

# [DEMO] MRI Design Review System

## *A Mixed Reality Interactive Design Review System for Architecture, Serious Games and Engineering using Game Engines, Standard Software, a Tablet Computer and Natural Interfaces*

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### ABSTRACT

Experience and control your design using natural interfaces! Most of today's conventional design review systems require special programming skills for preparation and high-capacity hard- and software for demonstration. Interacting with 3D data sometimes can be complicated. Today we face five major problem fields using design review systems: Interaction with 3D data, navigation in 3D space, controlling design alternatives, design presentation using less extensive hardware, content development without special software and programming skills.

Developments also targeting these issues by using different methods are presented e.g. by LANCELLE, SETTGAST and FELLNER (2008). They developed DAVE – Definitely Affordable Virtual Environment at Graz University of Technology. This immersive cage-based system today is used in evaluating the design of the new main railway station in Vienna, Austria. Also SHIRATUDDIN and THABET (2011) utilized the Torque 3D game engine to develop a Virtual Design Review

System. Finally DUNSTON et. al. (2011) designed an Immersive Virtual Reality Mock-Up for Design Review of Hospital Patient Rooms. These and other research work was based on standard 3D game engines by using a conventional cave or power wall for presentation and physical immersion. The eddison MRI Design Review System is an easy to use mixed reality interface for design evaluation and presentation. It integrates a wide range of hardware input systems including a special 3D-printed tangible user interface, desktop computers, tablets and touch screens. On the software side it offers plug-ins for standard 3D software including Autodesk Navisworks and Showcase, Unity3D, Trimble, SketchUp, Web GL and others. The eddison MRI Design Review System enables laymen to create their own interactive 3D content. It is a solution which makes the creation and presentation of interactive 3D applications as simple as preparing a powerpoint presentation. Without any programming skills you can easily manipulate 3D models within standard software applications. Control, change or adapt your design easily and interact with 3D models by natural interfaces and standard handheld devices. Navigate in 3D space using only your tablet computer. Complex buildings can be experienced by means of 2D floor plans and a touchscreen. System requirements are reduced by using standard software applications such as SketchUp or Unity3D. The eddison MRI Design Review System also makes it easy to present different design stages without extensive hard- and software on all common mobile platforms. Actual application areas are Architectural Design, Digital Prototyping, Industrial Simulation, Serious Games and Product Presentation. Currently, the system has two major use-cases: one setup will show the WebGL demo running on an iPad or an Android tablet computer. Using a WebGL/HTML5 cloud solution MRI Design Review System is able to reach the masses. The second demo is a SketchUp file controlled by optical tracking and 3D printed tangible objects also using a touchscreen or a handheld device. The eddison MRI Design Review System extends the range of existing design review systems with an easy-to-use hard- and software. Herein it simplifies the whole design process by an evolutionary, iterative approach, combined with a bunch of user-friendly intuitive interfaces.

**Demo Video URL:** [www.youtube.com/watch?v=CyC\\_TYdRSvo](http://www.youtube.com/watch?v=CyC_TYdRSvo)

**Keywords:** Easy to use Mixed-Reality Interface (MRI), User-Friendly Virtual Construction Kit, Building Information Modeling (BIM), Digital Prototyping, 3D-Visualization, Serious Games, Unity3D, SketchUp, Autodesk Navisworks, Autodesk Showcase, Unity3D, Trimble, SketchUp, Web GL

**Index Terms:** Science and Technology (S&T), MASH'D, Applications for Architecture and Engineering

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