DON'T COUNT THE PIXELS, TRUST YOUR PERCEPTION

For an immersive picture it's not the quantity of pixels but the quality of the processing argues Habitech's Jonathan Pengilley...

The consumer world's obsession with pixels has added plenty of heat but not so much light to the definition debate

Over three years ago the Consumer Electronics Association threw its weight behind a spec for the next generation of high definition displays. At four times the resolution of Full HD these "Ultra High Definition" or UHD TVs would adopt the familiar aspect ratio of 16:9 and offer at least one digital input for carrying native video at a minimum resolution of 3840×2160 pixels. It kick started a pixel-packing gold rush. By the end of 2015, according to analysts IHS, the industry will have shipped over 50 million UHD TVs to willing consumers, all of them hooked by the delicious prospect of 4K definition and blissfully unaware that 4K is precisely what they won't get.

4K confusion

It's easy to be seduced by the sticky brevity of the name and the dynamic logo, but the difference between UHD and 4K amounts to more than a marketing makeover. In truth customers buying '4K' TVs are unlikely to experience 'native' 4K - that's 4,096 by 2,160 pixels - in many places other than the cinema. This is because 4K is a pro production standard, exactly four times the previous spec (2K) for digital editing and projection. UHD on the other hand is the consumer display and broadcast standard adopted for TVs, the new Ultra HD Blu-ray specification, and streaming services like Netflix. The consumer world - including our little piece of it - is squarely behind UHD.

Of course there are a handful of consumer panels and projectors boasting 4,096 by 2,160, but this computes to a pro (DCI, IMAX®) aspect ratio of 1.9:1 - as wide as 2.39:1 'anamorphic' cinema widescreen but appreciably taller. They may offer native 4K but play or stream UHD Blu-ray or Netflix and actually, it won't fit. It's no coincidence that at 3,840 by 2,160, UHD provides a 1.78:1 aspect ratio, which is 16:9: the popular standard at large in virtually every UK home!

Clearly the consumer world's obsession with pixels has added plenty of heat but not so much light to the debate, and in recognising the problem, major manufacturers such as Samsung and LG have formed the UHD Alliance: a working group charged with shifting the consumer focus away from 4K (the latest Samsung TV ads don't even mention it) and on to the challenge of setting quality targets within the 3,840 by 2,160 frame. Having established the standard, they understand that there's so much more to a great picture than the pixel count.

It's what you perceive that counts

In pro circles the buzz-phrase is 'perceived resolution'. Research into the Human Visual System (HVS) identifies the greater contribution of other parameters such as frame rate, colour gamut and dynamic range in creating a more life-like image. Reports from September's International Broadcasting Convention in Amsterdam reveal how standard Full HD content displayed on a pro HDR (High Dynamic Range) monitor beat the pants off native 4K material before an experienced audience of broadcast pros. This explains for instance why the UHD Blu-ray spec places as much emphasis on expanded colour range support, HDR and high

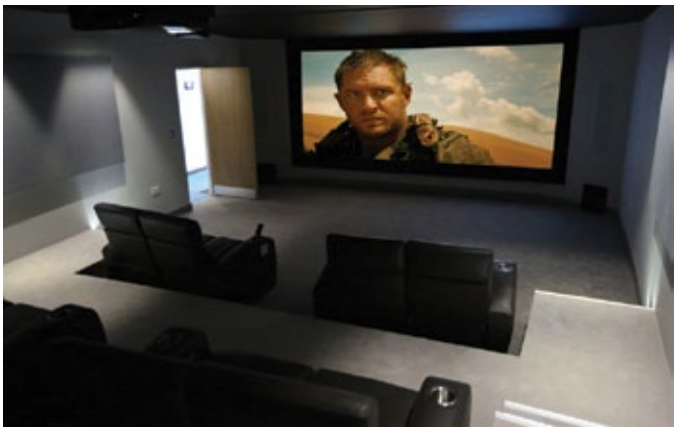
■ Pixels are not the only fruit. With 18Gbps processing and HDR, JVC's new range of UHD PJs promises greater perceived resolution

(60fps) frame rate content, as it does on pixel resolution, and also why, in addition to the 4K confusion, all the talk of 'native 4K' in relation to consumer screens and projectors simply misses the point.

Quality not quantity

The reason I get this is down to personal experience. Since 2011 JVC has been making UHD-capable PJs by using 'e-shift' technology, which stitches together 1920 x 1080 sub-frames through its D-ILA optical system to create a 3840 x 2160 UHD image. Originally developed by JVC and NHK (the company behind UHD tech incidentally) to deliver brilliant 1080p upscaling, e-shift is not in the purest sense 'native', but in combination with faster processing and proprietary image optimisation technologies, e-shift looks stunning.

My epiphany is this: after years of selling pixels I appreciate that a greater number of colours, better contrast and smoother frame rates can produce a perceived resolution more immersive than any hung on a simple pixel frame. Having experienced JVC's new DLA-X9000, DLA-X7000, and DLA-X5000 models I'm compelled to overhaul the argument. Ween your customers away from the habit of seeing the pixel count as the only measure of quality. Instead talk about frame rate and colour depth - the latest UHD Blu-ray ready HDMI 2.0 (HDCP 2.2 compliant) chips inside the X1000s deliver a transfer rate of 18Gbps to support UHD at 60p/50p with full 4:4:4 colour depth (versus the10Gbps 4:2:0 from their 'native' 4K rival), falling comfortably within the current UHD spec for a visible improvement in colour tone and gradation.



■ Experience the ultra-wide immersive effect of the JVC X9000 with Panamorph lens at Habitech's new Atmos cinema

Light, fast and dynamic

In addition to colour integrity at the higher frame rate, encourage your customers to realise the importance of naturally fluid action of the kind produced by JVC's proprietary Clear Motion Drive and Motion Enhance technologies, designed to banish the ghosting and blurring on fast-moving images. Ask them to take a closer look at brightness and contrast. High brightness gives you a punchier picture on larger screens as demonstrated by the light efficiency of the X1000s through a new D-ILA imaging device in combination with an upgraded 265W lamp, which boosts lumens by up to 46% in the X9000 model.

What's more, JVC's advanced optical engine of hand-picked components and dynamic iris tech offers a very high native contrast for brighter whites, blacker blacks, more luminous colours and accurate dark scene detail. The effect is further enhanced on the X000s by the extended dynamic range capabilities of HDR (High Dynamic Range), provided by JVC in advance of the UHD Blu-ray's HDR feature. To see what this can do, activate HDR processing on your smartphone and compare the results with a standard exposure: processing and optics combined completely trump pixel resolution alone.

So here's the rub: pixels are only part of the picture. Simple observation will tell you that. Tear yourself away from the 4K orthodoxy and come down to the new Habitech Theatre at Basingstoke. We'll show you how great projector design can bring UHD pixels to life. And if you're seeking a genuine upgrade, which adds value to every projector sale, experience the full peripheral majesty of a JVC X9000 and Panamorph DC480 ultra-wide lens. In my humble view this combo demonstrates what the pros really mean by high perceived resolution.

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