) of the video samples shows that comparable video quality is obtainable with more than the 50% bandwidth reduction targeted by the design. Therefore, even if only half the bandwidth (of H.264/AVC) is allocated for a video stream, there is additional "headroom" for managing the lossy channel. Alternatively, because the subjective quality of the video at 50% of the H.264/AVC bitrate is "better" than that of the H.264/AVC video, distortion introduced by lost data will have a lower subjective impact than the same loss at double the bitrate using H.264/AVC. Secondly, the design of the H.265/HEVC Coding Tree architecture means that, considered across a single frame, in the encoded version, more bits will be used for detail (e.g. an instrument) than for background (e.g. the sky). So losing one packet's worth of data (up to 182 bytes) is, statistically, more likely to result in a loss of data in a smaller, rather than larger, piece of the image. Subjectively, then, data loss tends to be less visually intrusive and thus of greater utility than would have been the case with older encoding methods. Thirdly, because the H.265/HEVC coding uses half the bandwidth compared to H.264/AVC, it is practical to use higher resolutions and/or better quality settings than would have been the case with the earlier method. If the quality setting is (simplistically) likened to the "fuzz" reducing the clarity of a given picture, then reducing that "fuzz" or increasing the detail subject to "fuzz" both result in increasing the ability of the human brain to resolve detail (for example, distinguishing between the numerals "0" and "8").

The Future

Overall, HVEC H.265 compression is going to be a dominant codec in the coming years. So, particularly important for commercial usage, you will be able to record and stream ever higher resolution video and higher frame rates and store that video for longer retention times, all at lower total system costs. Although as the old adage goes "The data always expands to fit the available storage." So plan on doubling your storage capacity over time.

The more you get the more you want??



