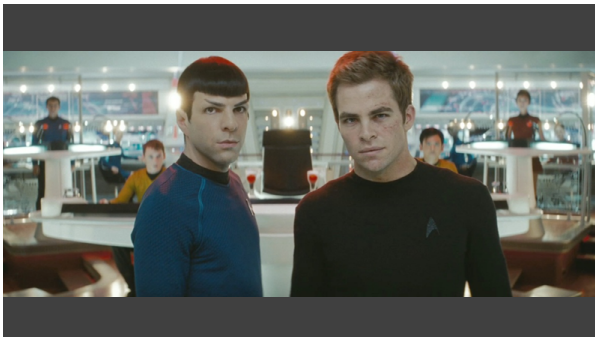
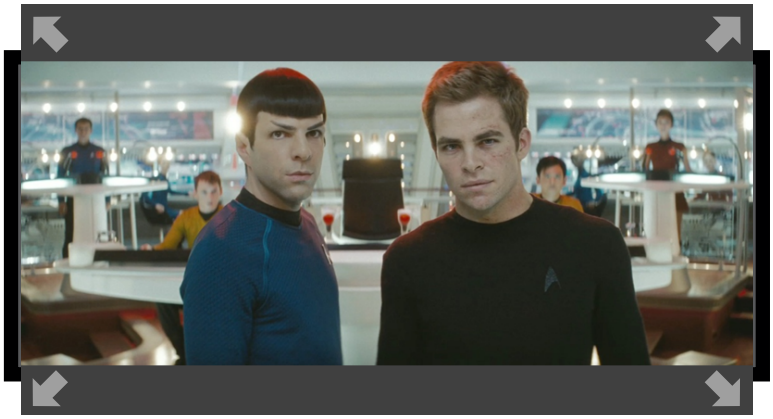
THE ZOOM METHOD



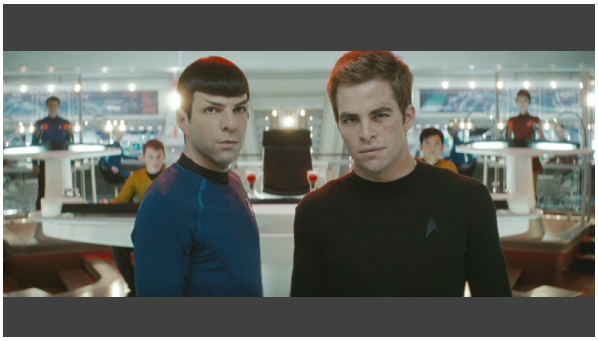
The unused pixels end up falling onto the wall above and below the screen. On projectors with an Auto-Iris the "black bars" can be seen to vary in brightness depending on picture content.



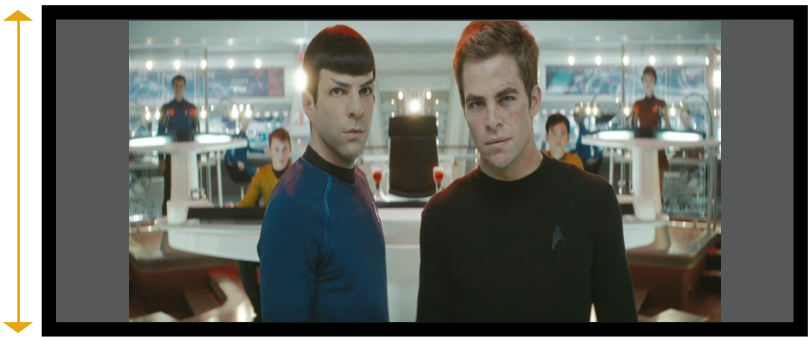
- This process requires 25% fewer pixels to fill 80% more screen area.
- Still only lighting up approximately 810 vertical pixels.

The "zoom method" of filling a 2.35:1/2.40:1 screen with a widescreen image is often referred to as "the poor man's anamorphic." While this method will fill the entire 2.35:1/2.40:1 screen with a letterboxed image, there are several major drawbacks. First of all, we are still limited to the approximately 810 vertical pixels of the letterboxed HD image rather than the full 1080p that true anamorphic provides. Even more dramatically, light output vs. anamorphic is greatly reduced. With the zoom method, 25% percent or more of the projector's pixels are shut off, diminishing light output by the same amount. You are now asking a projector that is running at a 25% diminished light output to fill an 80% larger screen area. The result is a dramatically dimmer image than what would be obtained from a true anamorphic system where all of the projector's pixels are being utilized. As you can see above, there is also the fact that the black bars are not truly gone, they are just being projected onto the wall above and below the screen. This can be very distracting, especially with projectors that have an auto-iris (as explained above).

