

How close is 3D-TV?



1 – There is no unique '3D-TV' system

3D-TV is a general term for a range of technologies for methods of production, distribution, and display that add 'depth' to television pictures. They vary in the demands they make, and the performance they offer. Today, 3D-TV is a somewhat misleading designation for renaissance of stereoscopic TV.

2 – Current 3D-TV systems are called "Stereoscopic TV"

The only forms of 3D TV that are practical today are left/right eye image systems. These are termed '1st Generation 3D-TV'. They are, in some ways, similar to the way we normally view the world around us, and in some ways different. They are a 'subset' of 'natural vision. In the years ahead, 2nd and 3rd Generation 3D-TV systems may be developed, but much research is needed. 2nd Generation 3D-TV systems will not require glasses (autostereoscopic and multicamera views) and 3rd Generation 3D-TV system may be holoscopic or holographic systems. All discussion of technology and standards today focuses on 1st Generation 'two channel' 3D-TV, sometimes called 'Stereoscopic TV'.

3 – Stereoscopic TV systems have the potential to cause eye-fatigue

All Stereoscopic TV systems have limitations, and have the potential to cause eye-fatigue, though digital techniques can minimize it. A portion of the population will not be able to see the depth effect, because they cannot 'fuse' the left and right images. But, within the limitations of eye fatigue, and assuming the most usual eyesight, the effect of adding depth to the television picture can be dramatic and compelling.

4 – Capturing left & right eye images for 3D-TV

There is a range of methods for arranging the capture of the left and right eye images, for their transmission, and for the left and right eyes to see separate images.



5 – Using 2 cameras to capture a stereoscopic TV signal

A fundamental way to capture a stereoscopic TV signal is to use two cameras mounted on the same axis and separated by the spacing of the average pair of human eyes (6.25cm). But, camera spacing can be varied, and cameras can be 'toed in', to achieve different elements of picture composition. Making good stereoscopic content requires new ways of production grammar and cannot easily be compared with making HDTV Content. This will have several cost implications.

6 – Displaying a stereoscopic TV signal using "anaglyph"

There are different ways to display the stereoscopic TV signal. The most simple is to use a method of 'colour division multiplexing' with a normal television channel and receiver. The method is generally called 'anaglyph'. The limitations are that colours are not all entirely true, pictures can be soft, and there is some propensity to eye fatigue.

7 – A more advanced way of displaying a stereoscopic TV signal ...

A more advanced method is to sequentially display the left and right eye pictures, and to arrange for the eye to see the correct image by using shutter controlled glasses, or glasses with different polarization planes in each eye. A new display is needed for this, but it will yield a higher picture quality than anaglyph.

8 – Do you need to use an existing set-top-box or a new one?

Systems have been proposed which allow the use of an existing 'set top box' together with a new display, and others which need a new 'set top box' with a new display. Those which are based on the use of an existing set top box may have more limitations of picture quality, but may be more convenient.

9 – EBU considers that Stereoscopic TV is a valuable service for some EBU members, but ...

The EBU does not currently support a particular method of transmission or display, though it is obvious that the highest quality will be achieved with methods that need a new set top box and new display. Stereoscopic-TV will never entirely replace normal TV, but it may be a valuable service for some EBU Members.

10 – Delivery systems for stereoscopic TV should be "standardised"

In working closely with market players, the EBU believes that the public interest will be served if delivery systems for stereoscopic TV are 'standardised', and this should be done before the public is asked to invest in new receivers or displays. Furthermore, the technology must not be 'oversold', and the public must be sensitized to the limitations and potential for eyestrain as well as the exciting viewing experience.