

# LiberoVision: New perspectives with a magic camera

The Greater Zürich area is a football region and Zürich is a football city: three EURO 2008 matches will be played here next summer. Zürich is the home of FIFA, and this is where two young IT specialists have developed a system that provides football fans with spectacular views of televised matches.

Football fans know the problem: there can be as many cameras as you like positioned around a stadium, but controversial or especially important scenes are usually jinxed – there aren't any images of them taken from an ideal angle. Has the referee overlooked an offside or not? Was the goalkeeper standing in the wrong place? At such moments, it would be great if we could stop the film and view the situation again from all sides – from above, from the perspective of the assistant referee or of an individual player.

## Perfect artificial images

Such visual investigations are now possible thanks to the “magic camera” invented by the Zürich start-up company LiberoVision. However, the name of the high-tech innovation is as charming as it is inaccurate, because LiberoVision is neither a camera nor is it magic – but a highly sophisticated computer program. Using existing, real images, within a few minutes it produces a virtual situation model that can be viewed from all sides with a few mouse clicks. However, you won't see that LiberoVision's high-quality images are computer-generated depictions – they have nothing in common with animated films or computer games, and are barely distinguishable from genuine television images.

## Football fans and IT specialists

“The decisive innovation is the picture quality,” says Christoph Niederberger, CTO at LiberoVision. “Today there are already 3D depictions of important situations during televised football matches – but they look as if they've been produced by a PlayStation.” This unsatisfactory visualisation annoyed Niederberger and his friend Stephan Würmlin. Because the two natives of Basel, now both 32, were studying information technology at the Swiss Federal Institute of Technology (ETH) in Zürich and working on their theses about 3D videos and computer games at the university's Computer Graphics Laboratory, they obviously thought about alternatives to the inadequate 3D simulations at football matches. “We wanted to develop a system where you didn't realise that it was controlled by a computer,” says Niederberger.

## Support from all sides

This was a major challenge. “There are only very few teams who are equipped to take on such a job. The ETH in Zürich has achieved a leading position in this area over a period of many years.” In Switzerland, moreover, the environment is ideal for bringing innovations of this kind to market maturity. Because the ETH is very interested in the transfer of knowledge between the worlds of research and business, it supported Stephan Würmlin and Christoph Niederberger when they set up their spin-off company, LiberoVision. KTI, the subsidies office of the Swiss Confederation, also provides support. LiberoVision also won the prestigious Swiss Technology Award. “Yes, this is the right place for young entrepreneurs,”

Niederberger is convinced. "And in our case, Switzerland's central location is also an advantage. Three of Europe's five top leagues – the French, the German and the Italian – are at home in neighbouring countries, and we are also within easy reach of Spain and the UK. We're at the centre of the football world!"

### **First football, then the film?**

For Niederberger, it's clear that the television broadcasters in neighbouring countries will soon be working with the magic camera. Apart from the picture quality, the advantages of LiberoVision over comparable systems include the fact that the technology from Zürich can do with very little source material – the data streams of two differently positioned cameras are already enough for the magic camera to work with. So if a television station opts for this system, there is no extra work involved for the station itself; a LiberoVision employee simply docks into the server in the broadcasting van, where all the data streams of the cameras come together, downloads the most important sequences onto his system and processes the data for the magic camera. For the time being, LiberoVision can only produce moving images of a "frozen" situation within a reasonable timeframe; but at some stage it should be possible to produce moving sequences. "Then LiberoVision will also be of interest for the film industry," Christoph Niederberger is convinced.

### **Already on the air this season**

For the time being, everything in the young company revolves around football. "There is a market for LiberoVision worth double-digit millions," says Niederberger. A television broadcaster that uses LiberoVision can offer its viewers more attractive images than its competitors – which can be an important argument in the struggle for audiences and advertising revenue. The Swiss telecommunications company Swisscom recognised the potential of the magic camera and has acquired an eight-percent share of LiberoVision. "Swisscom might also be able to use our technology for online programming," says Christoph Niederberger. "In the future, an interactive application, for example, could enable viewers to watch scenes from the perspective of their choice – and gain their own insight of a match." For the moment, however, the magic camera is only available on television. LiberoVision has entered into a strategic partnership with the Swiss pay-TV station Teleclub. The private broadcaster shows Swiss Super League matches – and enhances the top games with LiberoVision. "This commitment helps us to improve our programmes and to make them even more suited to the needs of the sports broadcasters," Christoph Niederberger is convinced. LiberoVision will thus be fit for Europe's top leagues – and perhaps also for EURO 2008.

Article taken from

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on December 17, 2007

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