

## Telairity Dives Deep Into 4K Technology – Part 3

In a nutshell, here is the whole technical difference between an HD display and a UHD display: since UHD formats cram 4X the number of pixels onto a screen as HD, for screens of the same size, UHD pixels are  $\frac{1}{4}$  the size of HD pixels; conversely, for pixels of the same size, UHD screens have 4X the viewing area of HD screens.

### **The Difference Between HD and UHD for a Viewer**

In simplest terms, then, the whole viewing difference between an HD display and a UHD display comes down to just one point: bigger screens with no loss of visual quality—where “visual quality” is measured by the single metric of apparent pixel size. It makes no difference whether you replace your old display with a new UHD display of the same size and move closer to it; or keep the same viewing distance, but replace your old display with a bigger UHD display. In both cases, the effect is exactly the same: the screen looms larger in your visual space.

### **UHD Provides a More Immersive Viewing Experience**

The ability to increase apparent screen size with no loss of visual quality is not everything, but it is not nothing, either. The apparent size of a screen in our viewing area is a key factor in what is generally called viewing *immersion*; indeed, the illusions of virtual reality are created largely by covering our entire viewing space with a screen.

By this analysis, then, the advantage of UHD over HD is primarily its ability to create a more immersive viewing experience, by allowing us to get closer to screens of the same size, and view larger screens at the same distances, with no loss in visual quality. This is presumably a good thing, at least when we want to be more immersed in what we are viewing. But, like many good things, UHD has its own trade-offs.

### **The Cost of the UHD Experience**

The most obvious trade-off for UHD is simply the cost quadrupling the number of pixels per video frame, from about 2 million to about 8 million. As a viewer, you might think that doesn't matter, as long as advancing display technology makes new 8-million pixel UHD screens available in the same price range formerly paid for comparable 2-million pixel HD screens. Like an iceberg, however, the implications of multiplying pixels run far deeper than the visible surface of a UHD screen. We will turn to that topic in the next part of this series.

[Telairity](#) has made a name for itself as the industry's leading video processing solutions provider. Please write in to us at [sales@telairity.com](mailto:sales@telairity.com) to learn more about our products and to collaborate with our team.