PROJECT RESULT

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MEDEA+

## 2A208: Interactive genius look at numerous contemporary events (iGLANCE)

# Enhance your 3DTV viewing with FTV

**Initial consumer experiences with three-dimensional TV (3DTV) have failed to boost the market for these sets, while lack of agreed standards has sapped the will of the consumer-electronics giants to invest. The MEDEA+ iGLANCE project aimed to overcome these obstacles by developing an end-to-end chain in 3DTV which established new, market-feasible standards for the industry. Successful demonstrators enabled these standards to be taken up by DVB, and consortium partners developed a new capability in interactive 3DTV that enables users to select freely their own viewing angle for the same subject.**

In the past ten years, changes including digital technology, new displays such as LCD, LED and plasma, improved broadcasting standards for digital satellite and terrestrial digital TV, and broadband transmission over Internet and cable have transformed TV markets globally. The next big thing was thought to be three-dimensional TV (3DTV), yet the market for this has been slow to take off.

Poor early renditions of the 3D experience have been part of the problem; key issues have been a lack of market direction and agreed standards to enable industry to invest. The MEDEA+2A208 iGLANCE project aimed to specify, design and implement an advanced high-quality 3DTV platform and, in the process, make some major contributions to industry direction and standardisation.

iGLANCE relied on mature technologies in the 3D display, 3D renderer and H.264 or MPEG-4 advanced video coding (AVC) video compression decoder. Its key innovation was to specify, implement and demonstrate a novel approach enabling multiple views of the same subject. So-called 3D free-viewpoint TV (FTV) enables the viewer to select viewing angles of the subject that differ from the single viewpoint normally presented by broadcasters.

### End-to-end chain

The primary goal of iGLANCE was to define a complete end-to-end 3D image chain for 3DTV applications. The work included the study and development of a 3DTV receiver meeting consumer-market requirements in terms of cost, time to market and interoperability.

At the beginning of the project, the 3DTV experience was based on the WOWvx auto-stereoscopic panel developed by Philips, and a 3D picture format based on 2D+depth. The consumer 3DTV market based on this panel and this format was non-existent, and no forecast of sales was available. The main reasons for the lack of market interest were the poor quality of the picture and the need for economically prohibitive amounts of additional bandwidth compared with existing high-definition TV (HDTV).

After identifying these limitations, iGLANCE formulated a new approach based on a stereoscopic video format and stereoscopic panels. A new multi-view coding (MVC) encoding/decoding mode was also proposed to enable transmission of 3D views through existing TV channels.

The secondary goal was to develop an interactive FTV selection capability, enabling the viewer to select and interactively change the viewpoint of a stereoscopic streamed video. This capability was based on broadcasting a number of video streams showing the same subject from several viewpoints, using traditional 2D video and additional depth information for each frame.

iGLANCE was also tasked with making active contributions to the 3DTV standardisation process as a key part of its work. The intention was to provide a foundation for future commercial deployment and mass adoption of 3DTV systems.

## Establishing the standards

By the end of the project, the stereoscopic 3DTV chain developed under iGLANCE was not only a successful demonstrator, but had also been standardised by the international digital video broadcasting (DVB) group. iGLANCE had shown the new direction possible for 3DTV, giving semiconductor and consumer-electronics manufacturers the means to overcome the limitations of earlier solutions based on 2D+depth.

The project's key target had been to define and promote a 3DTV chain for the market, standardisation bodies and key customers that could meet TV broadcasting constraints and satisfy the needs of consumer markets. That this aim was successful has been emphasised by DVB taking into account the iGLANCE results for its 3DTV phase 1 and phase 2 specifications.

It was the iGLANCE work that demonstrated the feasibility of this 3DTV chain, especially the decoder capabilities implemented by a new 3DTV decoder chip. This chip from project partner STMicroelectronics was presented at a number of international fairs as part of the 3DTV demonstration.

Thanks to the results achieved by the MEDEA+ project, in 2009 STMicroelectronics became the first semiconductor company to announce a dedicated 3DTV decoder chip. The company presented the first, full 3DTV HD decoder with MVC decoding at the CES fair in 2010.

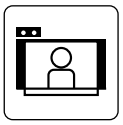
## Market-leading process

In the second major task for the MEDEA+ project, iGLANCE successfully developed a feasible FTV capability. FTV relies on a two-channel – left and right – stereoscopic video stream, with additional processing capabilities in the receiver that can interpolate the two image streams and present other viewpoints which lie somewhere between the two.

The 3D reconstruction which is an essential part of this FTV capability is built into the iGLANCE 3DTV platform. This function has been successfully demonstrated and can be used to adjust the 3D effect – 3D volume and 3D distance – which is a commercial requirement from the DVB 3DTV Commercial Module (CM-3DTV) for 3DTV phase 2 specifications.

Project partner Silicon Hive produced the processor which is central to the 3D reconstruction for the FTV. iGLANCE analyses judged 50 nm to be the threshold at which market adoption would be assured for 3DTV decoding and FTV; since the project closed, the company has produced a further chip using more advanced 32 nm CMOS technology.

STMicroelectronics has already introduced 3DTV decoding into the feature list for its HD decoders, including the MVC full HD decoding. When the project commenced, the company was not even present in the 3DTV market. Since then, it has taken a leadership position in this emerging market for 3DTV full HD decoder chips, ahead of competitors such as BCM, Intel, Mediatek and Mstar.



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Phillips Healthcare
Prodrive
Silicon Hive
STMicroelectronics
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**KEY PROJECT DATES:**

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