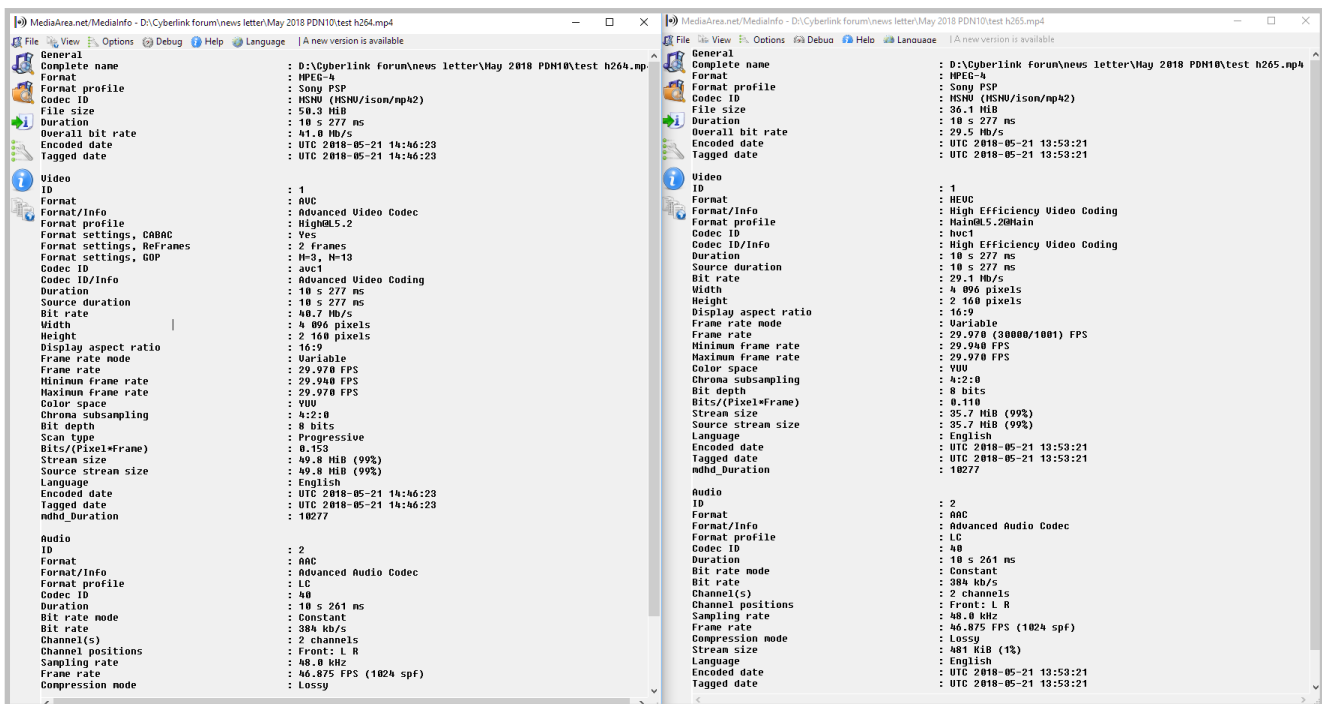


So, having digested all that, what does it actually mean for us as “simple” video editors. Firstly, we must decide which production route to use for our new project , so we go to the Produce module and choose.

BUT

Which choice and what do they mean anyway, and if we want something different, how do we get it?

We can discuss endlessly the differing codecs /containers and other things but we are given a particular set of tools in PDR and we cannot change them (but we can change some parameters within them) so we must work with them. If you are not certain of what you want, just try them on a representative sample of your project. To get technical details on a produced video use something like [MediaInfo](#).



In this example—same source, same resolution, same frame rate, same container but just a different encoder 264 or 265. Check out the other differences for yourselves. Different file size—smaller is better?? Different bitrate—more is better?? (maybe not—depends on the efficiency of the encoder and the source content—don’t take a blanket approach!)

Next Key Question then, who or where are our viewers? How will they enjoy our production—UHD TV, laptop via Youtube or vimeo, flashdrive on HDTV, BD, or the latest smartphone?

So, being blunt, do our viewers watch our wedding video and say—“Hmmm, it would have been better in H265 @ 47Mb/s” I hope not, but who knows? More likely, they would not know— or care?

So try and actually watch your production in different formats on differing viewing platforms (after having been processed by Youtube or whatever!!) and decide what production profile might suit your needs best,

If the standard profiles and choices do not suit, and you want to try something else, use a custom profile. Not all parameters can be modified but many can—try them and see the difference.

The article by The Shadowman in the Newbie Room shows you how to approach it.



AV1 and JVET Codecs

Since we are having a bit of a study on codecs and encoding, perhaps we can also look at [AV1](#) and [JVET](#) codecs.

AV1

The new upcoming AV1 Royalty Free codec developed and announced by the [Alliance of Open Media](#)—which has 12 founding members and 25 promotor members (July 2018). You will note that all the big boys are playing together for once!



<https://aomedia.org/membership/members/>

So what is AV1?

“AV1 is a video codec specification, similar to VP8, H.264, VP9 and HEVC.”

AV1 is built out of 3 main premises:

Royalty free – what gets boiled into the specification is either based on patents of the members of AOMedia or uses techniques that aren't patented. It doesn't mean that companies can't claim IP on AV1, but as far as the effort on developing AV1 goes, they aren't knowingly letting in patents

Open source reference implementation – AV1 comes with an open source implementation that you can take and start using. So it isn't just a specification that you need to read and build with a codec from scratch

Simple – similar to how WebRTC is way simpler than other real time media protocols, AV1 is designed to be simple



ROYALTY-FREE
Interoperable and open



UBIQUITOUS
Scales to any modern device at any bandwidth



FLEXIBLE
For use in both commercial and non-commercial content, including user-generated content



30% BETTER COMPRESSION*
Uses less data while delivering 4k UHD video and beyond when compared to alternatives



OPTIMIZED
Developed for the internet and related applications and services-from browsers and streaming to videoconferencing services



LOW FOOTPRINT
Designed with a low computational footprint and optimized for hardware



CONSISTENT, HIGHEST-QUALITY REAL-TIME VIDEO
Bringing features like 4k UHD, HDR, and WCG to real-time video