“2.35:1 CHIP”



Typical 2.40:1 movie within the 16:9 frame (263 lines are unused).

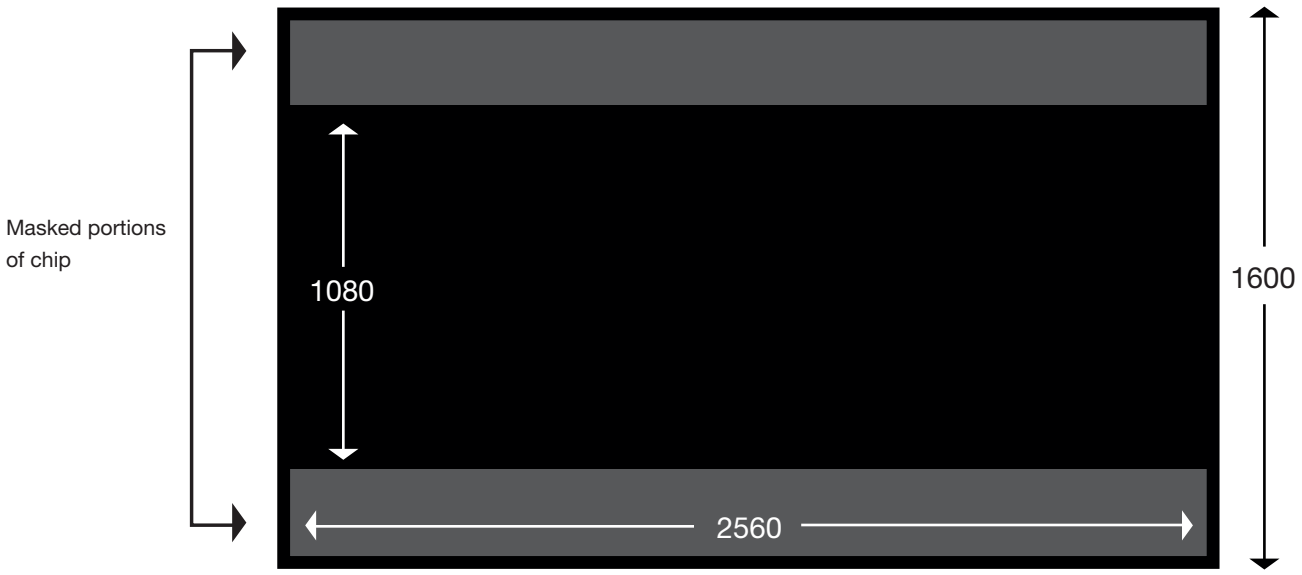


2.40:1 movie is vertically stretched by the projector or scaler to fill the 16:9 area.

Then the movie is horizontally stretched to use all 2560 x 1080 pixels in the 21:9 area. This requires two scaling passes.

Another challenge to the anamorphic process is the so-called “2.35:1 chip.” Actually, this is not a 2.35:1 chip at all, simply a 2560x1600 DLP chip that has been masked down to the 2.35:1 aspect ratio with a corresponding resolution of 2560x1080. The first issue with this method is that it requires two scaling passes by the projector’s video processing chip. Typically a 2.35:1 movie on Blu-ray is hard-encoded at a resolution of around 1920x810. With the 2.35:1 chip, the first scaling pass takes the resolution from 810 to 1080 vertically (just like with anamorphic). However, a second scaling pass is now required. In the horizontal, we need to take the resolution from 1920 to 2560, which is what is done with the second scaling pass. The more times we scale the image, the more we take the chance that unwanted artifacts will be introduced into the picture.

“2.35:1 CHIP” - OUR TAKE



As mentioned previously, the actual DLP chip used in 21:9 projectors has a native resolution of 2560x1600, which actually has a 16:10 aspect ratio. If we were to light up all of the pixels available for 16:9 projection, we would have a native resolution of 2560x1440. Once again, valuable resolution is being wasted – in this case both for 16:9 content AND 2.35:1/2.40:1 content. Rather than mask down the chip to 2.35:1, we are proposing using the full 2560x1440 resolution for 16:9 sources and 2.35:1/2.40:1 content. Anything less is a waste of the chip’s capabilities - in this case a waste of 2560x360 pixels, or 921,400 total pixels!

Panamorph is currently working with projector manufacturers to develop projectors that will anamorphically process the full 2560x1440 resolution that the chip itself is capable of.