Project participants

Tamlink Innovation – Research – Development Ltd
www.tamlink.fi/eng

Tampere University of Technology
www.tut.fi

TAMPEREEN TEKNILLINEN YLIOPISTO

Fraunhofer HHI
ip.hhi.de

Fraunhofer Institut Nachrichtentechnik Heinrich-Hertz-Institut

Middle East Technical University
www.metu.edu.tr

Technische Universität Ilmenau
www.tu-ilmenau.de

TECHNISCHE UNIVERSITÄT ILMENAU

MM Solutions Ltd
www.mm-sol.com

Mobile 3DTV Content Delivery Optimization over DVB-H System

MOBILE3DTV

www.mobile3dtv.eu

Contacts

Scientific Coordinator
Dr. Atanas Gotchev
Department of Signal Processing
Tampere University of Technology
P. O. Box 553
FI-33101 Tampere, Finland
Tel. +358 3 3115 4349
atanas.gotchev@tut.fi
www.tut.fi/mobile3dtv

Coordinator
Ms. Hanna Viljakainen
Tamlink Ltd
Hermiankatu 6
P. O. Box 140
FI-33721 Tampere, Finland
Tel. +358 3 316 5124
hanna.viljakainen@tamlink.fi
www.tamlink.fi

MOBILE3DTV is a small-scale focused collaborative research project funded by the European Commission's 7th Framework Programme.

SEVENTH FRAMEWORK PROGRAMME

In 2010, the first mobile 3DTV users in Germany watched the FIFA World Cup final broadcast live from South Africa where Germany won the match by a score 3:0.

In 2011, a Finnish family travelled to their summer cottage near a lake. Before falling asleep, the four-year-old Tarja watched her favourite cartoon "Moomin family" on her daddy's mobile 3DTV portable computer. After she fell asleep, her father continued watching the F1 Grand Prix broadcast from Indianapolis, USA, and cheered the victory of the Finnish veteran Kimi Räikkönen.

In 2012, a couple of million mobile 3DTV users around the world turned their portable devices on, while in cars, commuter trains or cafeterias, to watch the live broadcast of the landing of the ESA's spacecraft to Mars.

These stories are about to happen. The mobile TV market is a rapidly evolving one. Mobile TV subscribers are expected to leap to 100 million by 2010 and mobile TV is to generate more revenues than mobile video starting in 2011.

But the stories above are not about a trivial mobile TV. The users were enjoying Miroslav Klose's goals, Moominmamma's hugs and the spectacular rocks of the Red Planet, seen in depth. They were experiencing mobile 3DTV, a technology that does not exist. Yet.

MOBILE3DTV

New technology

The Mobile3DTV project develops the core elements of the next generation of mobile 3D television. The project scenario assumes that stereoscopic video is captured and converted to a proper content format, then compressed, encapsulated and broadcast to a large audience of mobile users, whose terminal devices receive, decode and display the 3D content.

Building upon two established technologies, namely the European DVB-H standard and auto-stereoscopic displays, the project will specify how mobile 3DTV content should be created, coded and transmitted over DVB-H in order to be visualized on a portable display with satisfactory quality for the user.

Project objectives

- Develop optimal formats for stereo video content creation for mobile 3DTV
  Best trade-off between compression ratios, rendering complexity and speed and user satisfaction.
- Develop optimal codecs for mobile 3DTV
  Best trade-off in terms of supported spatial and temporal resolution, compression efficiency and decoder complexity.
- Develop optimal tools for error resilient transmission of stereo video over DVB-H
  Effective trade-off between compression efficiency and MPE-FEC code rates; robustness with respect to typical channel conditions.
- Gather new knowledge about user experience of mobile 3DTV content
  Relevance to the artefacts specific to mobile stereo-video compression and transmission and to the purpose for which the user will view such media.
  Measurable through new metric for objective quality assessment of processed stereo video.
- Develop optimal tools for stereo video quality enhancement
- Design prototype portable device
  Capable of receiving and displaying 3D video streams; backward-compatible.
- Setup an end-to-end system
  Broadcasting and receiving of compressed and stored stereo video over DVB-H.

MOBILE3DTV

Impact

The mobile 3DTV technology has the potential to become widely available to consumers for 3D content delivery. It relies on DVB-H for bringing new broadcast services to handheld devices. Yet it will also boost the future internet by making 3D video a popular, desirable and searchable content. This is expected to strengthen the leading role of Europe in introducing novel 3D media technologies and to generate new and sustainable market opportunities for European hardware manufacturers, software developers and content producers.

Capture > **Coding** > **Resilience** > **Transmission** > **Decoding** > **Visual optimization** > **Display** > **Observation**