Members of the consortium:

Mediapro, SPAIN
http://research.mediapro.es

Bitmanagement, GERMANY
http://www.bitmanagement.com

Barcelona Media, SPAIN
http://www.bacelonamedia.org

EVS, BELGIUM
http://www.evs.tv

Royal Institute of Technology, SWEDEN
http://www.kth.se

Expertise Centre for Digital Media, BELGIUM
http://www.edm.uhasselt.be

Abertis Telecom, SPAIN
http://www.abertistelecom.com

TRACAB, SWEDEN
http://www.tracab.com

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Free-viewpoint Immersive Networked Experience

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OVERVIEW

The Free-viewpoint Immersive Networked Experience (FINE) project will be focused on researching and developing a novel end-to-end architecture for the creation and delivery of a new form of live media content. FINE will introduce the concept of live free-viewpoint content which will provide rich and compelling immersive experiences by allowing remote viewers to place a virtual camera in a real live-action scene and move it freely in space and time, heightening their sense of presence and reality

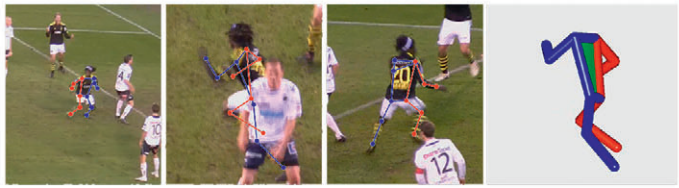
Several user centred scenarios will be defined for professional and home users. These scenarios will serve as a framework to demonstrate and validate the developed technologies and their usefulness. FINE will have a large impact on several platforms: Internet, broadcast TV, interactive TV, mobile, online video games and digital cinema. Even though the results will be directly applicable to the media industry, they will also have clear benefits for other markets such as teleconferencing, medical imaging, surveillance and security
As part of the outcomes, a multi-view video dataset and a collection of open source tools to manage it, will be built and released to the scientific community

OBJECTIVES

O1 - To develop robust and accurate methods for capturing calibrated and synchronized multi-viewpoint video
O2 - To generate free-viewpoint video representation of a 3D scene at real-time performance from the captured data
O3 - To develop robust marker-less motion capture techniques to generate accurate multiple character 3D animation streams from video/film sources
O4 - To create efficient free-viewpoint video coding algorithms suitable for real-time delivery and define strategies and specifications for next generation networks
O5 - To develop image-based algorithms for photorealistic rendering of 3D characters synchronised with live-action video feeds
O6 - To develop a new user centred and multi platform framework to integrate and exploit free-viewpoint technologies in experimental productions

Scientific & Technical Impact

- Multi-camera calibration, tracking and synchronized capture
- Real-time image processing methods such as de-interlacing, inpainting and photometric calibration
- Parallel algorithms for novel view synthesis by view interpolation, image based rendering and photorealistic 3D geometry rendering
- Fast (GPU-optimized) and accurate 3D reconstructions from a wide baseline disposition of cameras, in environment with non controlled illumination, and in the presence of multiple occlusions
- Marker-less motion capture and multiple object tracking
- Efficient and GPU-accelerated multi-view and geometry coding algorithms
- Free-viewpoint video streaming and delivery to multiple remote users at interactive rates
- Free-viewpoint networked exhibition and interactive visualization engines



EXPECTED IMPACT

- Reinforced positioning of industry in Europe in networking and delivery of multimedia content & services, in 3D media Internet technologies, and in networked search. Strengthened European industry in multimedia experiences beyond HDTV & in ecinema
- Wider uptake of networked and collaborative platforms based on a '3D media Internet'
- Global standards and European IPRs reflecting federated and coherent roadmaps
- Wider market opportunities, including for content-related SMEs, arising from innovative business and societal applications (e.g. games, entertainment, or education, culture, and service creations) based on novel networked media technologies and systems