

Mixed Reality Präsentationstechnologien für Science Center, Museen und Ausstellungen

Mixed-Reality Presentation Technologies for Science-Centers, Museums and Exhibitions

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Zusammenfassung:

[project: syntropy] ist Projektpartner, Produktentwickler und Lösungsanbieter für die Erstellung von Inhalten und Applikationen in den Bereichen:

- Interaktives Location Based Entertainment (LBE)
- Echtzeit 3-D
- Augmented / Virtual / Mixed Reality
- Mobile und drahtlose Attraktionen und Interaktionssysteme
- Medientechnik / Show Control

[project: syntropy] verbindet innovative Interaktionskonzepte mit immersiven Technologien für die Kreation, Visualisierung und Repräsentation von digitalen Inhalten in interaktiven Erlebniswelten. Für unsere Kunden erschliessen wir diese Technologien in hochwertigen nutzerfreundlichen Attraktionen für Kommunikation, Unterhaltung, Kunst und Kultur.

Wir entwickeln Gesamtlösungen für folgende Anwendungen:

- Echtzeit 3-D Umgebungen
- (interaktive) Kuppelkinos / Powerwalls inkl. Projektion
- Sichtsysteme für Freizeit- und Trainingssimulatoren
- Mobile personalisierbare Anwendungen für Museen, Events und Ausstellungen.
- Mixed-Reality Präsentationssysteme

Abstract:

[project: syntropy] is an expert in developing projects and solutions for attractions and applications in the areas of:

- Interactive Location Based Entertainment (LBE)
- Realtime 3D
- Virtual/ Augmented/ Mixed Reality
- Mobile and Wireless Attractions and Interactives
- Media Technology / Show Control

[project: syntropy] uses innovative interaction concepts and immersive technologies for creation, visualization and representation of digital content in interactive experiences. We make these technologies accessible by developing user-friendly high-class attractions for our clients.

- Realtime 3D Environments
- (interactive) Dome Cinema / Power Walls incl. Projection Systems
- Vision Display Systems for Entertainment- and Training Simulators
- Mobile personalized applications for museums, events and exhibitions
- Mixed-Reality Presentation Systems

Preface

“many museums are failing themselves and their users by creating a digital pastiche of the physical museum, rather than seizing the opportunity to extend and enhance the museum learning experience offered by effective use of ICT”
(Prosser and Eddisford 2004)

The use of digital technologies in Museums and Science Centers today

We are confronted with the “naive” assumption that digital technologies are inevitably interactive. But after interactivity, the goal of many organisations and curators is visitor participation. Truly interactive exhibits require some kind of decisionmaking by the visitor, compared with those, however technologically sophisticated, that require little or no visitor input beyond start/stop.

Key Requirements

Digital technologies shall facilitate many kinds of collaboration:

- between museum / science center and visitor
- between different institutions and
- among visitors themselves.

Digital technologies shall facilitate active participation – a shift from the learner’s deficit model to a dialogue-oriented model.

Future Requirements

As distinctions between the real and the virtual continue to blur key to future development is likely to be personalisation:

- personalisation of interpretation to enhance social and intellectual inclusion
- personalisation of technology to free both museums/ science centers and visitors from many of the current constraints
- personalisation to facilitate lifelong learning by providing a free-choice learning environment

Mixed Reality

The term „Mixed Reality“ is generally understood as an environment, in which real objects are overlaid by computer-generated virtual representations (Virtual Reality/VR).

Mixed Reality covers both Augmented Reality, which is an extension of real environments and objects with virtual data, and Augmented Virtuality, which links together virtual situations and objects with data from the material world.

In the past Mixed Reality was utilized mainly for military simulation and for hi-end applications in product development and in industrial manufacturing (e.g. automobile and aircraft construction) due to its associated high costs.

In the course of the development of ever more powerful and more favorable priced hard- and software it became our main task to make Mixed Reality technologies available for exhibitions, events, fairs, museums and for the point of information. Reliability and the avoidance of service lives are important goals of our development activities.

The Advantages of Mixed Reality Applications

We are accustomed to handle „classical“ Multimedia by our everyday contact with PCs, Internet and all kinds of terminals.

In contrast to this Mixed Reality applications have the following advantages:

- better „resolution“
- increased usability (no „VR-Sickness“)
- immersive product/learning experience
- enhancing the value of information and entertainment
- superior representation of complex contents
- creating memorable experiences

Integrating digital technologies

Mixed Reality Environments are able to integrate many digital technologies:

- Internet
- Multimedia
- Computer mediated conferencing
- Presentation technologies (interactive or unidirectional)
- Simulations and models
- Visualisation tools
- Microworlds and Games
- Streaming Media

Technology Enablers

Mixed Reality Environments can be enabled to “see, hear, feel” the visitor to react with him. They can be enabled to “express themselves” to interact and communicate with the visitor.

Technology enablers:

- Speech analysis and speech recognition
- Speech synthesis and speech conversion
- 3D audio processing
- Gesture recognition
- Hand and head tracking
- Personalised conversational avatars
- Speech-to-viseme mapping
- Emotional state detection
- 3D Image synthesis
- Modality fusion/channelling
- Haptic and force feedback
- Wireless connectivity
- Robotics

Modular Solutions

Our Mixed Reality Installations combine 3rd party hard- and software modules with our own proprietary solutions, which are partially produced in close co-operation with the manufacturers. All developments are stress tested for permanent operation and long-term usage.

Our software enables the use of standard projectors and PCs for installations with multi-channel projection. The adaptation of the systems to the technical state-of-the-art over the whole deployment period is also significantly improved.

We furthermore offer tailor-made interfaces and 2D or 3D contents for our Mixed Reality Products.

Mixed Reality Product Overview

- Realtime 3D System based upon 3D Game-Technology
- single-/multichannel Dome Projection incl. Dome Construction
- Construction of CAVEs / Powerwalls
- 3D Stereoprojection
- 3D Terminalsystems
- „See through“ – Terminalsystems with up to 3 DOF (degrees of freedom)
- Holopro™-Terminalsystems
- Mixed Reality - Showcases
- mobile Mixed Reality - Systems for Tablet-PC, PDA, Smartphone

Concepts

We are offering various concepts and modules for Mixed Reality Installations.

Please contact us to discuss your project.

- Immersive Presentations
- Single- / Multiuser Installations
- Virtual / Augmented / Mixed Reality
- Integration in Scenography