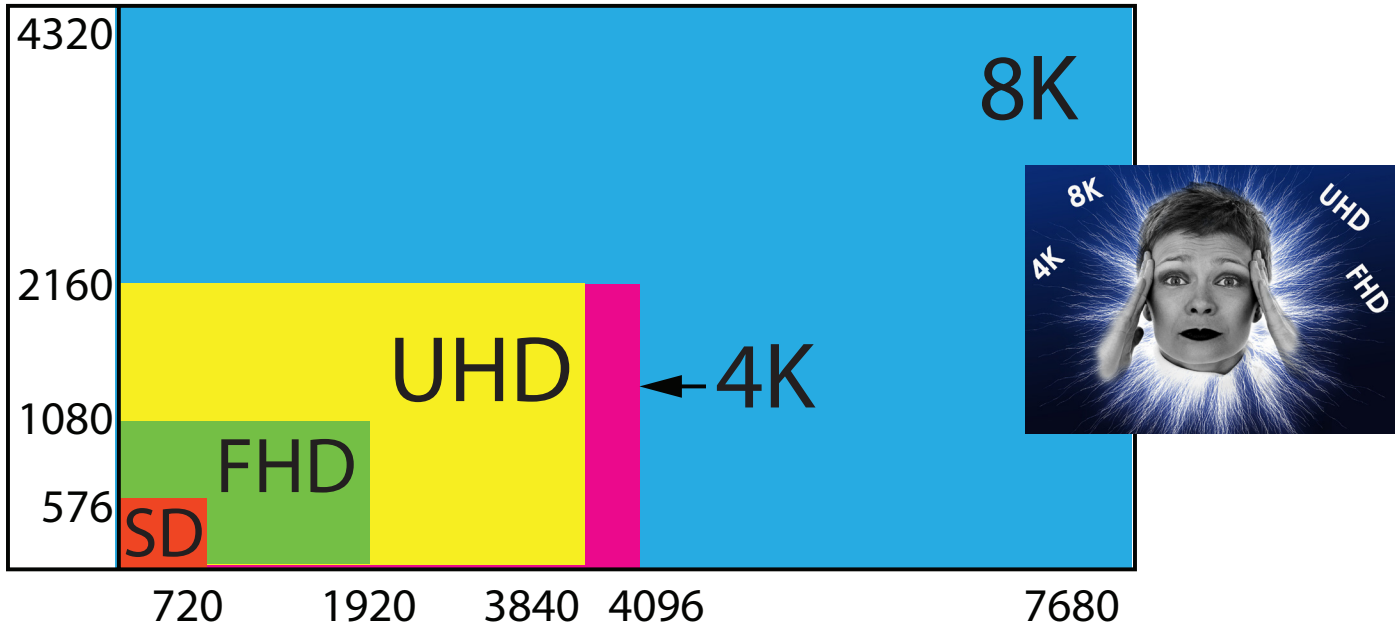


# AUDIO VISUAL SCREENS ULTRA HD VERSUS 4K

WHITE PAPER - APRIL 2016



As you can see from this graphic, Ultra High Definition is actually smaller than 4K.

- Don't be confused by the jargon—Draper can assist you in making an informed choice.

## CONFUSING ASPECTS OF AV

One of the most confusing aspects of AV for end users is the jargon—especially as it relates to resolution. If you are shopping for a projection system, you have come across terms like SD, HD, 720p, 1080p, 2160p, 4K, 8K, and Ultra HD.

What do all these numbers mean? Is 4K better than Ultra HD? Is a 4K TV the same as a 4K projection system? Are they all basically talking about the same thing, or different things?

Well, no. And yes. But not really.

Confused? No need to be.

## WHAT'S WHAT?

Technically, you could say that 4K and 8K are Ultra High Definition resolutions. However, Ultra HD as a term is actually used to reference a specific size that is smaller than 4K.

To understand this, we need to go back to the beginning, to the building blocks of the projected image.

These building blocks are called “pixels.” Pixels are “picture elements” from which a digital image is made. So when we talk about image resolution, what we're really talking about is how many of these little building blocks there are in our picture.

The more building blocks, or pixels, you have, the better quality image you get.