JVET

“Though High Efficiency Video Coding (HEVC) is still in its take-up phase, it is foreseeable that even better compression will be needed in the future, both in the context of traditional and new application domains. In this regard, a joint exploration activity has been started by ISO/IEC MPEG and ITU-T VCEG under the umbrella of their Joint Video Exploration Team (JVET). Test cases have been defined for various types of video, including HD, UHD, HDR, and 360-degree video, and investigations on advanced compression tools, using a common software platform, have been performed. Evidence obtained so far indicates potential for significant achievable compression efficiency improvements. “

“In past developments of video compression standard generations, it took approximately one decade to achieve a doubling in performance (i.e., half rate with same visual quality). Though the first version of HEVC was not launched earlier than 2013, a next generation appears to be desirable earlier, potentially around 2020, specifically supporting:

- 5G applications, with the advent of ubiquitous wireless video sensors;
- Massive streaming of UHD video content;
- High dynamic range and wide colour gamut (which are emerging and are expected to become mainstream);
- Immersive formats stepping into markets, such as virtual/augmented reality, free viewpoint, light field and beyond. At the same time, some changes in the ecosystem which has driven the sustainability of standards generations so far are happening:
- Proprietary codecs are increasingly competing against open standards (as they typically have shorter life cycles in their versions and are often running on software platforms).
- Software implementation on smart devices becomes more important than dedicated hardware and even dedicated hardware becomes increasingly programmable.

After all, this might allow for shorter development cycles than traditionally seen, in particular when potential technology exists, providing sufficient performance improvement to justify development of a new generation of standards. “

“Initial results obtained by JVET show clear evidence that video coding tools exist which can significantly improve the compression performance compared to HEVC. These findings look extremely promising, even though, due to complexity, not all elements included currently in JEM might be of practical importance in the context of real-world products. “

So, fellow video editors, we can look forward to yet more changes as the industry chases the ultimate goal of the highest quality/lowest size prize!!



HEIF and HEIC

OK, Having written all that stuff on new video codecs, I suppose we should also include a quick summary of some new image formats as well. I know!—it's a bit overkill but

Right, the usual quick summary :

“**High Efficiency Image File Format** is a format for individual images and image sequences. It was developed by the [Moving Picture Experts Group](#) (MPEG) and is defined by [MPEG-H](#) Part 12 (ISO/IEC 23008-12). The MPEG group claims that twice as much information can be stored in a HEIF image as compared to a [JPEG](#) one of the same size, while being in even better quality. “

[\[https://en.wikipedia.org/wiki/High_Efficiency_Image_File_Format\]](https://en.wikipedia.org/wiki/High_Efficiency_Image_File_Format)

“A HEIC file is a raster image saved in the High Efficiency Image Format (HEIF), a [lossy](#) compressed media container format commonly used to store images. It may contain a single image, a collection of images, image bursts, or image sequences, along with [metadata](#) that describes each image. HEIC files may also appear as [.HEIF](#) files.

[\[https://fileinfo.com/extension/heic\]](https://fileinfo.com/extension/heic)

“Technically, HEIC isn't really a format as such, more of a container for images and audio. The way Apple has outlined its use is to store still images encoded with the HVEC (H.265) video format. “

[\[https://www.macworld.co.uk/feature/iphone/what-is-heic-3660408/\]](https://www.macworld.co.uk/feature/iphone/what-is-heic-3660408/)

[Here's why HEIC files are great:](#)

- Around half the size of JPG for the same quality
- Can store multiple photos in one file (ideal for Live Photos and bursts)
- Supports transparency like GIF files
- Can store image edits, such as cropping and rotating so you can undo them
- Support 16-bit colour vs JPG's 8-bit

So, are we any the wiser—a bit, but what do we do with one if we have one—like all recent iphone users?

Well, as of writing this, we are a bit stuck.

There are a couple of free apps to convert HEIC to JPEG. Rumours are that Win10 will get HEIC handling soon, some on-line converters are available and, of course, iphone users can switch to JPEG for recording.

Rumours are also around that Android will support HEIC in the near future.

No doubt all image and video editing software developers are working to incorporate support, so we must wait for the big announcements.!!!



The Newbie Room

The place to come if you are new to PowerDirector, video making and editing.

Visit [here](#) to pick up some new and useful tips.

