# Giant Mine Case Study

Enabling anyone to understand applied earth science through 3D holographic models

Client: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) is in charge of the $900 million-dollar (CAD) Giant Mine Remediation Project, an abandoned gold mine within the boundaries of Yellowknife, NWT. In 1999, the federal government took ownership of the mine and the responsibility to manage 237,000 tonnes of arsenic trioxide stored as a bi-product of the gold mining operations which is currently stored in the now closed, underground mine.. To prevent the contamination of groundwater, CIRNAC has developed a plan to freeze the ground around the stopes and chambers in the underground mine that contain the arsenic trioxide.

Challenge: This technically complex and expensive remediation plan requires the understanding and acceptance of many stakeholders, including engineers, government officials and the general public. 2-dimensional engineering drawings and sections were created to present the chosen solution. This information can be difficult to clearly explain to non-technical individuals. As public consultation is a critical component to this process, a more effective communication method was required to explain how the mitigation plans are going to be implemented. This needed to be done in a way that allowed all parties to make decisions based on data and science.
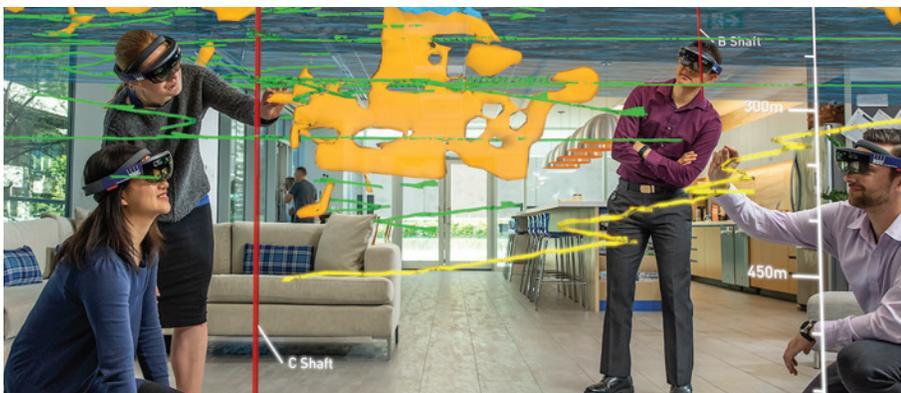
"I truly feel that we have found a great tool for communicating to stakeholders and helping project staff in their own work, especially in the underground."

—Chris MacInnis, Manager, Giant Mine Remediation Project, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC).

Solution: A multi-disciplinary team of engineers and content developers used The Ada Platform to build a 3D holographic representation of the complex models in a way that would be clear and easy for anyone to grasp, simply by putting on the HoloLens headset. A variety of data sets were combined, including LiDAR, GIS, CAD and underground measurements to create these holographic presentations. 3-dimensional "table-top' models set the scene for participants, followed by a comprehensive underground view of the former mining operation showing the stopes which store the arsenic trioxide and the engineering solution that has been proposed to contain it. This is followed by a depiction of a rising water table and its limited potential to interact with the arsenic due to the frozen ground. Finally, participants are transported to the year 2040, and a view of the reclaimed site, complete with restored river and vegetation.

Result: Community members, government officials and other stakeholder were all able to share the same common understanding of the challenges and solutions related to this project. With the Ada Platform, they were able to view inaccessible underground areas with both safety and visually clarity. Stakeholders were able to visualize all aspects of the project, and formulate questions and conclusions based on facts and data. CIRNAC was able to conduct a meaningful public consultation process in an efficient way that helped avoid unnecessary costs and delays, moving towards approval of the project and mitigation of the risk to the community.