

A third dimension for mobile phones

May 15 2009

(PhysOrg.com) -- Three-dimensional viewing has not yet made it in a big way onto our television and cinema screens. According to European researchers, the story of 3-D TV is set to be quite different with mobile devices, as the right standards and technology fall into place.

Simulating the third dimension is something of a Holy Grail for cinema and television. The key advantage of 3-D film over the conventional two dimensions is the illusion of depth and the sense of ‘body’ the viewer experiences - as if the action is leaping out of the screen rather than occurring within it.

Despite the images it evokes of high-tech wizardry, rudimentary 3-D technologies have been around practically since the dawn of filmmaking. The first ever attempt came in 1890, when the British film pioneer William Friese-Greene invented a process in which two films were projected side by side on screen, and the viewer looked through a stereoscope to converge the two images.

We’ve come a long way since this bulky and impractical solution, yet 3-D film and television is still some way from becoming an everyday reality, partly due to cost. But that looks set to change, and [mobile devices](#) - with simpler and hence cheaper 3-D technology - could well lead the charge.

“The mobile market has always been much more dynamic and receptive to new technologies than the television market, as the whole idea of mobility is based on dynamism,” explains Atanas Gotchev, the scientific

coordinator of the EU-funded Mobile3DTV project.

Gotchev also points out that the viewing conditions, and hence technical requirements, for mobile devices are not as exacting as they are for cinema, which targets a mass audience who expect a thrilling experience, and television, which needs to be of ‘home entertainment’ quality. “In Mobile 3-D technology, the viewing mode is personal, the required display size is small and the user is expected to adjust the display position for the best viewing experience,” he notes.

Glasses not necessary

The story of 3-D television for mobile phones has been one punctuated by stops and starts. As early as 2003, Sharp launched a 3-D mobile phone in Japan and Korea’s SK Telecom launched a 3-D phone - from Samsung - in 2007, and Japan’s Hitachi just launched one in 2009. But the big challenges have been the paucity of content and coming up with a profitable business model. Apple’s iPhone also supports three-dimensional television, but can currently only be viewed with special glasses.

Mobile3DTV is developing the core elements of the next generation of three-dimensional television for mobile devices.

“One major challenge is choosing the optimal format for representing 3-D video for mobile delivery,” Gotchev points out.

The format should be adopted ideally by all industrial players to avoid a ‘formats war’, he suggests. For that reason, the project decided to build its system around the EU standard known as Digital Video Broadcasting - Handheld (DVB-H).

“Another challenge is to ensure a comfortable and enjoyable 3-D

viewing experience,” adds Gotchev. Mobile3DTV is employing so-called auto-stereoscopic displays, which produce 3-D images that do not require those awkward glasses to view them - which is good news for people who want to be incognito about their mobile viewing.

“Auto-stereoscopic displays use additional optical elements aligned on the surface of an LCD, to ensure that the observer sees different images with each eye,” explains Gotchev. “As mobile devices are normally watched by a single observer, two independent views are sufficient for satisfactory 3-D perception.”

The project has been working on specifications for how mobile 3-D content should be created, coded and transmitted over DVB-H in order to be visualised on a portable display with satisfactory quality for the user.

“We have access to probably the most advanced 3-D portable display - one delivered by the Japanese giant NEC LCD,” says Gotchev.

Mobile3DTV has already demonstrated these technologies at a number of trade fairs.

The market dimension

Content is, as it has long been, the major obstacle on the road to the widespread take-up of 3-D mobile TV. “A major market challenge is to convince content providers and operators to start producing and distributing 3-D content,” observes Gotchev. “With our project, we try to provide the necessary technical evidence of the technology’s potential.”

And their efforts are paying off. Gotchev is quietly confident that the Mobile3DTV project can help prod the rollout of 3-D television in the

mobile market.

“Just one year ago, operators and providers did not really buy into the market benefits of producing and broadcasting stereo-video, largely because of the slow take off of the mobile TV services in some European countries,” he says. “The situation now seems to be changing as the same players are looking for new opportunities, and 3-D looks like just such an opportunity.”

In addition, the take-off of 3-D for mobiles could accelerate the take-up of other 3-D technologies. “The rapidly-evolving mobile TV market could serve as a ‘bandwagon’ for introducing 3-D TV broadcast to the general public,” emphasises Gotchev.

Mobile3DTV is funded under the ICT strand of the EU’s Framework Programme for research.

More information: sp.cs.tut.fi/mobile3dtv/

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Citation: A third dimension for mobile phones (2009, May 15) retrieved 19 April 2024 from <https://phys.org/news/2009-05-dimension-mobile.html>

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