CREATING CUSTOM PROFILES IN POWERDIRECTOR

WHAT IS A VIDEO PROFILE?

The answer is everything that makes up the structure of a video clip. The profile contains such information as the video CO-DEC, Bit rate, video resolution and frame rate. The frame and profile types are also important aspects to take into consideration when creating a custom profile.

WHAT IS A CUSTOM PROFILE?

Video editing programs will have several default production profiles available for use. However, there is a possibility that the media being produced will not match any of the defaults, so the simple answer is to create one that does.

This article will show how to make a custom profile and explain what to do if the custom profile still does not match your requirements.

CREATING A CUSTOM PROFILE THAT ISN'T AVAILABLE IN POWERDIRECTOR

In Issue 5 of PD News ([here](#)) it was explained how to create a custom profile. However, it is possible to create custom profiles that do not exist within the defaults of PowerDirector. One example might be the 2560 x 1440/60 resolution commonly used to upload video to YouTube.

If, as described in Issue 5, on the "Produce" page you click on "+" to open PD's Quality Profile Setup window and then open the "video tab", under "Resolution" many options are available to create a custom resolution setting. However, as will be seen, 2560 x 1440 does not exist. This can be very frustrating, but all is not lost - we'll make one.

We'll take the above scenario of 2560x1440 and create a profile to do the job. In PowerDirector with your project on the timeline, go to the "Produce" page and

step 1: Select - for the purpose of this exercise - H.264/MP4

Step 2: Select any profile available in the dropdown list. It doesn't matter which one because it is going to be edited.

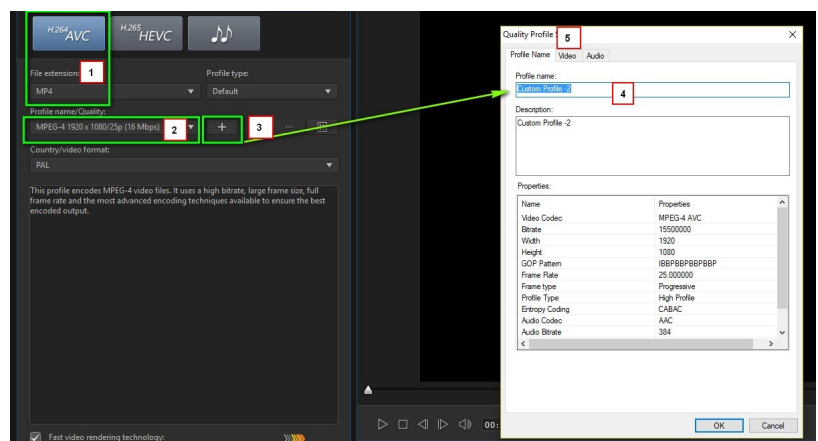
Step 3: Click on "+" to open the Quality Profile Setup window.

Step 4: Give the new profile a memorable name that will indicate what the profile is intended to do. We'll call this one "YouTube2560".

Step 5: Click on the "video" tab and you will see the profile is shown as 1920x1080 25 or whichever you chose in step 2.

Click "OK" to close the Quality Profile Window. Your latest profile will now be stored in PowerDirector's Profile.ini.

The next step is to edit PowerDirector's Profile.ini file to match your new 2560x1440 settings

