UCI ISR Research Forum

Abstract – Trends in Immersive and Holographic Interactive Displays (IHI)

Current Situation

The spread of immersive, holographic and interactive technology has increased significantly year by year in the business sector since the introduction of powerful graphics engines for gaming in the early part of the decade. In terms of consumer applications there are still pricing barriers but it is widely expected that these will be removed with mass adoption in the next 3-5 years, looking at Microsoft's strategy for touch and multi-touch interactive displays and how it will integrate as an essential part in Windows 7 as well as successes with interactive consumer devises such as the iPhone. Today most Fortune 500 organizations use 3D visualization and immersive display technology in a wide range of industry verticals where the more prominent ones include; Aerospace, Education, Energy, Healthcare, Manufacturing and Transportation. Main IHI application use today include sales/marketing, training, design and corporate communication.

Market Demands

As the adoption of IHI increases market demands focus on content and adaptation of content into realistic, interactive and engaging presentations. Key technology demands are:

- Scalable Experience on multiple publishing formats, e.g. Immersive 3D Stereo Displays, Kiosk, Internet etc.
- Simple (seamless) Data Transfer, with CAD and other 3D formats
- Integration with business systems such as SAP, Oracle, Documentum etc.
- High Level of Interactivity
- High Visual Quality bordering Reality, pixel/vertex shaders, real-time reflections/shadows etc
- Fast Development of Complex Applications and Configurators
- Physics Based Simulation of how Objects and Systems Behave in the Real World
- Large Data Capacity to enable real world scale visualizations

