

Augmented Reality: The Future of Conceptual Site Models

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Background/Objectives. The next generation of the conceptual site model (CSM) is the big data, digital CSM, which continues the evolution in the industry from static to dynamic CSMs and 2D to 3D and 4D CSMs. The first generation of CSMs were sections in investigation reports- 2D static figures to illustrate key elements like geologic cross sections, groundwater flow maps, and contaminant contours. As high-resolution, Smart Characterization methods are becoming widely adopted, CSMs are more dynamic, requiring us to synthesize “big data” and develop 4D interpretations with more data than ever before. The CSM paradigm has shifted towards the digital CSM which better leverages new tools for data mining, interpretation, synthesis and visualization.

Approach/Activities. One advantage of a digital CSM is streamlined reporting: an investigation report typically requires dozens of 2D cross sections and plume maps, but the digital CSM allows the development of intelligent reports which require far less effort, through the application of multilayered 3D and 4D interpretations. Rather than flipping back and forth between figures and tables in a report, stakeholders can dynamically change the field of view, zooming in on details and evaluating the data behind the interpretation. Software solutions like dynamic PDFs and cloud-based, geographical information system team sites enable open access to the interpretations and the underlying data.

Results/Lessons Learned. We will demonstrate the next frontier in digital CSMs- augmented reality. Augmented reality enables one to combine a live view of the physical world with computer generated information – the data behind the interpretation. Rather than viewing a 3D model on a computer screen, one is able to interact with the information in a holographic image – from inside the rendering – changing the field of view with the wave of a hand, or selecting data behind the interpretation by selecting a boring log or sample location with a voice command or hand gesture.