# 3-D movies via Internet and satellite

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With MVC, the two images needed for the 3-D effect are packed together to reduce the movie's bit rate. Credit: Fraunhofer HHI

Multiview video coding (MVC) is the new standard for 3-D movie compression. While reducing the data significantly, MVC allows at the same time providing full high-resolution quality. At the International Broadcasting Convention in Amsterdam from Sept. 10-14, 2010, researchers will showcase how 3-D movies can be transmitted via Internet and digital television channels such as via satellite.

Blockbusters like Avatar, UP or Toy Story 3 will bring the 3-D into home living rooms, televisions and computers. There are already displays available and the new Blu-Ray players can already play 3-dimensional movies based on MVC. The first soccer games were recorded

stereoscopically at the Football World Championships in South Africa. What is missing is an efficient form of transmission.

The problem is the data rate required by the movies - in spite of fast Internet and sat-ellite links. 3-D movies have higher data rate requirements than 2-dimensional movies since at least two images are needed for the spatial representation. This means that a 3-D screen has to show two images - one for the left and one for the right eye.

Researchers at the Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, HHI in Berlin, Germany have already come up with a compression technique for movies in particularly HD quality that squeezes movies while maintaining the quality: the H.264/AVC video format. What H.264/AVC is for HD movies, Multiview Video Coding (MVC) is for 3-D movies. The benefit is reducing the data rate used on the transmission channel while maintaining the same high-definition quality.

Videos on the Internet have to load quickly so that the viewer can watch the movies without interruptions. Thomas Schierl is a scientist at the HHI in Berlin and he explains that "MVC packs the two images needed for the stereoscopic 3-D effect so that the bit rate of the movies is significantly reduced." These 3-D movies are up to 40 percent smaller. Thomas Schierl and his colleagues are working to establish the MVC codec for television transmission over satellites or the Internet. "New TV sets will start off by only playing 3-D movies from the Blu-Ray disc that is now coming into the third dimension. The next step to bring 3-D into living rooms will be made possible via broadcast or IPTV channels running via DSL or cable."

You will be able to experience 3-dimensional movies in your living room in future without any 3-D glasses because the MVC format has the technical features to code and compress several views. After all,

everybody enjoying the movie with you on the sofa has a different viewing angle. That is why they need a separate view - their "own" 3-D movie - for his or her individual seat. MVC compresses all of these views into one compact file or stream and one receiver, one set-top box decodes this information and passes it on to the television.

It will also be possible to play the MVC-coded movies on older televisions and set-top boxes and Thomas Schierl tells us how: »The first view corresponds to the signal that the existing television can receive and we would hide the second view in the same stream so that only the new receivers can use it. They are invisible to older tele-visions.« That is especially interesting to movie lenders and television stations because they do not have to worry about compatibility. And even mobile radio and mobile phone manufacturers can join the trend towards 3-D with the MVC standard. In the meantime, there are even displays the size of a mobile phone that allow a good 3-D impression.

The experts from the HHI show how the MVC-Codec functions transmitting television via DVB-S2 satellite from September 10-14, 2010 at the IBC in Amsterdam.

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