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Holographic video 'here by 2009'

Windowing technique produces relatively light data and processing load

Clive Akass, [Personal Computer World](#) 06 Jun 2007

German startup SeeReal has given more details its **high-definition 3D holographic video system**, which it says could become commonplace thanks to a new approach using known technology.

The company says it has overcome the problems of achieving the resolution and processing power required.

A 47in 3D holographic display with a viewing angle of 60 degrees requires a resolution 250,000 times that of high-definition TV (HDTV) and real-time processing at a rate of several hundred petaflops.

[SeeReal](#) has made the problem more manageable by processing only the information that reaches the viewer's eyes. It is like looking through a peephole, except that the viewer is not aware of any restriction. "He doesn't care what light falls on his nose or chin," says chief executive Hagen Stolle.

The method cuts the data load and, coupled with a technique of splitting the image into sub-holograms, reduces the real-time processing required for HD 3D to 3.5 teraflops. Intel's next-generation Larabee architecture (see [PCW](#), July) promises this class of performance.

One drawback is that the system has to track the viewer's eyes, which is done using two simple VGA cameras mounted on the display. This means you are not going to get the communal viewing experience of television.

Filming in 3D requires equipment only a little more complicated than that for 2D, Stolle says. You can also convert 2D movies into 3D by producing a "depth map" from comparisons of successive frames – a 3D version of Star Wars, with its famous hologram of Princess Leia, is already being worked on.

Holographic images have can be indistinguishable from reality. "We are not quite there yet but we are in principle," Stolle said. "We are doing real-time 3D video but we are doing it in mono because we are using the performance available today. We are using a slow medical flat panel and an ordinary Intel dual-core processor."

SeeReal has achieved real-time colour using a custom chip, but it also can be done with a standard processor if you limit viewpoint movements to the horizontal or vertical.

Intriguingly, 3D video telephony is viable because it requires a data pipe only 20 per cent larger than 2D. The data consists of 2D information combined with a depth map.

Stolle says that if the company gets the right partners it could have product as soon as 2009, using special LCD panels that can be made using existing techniques. Prices are likely to start at about double those of an HDTV.

Holography offers some advantages over conventional stereography, which works by presenting a slightly different image to the eye, leaving your brain to interpret depth.

"Stereo works well if the content is very well made," said Stolle. "The depth cannot be too great because you may get a headache from the processing in your brain."

"Holography is really reconstituting natural viewing. We recreate the 3D image in space as you would see it if you were looking at the real thing. We recreate the same interference patterns that you get in your eye."

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