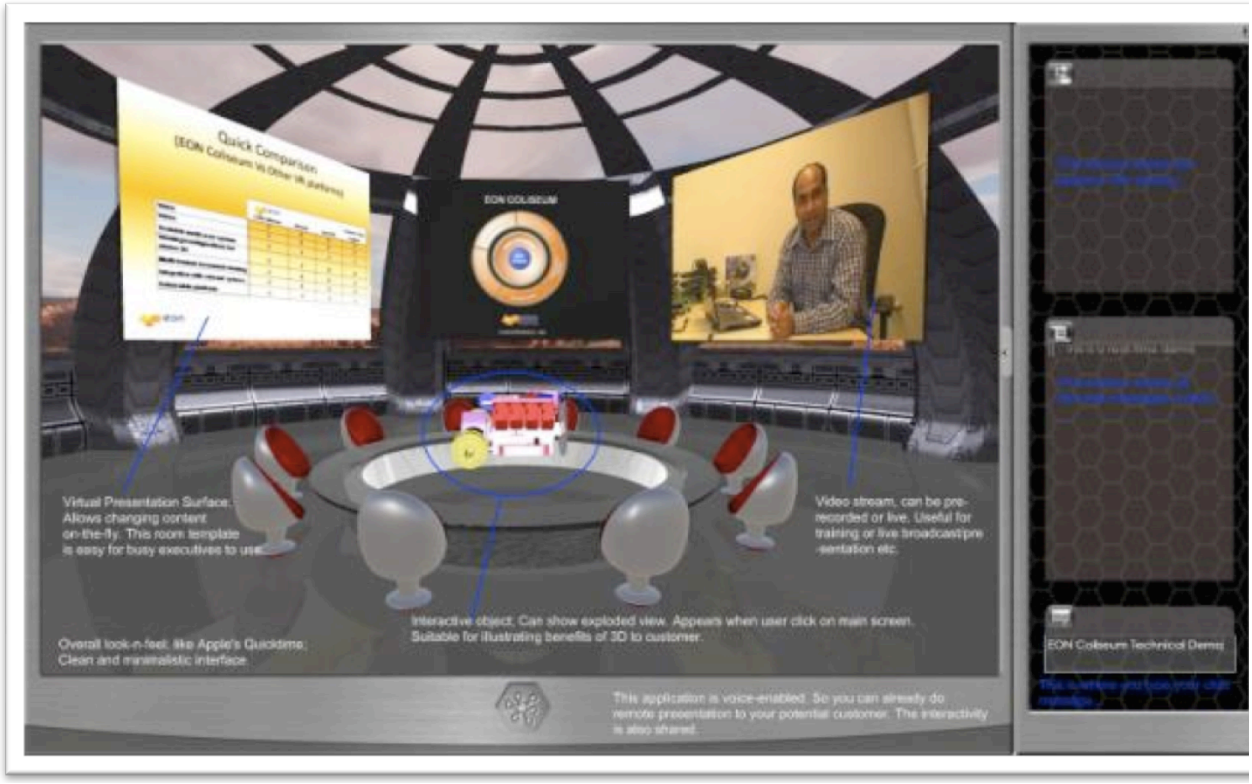
Content Integration and Software

Here we will discuss and review examples of how content and software integrates into an end customer's 3D work for a more efficient customer presentation/configuration/planning & specifying session. Our approach called Unfied INofrmation System (UIS) is used as an overall customer interaction tool to build different configurations during a customer meeting whereby a 3D photo-realistic product definition is achieved and where price, weight, technical information, finishing materials, are all linked to a single source of data. These UIS application allows for auto conversion of data from CAD system to EON simulation file formats and for use within a UIS Editor and a UIS Viewer. UIS is fully integrated with over 18 publishing and display options, providing an increasing level of immersion from web, laptop to interactive 3D display technologies that are

available for stereoscopic viewing. Passive, active, Infitec, red/green stereo, holographic screens, augmented reality, tele immersion devices and immersive Icube displays included

Software Architecture for Immersive Multiuser Applications
The Internet era has ushered unprecedented convenience for people to get connected whether they are geographically distant or in close proximity. However, effective communication remains a challenge when there is a lack of consistent, scalable and illustrative environment. We have seen many success stories for massive multi user on-line games and social networking in the past few years; however in the business sector successful use of these types of technologies have been limited until recently. With a process oriented content integration the benefits many large manufacturer's stand to achieve are massive. We will review how this technology is used effectively today in a 2Dinterafce and then discuss the next generation virtual communication and requirements for software architecture including:

- Technology has driven communication beyond plain visualization
- Voice communications, live video
- Virtual/mirrored worlds
- "Mash-ups" technologies provides powerful multimedia experiences for users
- Internet creates ever-growing demand for connected applications
- Live 3D avatar/capture technologies
- Fully immersive multi-user requirements
- Application communication protocols



From virtual classrooms to key boardroom meetings, presentations come alive with EON Coliseum™ smart networking engine that cleverly optimizes quality of multi-modal communication on different systems so that connected parties can enjoy a seamless experience with every session.

Future Trends
Mobility will come in as a key trend more and more in IHI technologies and here we will discuss Ultra Mobile PC and handheld trends, micro projection technology and wearable displays as well as wide area

motion tracking as some of the key enablers in order to effectively make use of IHI in a mobile wireless world.

About EON Reality Inc.
EON Reality, Inc. is the world's leading interactive three dimensional (3D) visual content management software provider. Its powerful, breakthrough technology enables users to experience more by revolutionizing the way companies leverage their digital assets throughout the product lifecycle. With EON's software tools and applications, including Interactive Product Content Management (IPCM), Simulation-Based Learning (SBL), Augmented Tele Presence (ATP) and Rich Media Publishing (RMP), users are able to create realistic and authentic product experiences based on i3D visualization technology, delivering versatile productivity to the aerospace, automotive, manufacturing, retail, defense, education and medical sectors. Organizations including Cornell, University of Philadelphia, Texas Tech, KCTCS, SIMT, Suzuki, Siemens, John Deere, Atlas Copco, ExxonMobil, Toyota, Tetra Pak, Boeing, Bombardier, Intel, Peterbuilt, Lexus, Whirlpool, Honeywell, GE Healthcare and Stryker use EON solutions to enhance the interactive user experience to effectively increase sales, better communicate product functionality and decrease the cost of service, training and technical support.

EON Reality is the global leader in providing the most visually rich, interactive and reusable 3D experience through software and technology solutions. Its framework enables i3D content delivery from traditional virtual reality to large visual display solutions. EON Reality creates and delivers the leading interactive 3D platform that enables companies and organizations to effectively visually communicate, visually collaborate and visually accelerate knowledge transfer while optimizing business information ranging from procurement, marketing, sales, operations, training and maintenance.