

Case Study: Giant Mine

Engaging communities around a complex remediation, through 3D holograms, apps and videos

Client: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) is in charge of the \$1 billion-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. Existing, two-dimensional engineering drawings and sections were inadequate, as this information can be difficult to clearly explain to non-technical individuals. As public consultation is a critical component to this process, more effective communication methods were 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 achieve consensus based on data and science, regardless of their location.



"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."

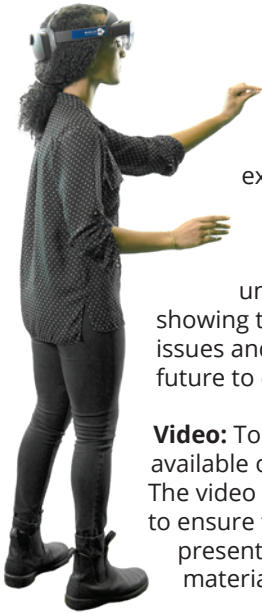
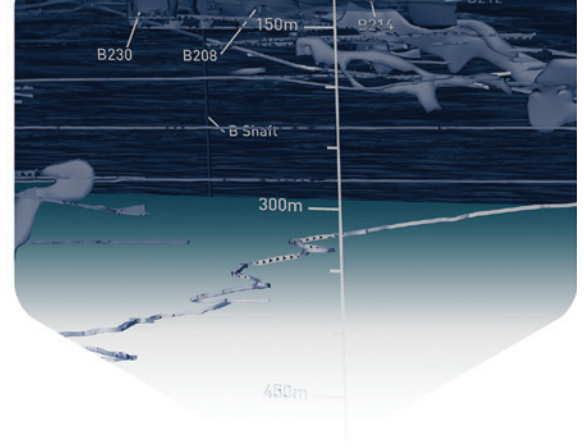
—Chris MacInnis, Director, Giant Mine Remediation Project, CIRNAC.

Solution: A multi-disciplinary team of engineers at BGC Engineering worked with Clirio to build 3D holographic representations in a way that would be clear and easy for anyone to grasp. A variety of data sets were combined, including LiDAR, GIS, CAD and underground measurements, to create large-scale immersive experiences, letting viewers freely explore the data in a way that makes sense to them. These were deployed in a variety of formats, including video, mixed-reality holograms, and even a publicly available app. Three-dimensional maps 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 proposed to contain it. This is followed by a depiction of the water table and its relationship to the site. Finally, participants are transported to the year 2040, with an expansive, realistic tour of the reclaimed site, complete with restored river and vegetation. This simplifies complexity and gives a sense of scale, providing viewers a memorable and engaging experience.

Result: Community members, government officials and other stakeholders have come to share a common understanding of the challenges and solutions related to this project. They are able to view inaccessible underground areas with both safety and visual clarity. Stakeholders are able to explore all aspects of the project, and formulate questions and conclusions based on facts and data. CIRNAC is able to conduct a meaningful public consultation process in an efficient way that helps avoid unnecessary costs and delays, moving towards approval of the project and mitigation of the risk to the community. By publishing 3D walkthrough videos (in YouTube), a publicly accessible app (on Apple and Google app stores), and holographic visualizations (on Microsoft HoloLens), CIRNAC is able to educate and inform both the local populace of Yellowknife as well as Canadians in general. (cont'd)

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Media deliverables



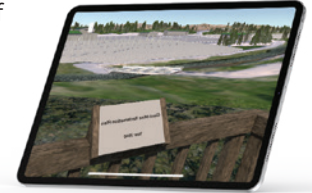
By leveraging the content and the story of the Giant Mine Reclamation Project, Clirio is able to assist CIRNAC in maximizing the reach and effectiveness of their stakeholder engagement process. Our diverse range of information design, user experience and programming talents allows us to provide exceptional service and value to this client throughout this project's life-cycle.

Holographic Experiences: For the public community engagement meetings, Clirio created an end-to-end holographic presentation that runs on Microsoft HoloLens. This allows participants to visit the underground of the mine site in a way that would be otherwise impossible. Starting from the surface, showing the current state of the landscape, viewers go into the underground to get a better understanding of the issues and solutions. And, using 360° immersive scenes, they are taken 20 years into the future to experience the reclaimed landscape and the renewed creeks and vegetation.

Video: To reach the largest number of stakeholders, Clirio created a 3D walkthrough video, available on YouTube, that explains all of the aspects of the project's issues and solutions. The video is available in English, as well as the Wìlìdeh dialect of the Dene First Nation to ensure that all stakeholders have access to the information. This dynamic presentation illustrates the story of the water table interaction with hazardous materials, and the engineering solution designed to mitigate the risk.



Apps: Combining the best of both worlds—the reach of video and the interactivity of holographic presentation—Clirio developed an app that is publicly available on the Apple App Store and the Google Play Store for Android. This allows any Canadian to learn more about this important project in our country's north. The app uses augmented reality (AR) technology to project the data into the users room through their phone or tablet. This way, a user can view the underground mine and the future interactive landscapes for themselves from the comfort of their home.



Learn More: www.clirio.studio



360° immersive scene



Participants viewing the mine underground