



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

NETWORKED ICE TERMINALS

Partners:

4D View Solutions
INRIA
Logica
Philips
ProDrive
Silicon Hive
STMicroelectronics
TASK24
TIMA
Uni Eindhoven (TU/e)
Verum

Project leader:

Michel Imbert
STMicroelectronics

Key project dates:

Start: September 2008
End: September 2011

Countries involved:

France
The Netherlands

Among the key challenges of instituting functional three-dimensional television (3DTV) systems are the addition of perception of depth on a two-dimensional TV display and the provision of multiple viewpoints – so-called free-viewpoint TV (FTV) – of the same scene. The MEDEA+ iGLANCE project has set out to tackle these problems by developing a semiconductor platform with the capability to handle the hugely increased real-time processing power required to cope with the 3D-HDTV decoding and FTV rendering. iGLANCE will boost European development of advanced TV applications and establish a strong foothold in the emerging market of 3DTV, both conceptual and in hardware and software platforms.

Three-dimensional (3D) film and video technologies, long relegated to novelty nights at the local cinema, have advanced rapidly in recent years. So much so that major Asian TV manufacturers are gearing up to launch 3D television (3DTV) sets in 2010, despite a lack of availability of 3D content to date.

The two most important aspects of viewing in 3D are adding the third dimension – the perception of depth – to classical 2D views and creating free-viewpoint TV (FTV) using eventually additional cameras to enable viewing of an object or scene from almost any angle. 3DTV is important in cinema viewing, broadcasting and the DVD market. FTV will be significant for sports-event broadcasting, concerts, multi-user games, museums and cultural archives, medical surgery and surveillance applications.

But how can the problem of the user interface be solved? How is it possible to provide the depth perception that gives the impression of 3D viewing from a 2D screen? In past cinematic experiments, audiences have used special 3D spectacles to give the impression of depth on specially shot film. Such an approach is obviously impractical for the domestic TV; the MEDEA+ 2A208 iGLANCE project set out to meet this challenge.

Partner project

iGLANCE is one of two MEDEA+ projects involved in research on 3DTV, and addresses the issue of providing 3D views of a scene, with a focus on the decoding and rendering aspects for 3DTV receivers. Its sister project, TritonZ, concentrates on the overall content delivery chain including content capture, encoding, transmission, decoding, rendering and display of a single 3D view.

The iGLANCE project focuses on developing a next-generation processing chip for TV receivers that will not only offer improved visual definition, but also the processing capabilities for innovative 3DTV applications. The objective is to develop a platform with an innovative chipset and the corresponding software that offers:

- Ultimate high definition TV (HDTV) audiovisual quality to serve the existing European and worldwide mass-market application of HDTV; and
- A flexible architecture extension capable of the additional computation power for 3DTV decoding to serve the emerging 3D-HDTV European and global market.

The iGance platform will include extension

to perform free view point 3D reconstruction from a stereoscopic view to investigate the feasibilities and performances of such 3D interpolations.

iGlace should result in the specification, design and implementation of an advanced HDTV platform with innovative extensions to demonstrate 3DTV, in this way contributing to 3DTV standardisation. It will also result in a proof of concept for free view point applications.

Development in stages

Developing an advanced 3D-HDTV platform with FTV capabilities, and at the same time contributing to the standardisation of stereoscopic 3DTV, is going to be demanding in terms of time and effort. To ensure an efficient return-on-investment, and the introduction of cost-effective solutions to the market in the shortest possible time, several intermediate milestones have been defined:

1. Starting at HDTV resolution, the iGLANCE receiver should facilitate optimised image-quality extensions for the next generation of HDTV applications. This receiver should integrate the latest picture-quality control and optimisation of end-to-end image-chain processing;
2. The platform should be extended to enable the transition from 2D to 3D by implementing the relevant decoding processing technique in the platform and possibly to contribute to the standardisation of stereoscopic 3DTV applications; and
3. Demonstrate the capabilities of FTV applications, based on a stereoscopic 3DTV signal.

A bi-pole consortium

Project partners in iGLANCE are part of a European 'bi-pole consortium' consisting of the members of the Point-One competitiveness cluster in Eindhoven, the Netherlands and the Minalogic competitiveness cluster in Grenoble, France. This consortium creates a strong link between two semiconductor-technology hotspots in Europe, combining Minalogic's expertise in TV-chip and system-on-chip (SoC) designs with Point-One's market experience in TV sets and embedded software.

For example, Philips Healthcare will contribute top-down platform design, whereas STMicroelectronics will complement with SoC designs from the bottom up. While Philips Healthcare can act as a content provider, displaying the internal images of the human body in 3D form, 4D View Solutions is able to provide content showing the human form from the outside.

Philips Healthcare possesses vast experience in the acquisition, processing and visualisation of 3D medical data, and will be involved in applying and validating iGLANCE objectives in clinical applications. In Eindhoven, the SME Silicon Hive is designing coprocessors that can contribute or be an add-on to the chipset of STMicroelectronics in France.

An important project contribution is the participation of the consortium members in the standardisation effort of the emerging stereoscopic 3DTV standard. Their participation is focused on developing novel tools optimised for 3D and multi-view video use.

Targeting new applications

The MEDEA+ project will underpin the

development of new applications for 3DTV and FTV in both professional and consumer domains. In the professional area, 3DTV techniques can be used in hospital operating theatres to provide enhanced insight into a patient's anatomy. While for consumers, the 3D television set is an obvious mass-market product.

In addition to the real-time conversion of regular 2D content to 3DTV, more and more native 3D content will gradually become available. iGLANCE is specifically targeting large contemporary events such as major sports events or large concerts that will be recorded with stereoscopic cameras. Using the techniques developed in the project, novel user experiences will be possible that will without doubt generate attention in a world that is dominated by 2D images.

The iGLANCE results will sustain European development for advanced TV applications and establish a strong foothold in the emerging market for 3DTV, both conceptual and for platform implementation in hardware and software. The two main industrial companies involved in this project – STMicroelectronics and Philips – have a history of pioneering technological innovations, thus allowing them to count among the major worldwide market leaders.

iGLANCE represents co-operation between TV manufacturers, component developers, ICT suppliers and technology research institutes, all of which are participating as partners in the consortium. This interdisciplinary consortium has the competence to face strong competition from Asia and North America, thus contributing to European advances in this crucial technology.



MEDEA+ Office
140bis, Rue de Rennes
F-75006 Paris
France
Tel.: +33 1 40 64 45 60
Fax: +33 1 40 64 45 89
Email: medeaplus@medeaplus.org
http://www.medeaplus.org



MEDEA+ (EUREKA Σ!2365) is the industry-driven pan-European programme for advanced co-operative R&D in microelectronics to ensure Europe's technological and industrial competitiveness in this sector on a worldwide basis.

MEDEA+ focuses on enabling technologies for the Information Society and aims to make Europe a leader in system innovation on silicon.