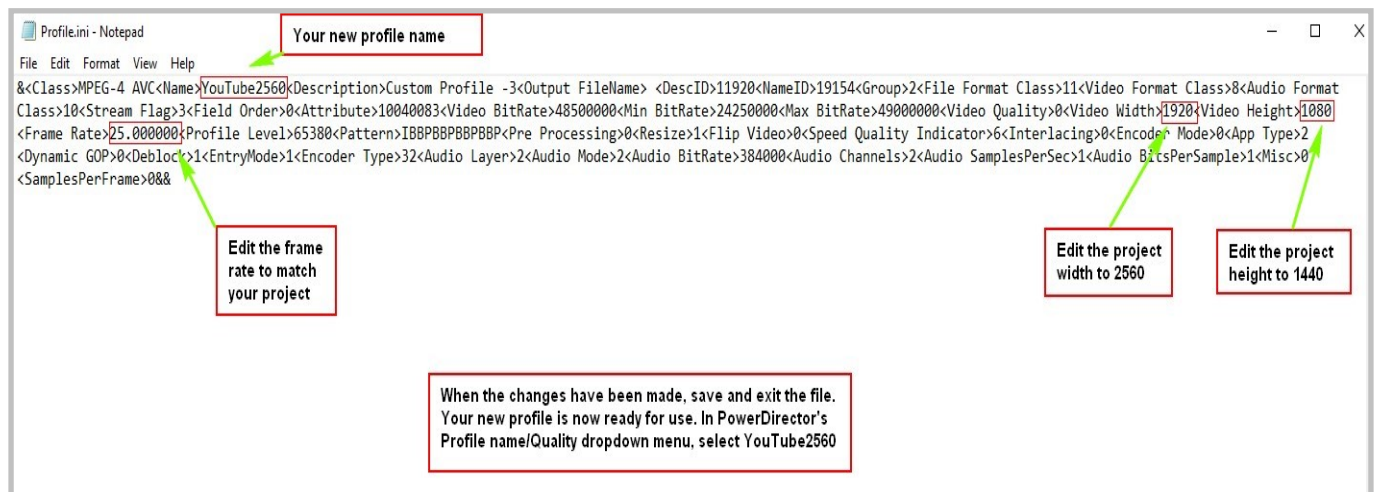


The hardest part of this exercise will be locating PowerDirector's Profile.ini on your system.

However, try following this route:

Your computer/AppData/Roaming/CyberLink/PowerDirector/16.0*/UserConfigure

*enter your particular version.



The graphic shows the steps necessary to create your new profile.

Just change the video width, height and frame rate.

Now save and close Notepad and the profile is ready for use in PowerDirector.

NB. If you have created custom profiles in the past you may need to explore the profile.ini file to find the YouTube2560 entry. In the Profile.ini opened in Notepad, just select "edit" - "find" and, in this example", type YouTube, and "enter". The name of the profile will be highlighted in blue and you can begin the edit.

If you don't want your old custom profiles any longer, the Profile.ini file can simply be deleted. When making a new profile the Profile.ini will be recreated automatically.



Free Things and Tips and tricks

[Free Fonts via Shutterstock](#)

[Old but still valid—Shooting an Interview](#)

[Some film strip PNGs that might fit a project?](#)

[Tips on video cuts](#)

[Free still backgrounds and titles](#)

Interesting Info.

[Editing & Empathy in Big Little Lies](#)

I've never seen this series but I really liked this video essay on the editing techniques employed.

I would recommend watching it to get a cool view on how we can all incorporate some of these processes into our own editing.

Well worth the 14 mins.

[Defense Visual Information Distribution Service](#)

Came across this—fascinating resource full of potentially interesting things.

[Prelinger Archives](#)

Again a weirdly wonderful collection that may prove useful.



Places to visit

Tutorials—inc. PDR16

- [Official CyberLink Tutorials](#)
- [PD University](#)
- [Hans van Kempen's Starter Course \[for Dutch users\]](#)
- Also many of [PDtoots tutorials](#) are useful to PD users.
- [Jimlowa's Tutorials](#) <http://sharperturtle.com>
- [PowerDirector Tutorials](#)

Members Resources Websites

- GodfreyZA's Templates: <http://oneclickmobi.com/powerdirector-templates/>
- Barry Gill's resource page: http://www.bgillcyberstudio.com/barry_gill_cyber_studio_002.htm
- Eric Matyas music page: <http://soundimage.org/>

Useful Documents

- Future Suggestions:
- Guide to Good Posting : [Before Posting](#)

Resources

- DirectorZone
 - [Effects, particles etc.](#)



Request for sample video files

[Barry The Crab's site](#) has a wide selection of interest to editors, including sample files from many camera sources to trial or work with, donated by other members etc.

HE NEEDS MORE SAMPLES TO KEEP THE COLLECTION
UP TO DATE!!

Please consider visiting and [uploading samples](#) that are not already available, it will help support a good service.