## BUILDING A BIGGER—AND BETTER—PICTURE

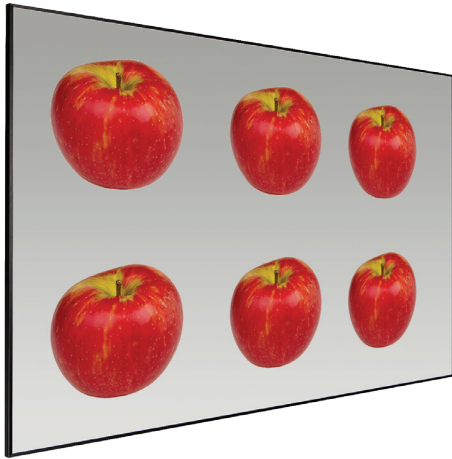
So, why do more pixels=better image? And just how many more pixels does it take to make a better picture?

Let's take for example the difference between Standard Definition (SD) and High Definition (HD). The SD image is 720 pixels wide by 576 high. Multiply the height by the width and there are 414,720 pixels. That's quite a lot. But take the next step up to High Definition (HD)—1280 pixels wide and 720 high—and you get 921,600 pixels. That's more than twice the pixel count of SD.

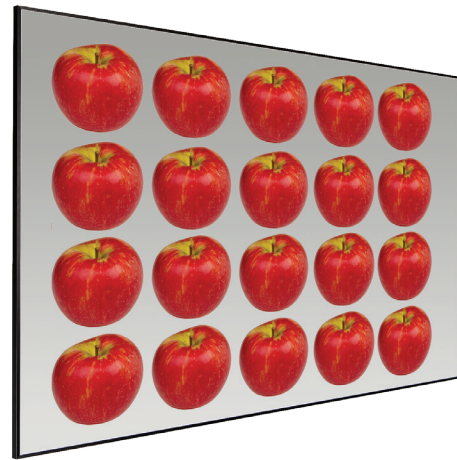
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## WHITE PAPER: ULTRA HD VERSUS 4K



At lower resolution, fewer pixels means less visual information.



More pixels=more visual information, and so a higher quality image.

Now see the pixel difference with 4K, which is 4096 pixels wide by 2160 high. That's 8,847,360 pixels—more than nine times the number of pixels in typical HD/1080p.

### BUT WHAT EFFECT DOES IT HAVE ON IMAGE QUALITY?

Quite simply, it means clearer, crisper images that can show much more fine detail. That's because the more pixels there are, the closer together they are. With fewer pixels there's more space between them, which means less visual information being delivered, and so a lower quality picture.

### I'M STILL CONFUSED ABOUT 4K AND ULTRA HIGH DEFINITION

Although these terms are sometimes used interchangeably, they are not the same. 4K resolution, as covered above, is 4096 pixels wide. Ultra High Definition, meanwhile, is a flat panel standard. It is 3840 pixels wide and 2160 high—or 2160p. Notice that UHD is not as wide as true 4K. It's also not quite the same shape.

4K is a projector standard developed by the Digital Cinema Initiative (DCI)—it's what you would see in a movie theater showing 4K content. Its format, or shape, is 1.8963:1, rounded up to 1.9:1. Most blockbuster movies are shot in CinemaScope. Over 90% are 2.39:1.

UHD, meanwhile, is a flat panel standard. The format or shape of UHD is 16:9, because that's the standard used by broadcast companies—it is double 1080p. When you check the actual resolution on a "4K" TV, you will find that it is actually 3840 pixels wide.

So, technically it can be said that 4K and even 8K are Ultra High Definition, since they are above 3840 pixels wide. But they are different.

### HOW DOES THIS AFFECT MY DRAPER SCREEN?

This difference is very important when choosing projection over a flat panel. First of all, there are more pixels in 4K, for a better image. Perhaps a more important difference, however, goes back to the fact that 4K is wider than UHD. Wider is better because the source content—such as those CinemaScope movies—will shrink less vertically. You'll be able to see the content without having to adjust the distance of seating from the screen as much.

Of course, with a better image, the projection screen needs to be better at reflecting that image without leaving any visual artifacts from a certain distance away. For 4K, that distance is one and a half times the image height away from the screen. The 8K standard is even more rigorous, at 75% of the image height!

Most Draper screens have been laboratory tested to confirm they are 4K ready. To see which ones, visit: [draperinc.com/go/ScreenSurfaces.htm](http://draperinc.com/go/ScreenSurfaces.htm).

Meanwhile, Draper's Optically Seamless TecVision is already 8K ready! To learn more about TecVision, go to: [draperinc.com/go/TecVision.htm](http://draperinc.com/go/TecVision.htm).

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