



## The Top 4 Things to Know from the 8K Display Summit 2019

The 8K Display Summit 2019 took place at Millennium Times Square, New York City in June. Presented by [Insight Media](#), with sponsorship by Samsung Electronics, the event brought together those interested in the growth of 8K.

Addressing both concerns and opportunities for the technology, the one-day event raised many interesting topics.

We've rounded up 4 of our favorite learnings from the summit.

### HDR 10+



Bill Mandel, VP Industry Relations at Samsung, spoke about the next evolution of HDR content - HDR 10+.

Filmmakers are already strong supporters of HDR 10, with a wide selection of professional cameras at this resolution available. The next logical step for visual quality for video content is HDR 10+.

With 1000s of hours of HDR10+ content now on Amazon Prime, it's time for other content distributors to consider also upgrading their image quality. Mandel discussed the Samsung tools that can help more distributors to make HDR10+ content.

As HDR-filmed content is broadly supported in post-production tools for color grading and transcoding, it's easy to create, master and ultimately deliver new work in HDR.

HDR10+ optimizes the existing picture quality. Supporting color up to 2020 gamut, it's the most advanced HDR technology and has 100% backwards compatibility to HDR10 (if needed).

The amount of HDR10+ compatible TVs and phones is growing, so there is a need for content to upgrade - and Samsung make this simple.

### Quantum Dots

**It's not just about more pixels, it's about better pixels.**



Quantum dots were a hot topic at this event. Nanosys CEO, Jason Hartlove, discussed the resolution revolution, focussing on how quantum dots deliver in 8K.

Highlighting the Samsung QLED 8K Q900 as one of the best 8K experiences available, Hartlove spoke about how the technology creates lifelike realism. As he explained, it's not just about more pixels, it's about better pixels.

However, to create this impressive 7680 x 4320 pixel display, there are some challenges for producers. To create QD 8K, pixels must shrink but transistors cannot. This means significantly less light makes it through the panel to your eye. Optimizing 8K systems to deliver perfect color with high efficiency is critical to delivering a good overall experience.

As quantum dot technology evolves, there will no longer be filters needed to create the ultimate visual experience. Quantum dots will be able to be coated directly on top of blue microLED or OLED subpixels; this will be a true emissive display with perfect black levels and viewing angle options. It will also simplify the quantum dot manufacturing process.

With quantum dots placed directly on microLED or OLED, the future of the technology promises even greater resolution, improved efficiency (while maintaining brightness), more accurate color gamut with BT.2020 coverage, perfect viewing angle from all directions, and simpler manufacturing.

## Hyperrealism



At the Applied Vision: Applications of High Resolution session, Prof. Yungkyung Park presented her “Hyperrealism in Full Ultra High-Definition 8K Display” paper.

Prof. Park discussed the phenomenon of hyperrealism, which is where objects on a screen seem even more realistic than in the real world. This is partially due to mach bands (an optical illusion that causes a band of gradients to appear lighter or darker than they actually are, which exaggerates contrast). As 8K resolution is four times more than 4K (and 16 times that of FHD), there are substantially more mach bands formed in 8K displays of the same size. As the resolution increases, the spacing of mach bands also narrows; this forms a continuous gradient. Ultimately, higher resolution results in higher brightness and contrast and improves color and clarity expressions.



The paper also included new research, showing the value of consumer response to the technology. 120 participants were asked to comment on differences observed between 4K and 8K. Participants interestingly highlighted different sensory perceptions of the resolutions. For example, participants described 8K images as evoking higher sense and perception - noting that objects look cooler, warmer, more delicious, and even heavier.

Prof. Park concluded that 8K improves how we understand the objects depicted and make these hyperreal as it enables us to have a higher perception of the image's contrast, color expression, and resolution.

This was given a positive response at the ground, and received a lot of interest from industry experts. There was noticeable interest from Google and Oculus who both mentioned the importance of researching high resolution displays.

If you're interested in learning more, you can read [Prof. Park's full paper here](#).

## The Reviewer's Perspective of 8K



For those in the industry, it's easy to see the positives of exciting technologies. However, consumers are not always as keen to make the change. Mark Henninger, the editor of AVS Forum, discussed how to convert skeptics.

Consumers like short acronyms and memorable terms. For them, technical details are less important than perception. Although customers followed the leap from standard definition to HD, and then HD to 4K, more work needs to be done to convert people to 8K. For consumers to understand that 8K promises even more than what they already have, it should be sold as 'state of the art'.

One of the questions frequently asked by potential consumers is "Do we really need that much detail?". It's worth remembering that the same question was asked before consumers accepted 4K. Advances in image processing and high native camera resolution mean the enhanced detail exists - consumers just need to understand why they want this.

To clearly communicate this advantage, Henninger raised some key points about 8K, such as allowing the screen to be viewed ultra close and showing visuals they were intended (the ultimate in Hollywood 'director intent').

The advantages of 8K are apparent to those who look for them but Henninger's presentation was an interesting reminder that it's not yet obvious for everyone.

The 8K Display Summit 2019 was a fascinating event for all those interested in the technology, with different viewpoints from tech leaders, academics and the industry press. We may already know that 8K is the next big display technology, but there are still many more elements to learn about.

