

Using Augmented Reality to Improve Communications and Decision Making of Stakeholders at a Former Chemical Manufacturing Facility

Tom Fewless (thomas.fewless@ghd.com) (GHD, Detroit, MI, USA)
Ian Richardson (Ian.Richardson@ghd.com) (GHD, Waterloo, ON, CN)

Background/Objectives. The investigation of impacts at a former chemical manufacturing facility has spanned 25 years. Conditions at the site have been strongly influenced through mixing varied water densities (fresh, sea, and caustic) along with DNAPL, all of which influence the distribution of impacts across the site. Over the investigation time span, thousands of individual data values have been collected mainly through monitoring wells and soil borings. To understand the distribution of impacts at the site and how those impacts will be addressed, these data were combined to generate a comprehensive conceptual site model (CSM). A strong understanding of the site geology, hydrogeology, and constituents of concern distribution/mobility has been gained through investigation and analysis.

Approach/Activities. The use of a three dimensional computer model (EVS) was employed to facilitate communication of the CSM to stakeholders and regulators. This model allowed viewers to understand site conditions in greater depth. Difficulty arose with communications regarding potential remedies at the site between stakeholders and understanding of those remedies was crucial to their approval. The next logical step was to bring the information contained within the CSM into the real world. To accomplish this augmented reality (AR) was employed. AR sets the viewer in the driver's seat, allowing exploration of the data and interpretations from any angle or at any scale including being able to see site conditions and proposed remedial measures at actual size with the actual site as the background. This ability to explore the site details with interactive augmented reality that can be controlled simply through hand gestures and voice commands makes this suitable for all intended audiences.

Results/Lessons Learned. Results of interactions with stakeholders have been favorable. The ability to allow stakeholders to see the site conditions below the ground and the remedial measures that will be employed to address the conditions at actual scale and with the actual site as the backdrop is revolutionary and allows better stakeholder engagement.