

Enrichment of TV Series with Augmented & Mixed Reality Applications on Mobile Devices and on HoloLens

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Abstract

In this demo we will present two related AR/MR projects realized in cooperation with the German public broadcaster ZDF, which consist of an interactive mobile 3D Augmented Reality infotainment/game application as well as a Mixed Reality version of the infotainment app for HoloLens. The aim of the projects was to evaluate the technical, gamification and infotainment potentials for so-called companion apps based on AR/MR technologies for the very successful TV series 'Die Bergretter' (The Mountain Rescuer). Both applications provide rich interactivity with story connectivity to the TV series and give seldom experience of similar content at mobile and HoloLens devices.

CCS Concepts

• **Human-centered computing** → Interaction design • **Applied computing** → Arts and humanities → Media Arts

1. Introduction

In the year 2016 the worldwide collective gaming phenomena based on the mobile game 'Pokémon Go' has led to a remarkable attentiveness and engagement of many people with the topic of Augmented Reality (AR). Several statistics have shown that in average 20 Mio users only in the US have played Pokémon Go on a daily basis [All16]. At the end of 2016 Microsoft has released the so-called 'Holographic' glasses 'HoloLens' for developers to create new Mixed Reality (MR) experience applications. Meanwhile are all big global digital player – Apple, Google, Microsoft, Facebook, etc. – intensive engaged in the development of frameworks and devices for the AR/MR market, but also a number of new 'player' are trying to enter the very promising future AR/MR market like magic leap, Metavision or ODG. Analysts from the technology sector are forecasting an enormous business and economical potential for AR / MR oriented software and hardware solutions with about 117 Billion USD, more than for the VR sector with 34 Billion USD until the year 2022 [mar16]!

Despite the evolving attractiveness of AR/MR/VR media there is still increasing interest in TV content, especially in form of streamed TV series from video platforms like Netflix or amazon. 'Binge-Watching' is an increasing phenomenon in particular by young audiences [deloitt]. Besides the 'marathon' watching of TV episodes young consumers are using mostly mobile devices or laptops instead of TV sets and are consuming short video clips at YouTube, Facebook or other web based video platforms. Furthermore they are consuming simultaneously video streams, related text and multimedia content, chatting with friends etc. Broadcasters – not only - in Germany have the arising 'problem' with an increasing age of their audience between 50 and 60 years old! [Kre18] Therefore they have start a number of content

activities to win the young people back. One is the creation of online TV platforms, like 'www.funk.net' with new and short program formats, imitating YouTube content. Another trend is to use new media technologies like 360°/VR video or Multi-Camera by sport broadcasts. Immersive/VR content and so-called 'Web Productions' as a multimedia content mixture with some infotainment/gamification elements seem to play an important role in the strategy to engage younger audiences. For about two years there is an intensified interest by the broadcasters also in Augmented and Mixed Reality as a promising technology and application format to 'extend' the usual linear TV content in a very attractive way. AR/MR technologies open great 'extending potentials' either for fictional as well as for documentary TV productions. There are several notable advantages of AR-based applications compared currently to VR: a) the immediate usage possibility just with a smartphone and hence with no need for a special VR goggles/glasses (Head Mounted Display – HMD) and moreover with no need for the tedious calibration of motion trackers; b) user are not disconnected from the surrounded environment and hence with possibility to move around to explore some artifacts because there is no danger to stumble over furniture and there is no need for an extra movement space of minimum 2m x 2m; c) there is a great possibility to compare sizes of the virtual objects related to the sizes of the surrounding objects or to the room space; d) by AR/MR applications there is no problem with 'motion sickness', still a big problem for a quite big part of the audience with VR; e) AR/MR are immediate social shared experiences with the present people in the same room; f) AR/MR artifacts experienced in the connection to the surrounded environment, e.g. living room and this is still a kind of 'magic experience' for the audience.

2. Two AR/MR Applications for a ZDF TV Series

ZDF is the second public broadcaster in Germany with ca. 8.300 broadcasted TV productions of ca. 5.000 hours program per year and average 13,4 % of audience share in Germany. The action and drama TV series 'Die Bergretter' ('The Mountain Rescuer') has been playing for eight years, with average 4,4 Mio of audience.

The cooperation between the Beuth University of Technology and ZDF started in summer 2016. The objective was first to conceive and to create a 3D interactive AR based mobile app as a kind of 'companion app' related to the TV series. The main idea of the project was to generate an infotainment application with a strong gamification effect to attract more young people but also to provide a new interactive experience with the content of the TV series for the fan community. An important aspect was the close relation between the film and the 'virtual' 3D characters, objects and scenes, so the audience could immediately feel the connection between the series and the applications/games.

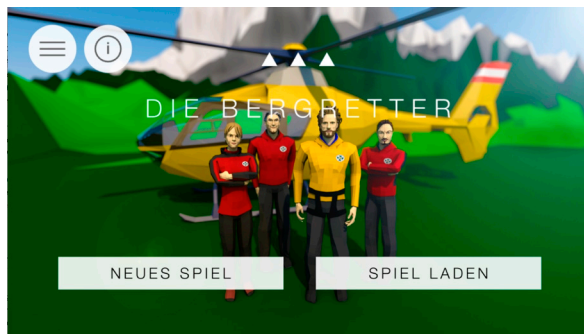


Figure 1: Screenshot from the main menu screen of the mobile AR Game 'Die Bergretter' – the characters

The usage requirements for the mobile AR application has been defined as follows: the app should be playable on usual smartphones or tablet devices in an average TV consuming situation, e.g. on the couch table in a living room, but also anywhere else.



Figure 2: Screenshot from the interactive tutorial part of the mobile AR Game 'Die Bergretter' – table view

The infotainment/game application is realized with a game-in-game approach: the user can choose in the mountain landscape between different 'challenges' like rescuing a skier after a snow slide. The work on this AR application has started 2016/2017, so we have chosen the AR framework Vuforia™ with the Smart Terrain feature, because of the multiplatform possibilities (android & iOS), good per-

formance values of the framework on smartphones and because of seamless work with the 3D game engine Unity.



Figure 3: Screenshot 1 from the HoloLens MR App

2017 and 2018 we continued the development of the AR app based on Microsoft's Mixed Reality platform for HoloLens. The main idea was to extend the audiences' living room in an infotainment rich interactivity area. The viewer can take the role of a rescuer's assistant and get some tasks like sorting of some typically rescuer tools, exercising flight maneuvers with a virtual helicopter inclusive landing it on the real table or cupboard in the surrounding room, interacting with the life-sized TV series characters, viewing some video spots on a virtual TV set, interacting with speech, game controller and gestures. Both AR/MR applications provide a 'magic' and funny experience for the audience, according to feedback from some presentations, e.g. at the EBU in Geneva 2018.

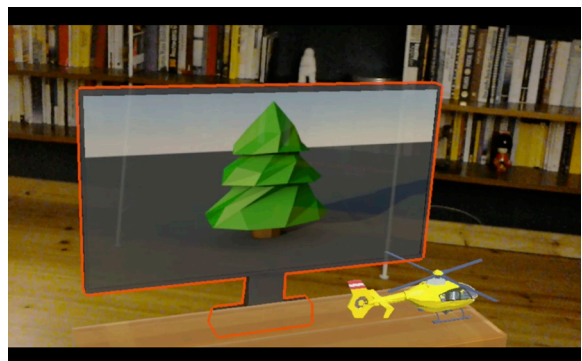


Figure 4: Screenshot 2 from the HoloLens MR App

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[Kre18]

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