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Technology Update

3D Technology

Last month I promised a 3D TV update, just in time for the World Cup.

Will 3D really take off?

The simple answer to this question is, yes, it will.

So if you are a technology freak and you purchased an LCD HD TV last year and a new LED one earlier this year, you will have to purchase a new 3D TV by mid June for the World Cup. It's difficult to keep up, isn´t it?

So, why I am so convinced? Let´s start by looking at what is happening in the movie industry.

Avatar has set a high bar for quality 3D at the cinema and has brought 3D to the attention of a record box office audience. In 2010, 56 3D movies are due to be released, with another 33 already scheduled for 2011 and a further 14 for 2012, and that is just from those studios which have made their plans public. Over half of Hollywood's income now comes from sources such as DVD and Blu-ray, and they are hoping to release between 15 and 25 3D Blu-ray movies this year. This does include converting some 2D movies to 3D.

In April a consortium of Samsung, Technicolor and Dreamworks started producing 3D Blu-ray discs. The exclusive first releases will be Monsters vs Aliens and Toy Story. Technicolor is setting up a cable 3D channel in the UK.

In the gaming and PC world, any PC with a decent graphics card can support 3D gaming. The first crop of 3D laptops and monitors are already available. There are already over 400 PC games that can be run is 3D.

Sony is planning to do a firmware upgrade of the PS3 this summer to support 3D. No doubt Microsoft will follow. The Insight Media 3D Gaming Report states that there will be between fifteen and twenty five new native 3D games released this year.

Moving onto the satellite and cable service providers, there is a lot of activity.

The ESPN sports channel has 85 events planned in 3D in their first year starting with the FIFA World Cup in June this year. They

are planning to provide 24/7 sports broadcasting in 3D in the future.

The DirecTV service provider in the USA, in conjunction with Panasonic, are planning a new Pay per View 3D channel with movies, sport and entertainment.

Similarly, Discovery with IMAX and Sony plan to launch a similar service in 2011 providing entertainment, sports and nature content.

Let me give you a brief summary of the extent of the 3D services that will be available this year.

Live events: over 35 by pay per view
Satellite/cable channels: 8-12 by the end of 2010
Terrestrial TV channels: 1-2 by end of 2010
Video on demand channels: over 15 by end of 2010
Internet channels: 12-15 by end of 2010
User generated 3D videos: there are over 8,000 on YouTube now!

So that is why I am so convinced and able to give you such an unequivocal answer. An enormous amount of investment is taking place in the technology.

The industry wants us all to buy new TVs and start wearing glasses. The former is true, but the latter is optional depending on the technology.

The HDTV revolution is only just maturing. It hasn't finished yet. However the current phase is showing some significant price reductions and new innovations are now few and far between. 3D adds a new reason and vigour to buy a new TV. When buying a 3D TV you will get all the mature benefits of the HDTV that you could have purchased now, or have already purchased, at a really good price, but you will now have the added benefit of having 3D technology and being the first of your mates to have one, but at twice the price!

I am not sure I have convinced you. In reality, by the end of this year prices will start to drop as every major TV maker will offer up to 14 different 3D models each.

Is it really 3D? How does it work?

3D means different things to different people. There are different terms used for 3D including "rendered", "volumetric" and "holographic". The technology being used here is "stereoscopic 3D". It come in two different major types which is "stereoscopic 3D (S-3D)", when you need glasses, typically used for home TVs

and “autostereoscopic 3D (AS-3D)” when you don´t need glasses, typically for bars and public places.

Stereoscopic vision works by the eye and brain integrating multiple cues to perceive depth. Stereoscopic 3D cues, which originate from the slightly different views from each eye, create the depth image. The way it works is by the eye seeing two slightly different images presented to each eye. Both these stereoscopic technologies seek to replicate the ways eyes see 3D.

The existing 2D broadcast infrastructure has defined the techniques that have been used to develop the 3D technology. Cable and satellite operators have wanted to use existing set top boxes, existing cabling and the existing infrastructure and compression methods. The only new component that would be required is the TV.

Thus the solution has been to develop frame compatible 3D signal packaging that will use the existing 2D broadcast infrastructure. Higher bandwidth solutions will come later when new infrastructure is developed. Two slightly different images are transmitted together by merging the pixels of each image into each frame either line by line, column by column or as a checkerboard. The trade–off is a slightly lower resolution per eye.

There are new standards and formats. There is a new Blu-ray 3D spec and an HDMI 1.4A spec. There is full backwards compatibility. 3D content will show 2D image on 2DTV and 3D on 3DTV and 2D content will show 2D image on 2DTV or 3DTV. HDMI 1.3 transceivers can support 3D signalling if they can accept a firmware upgrade. What this means is that many existing set top boxes, Blu-ray players, AV receivers may be able to support 3D.

However there will also be new 3D Blu-ray players and 3D set top boxes coming. The only way you will be able to connect 3D will be with HDMI 1.4. Lower HDMI versions or old technology such as component and s-video will not work.

3D Glasses for stereoscopic 3D

3D glasses are not the cardboard type you may have worn at the cinema. These are pieces of technology in their own right. They are LCD shutter glasses. Each lens is an LCD and it blacks out and opens in milliseconds when it receives a synchronisation signal just like a camera shutter. The synchronisation signal is sent from the 3D TV to pass or block light to each eye individually. Currently each TV manufacturer has its own protocol so you will not be able to use your Samsung glasses with a friend’s LG screen.

The vast majority of 3D solutions will use shutter glasses. Autostereoscopic 3D will be used in public. The picture brightness when compared to current screens will be reduced by up to 20% when using shutter glasses. The glasses will cost about €100 to start with but the price should come down and an industry standard protocol should be developed. What remains to be seen is how everyone will feel about wearing glasses...

I could go on, but I think that is enough to give you an insight into the new 3D technology that is coming and how big this will be.

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