

BGC Engineering ADA PLATFORM™



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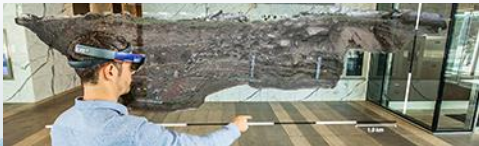
Applied earth science projects brought to life through 3D holographic visualizations of complex data.



CHALLENGES

Robust and effective geotechnical outcomes rely on a thorough understanding of the geology, the environment, and the interaction of these systems over time. Challenges exist in creating this understanding with expert and non-expert stakeholders alike.

Currently, 2D drawings with contours and text are typically used to communicate engineering design. Each person will create their own mental model, which can't be readily shared with, or verified by, others. Misunderstandings can lead to unnecessary project delays or unexpected outcomes. Sharing with non-technical stakeholders is nearly impossible.



IDEAL SOLUTION

A revolution of augmented applied earth science is underway, merging real world and digital data to allow people to make better decisions through greater, shared understanding.

A solution to misunderstandings from interpreting 2D drawings and data, the HoloLens uses 3D holograms to allow people to visualize options and approaches, interact with the information to gain knowledge and turn that knowledge into action.



DESIRED OUTCOMES

Ada allows our customers to better understand the project challenges and make fully informed decisions, as well as communicate those decisions to a larger audience. To date, we've delivered over 35 projects, totaling over three quarter of a million dollars in value.

The mining industry has recognized that "greater levels of understanding are required between mining companies and their local stakeholders"¹. A shared visual experience can break down barriers of communication and establish common ground among stakeholders.

¹ (Deloitte, Tracking the Trends 2017).





Holographic Visualization of Earth Science Data

3D Space + Time

Holographic projections allow a natural way for users to interact with 3D data and its changes over time.

Ada can show survey data, CAD designs, and numerical simulations with industry-leading clarity and at high resolution.

Sub-surface Visuals

Give stakeholders a better understanding of underground geology, how it influences landscape, groundwater, engineered structures and other features and conditions.

Inaccessible, invisible features are made real through holographic visualization.

Walk the Landscape

Improve expert and non-expert stakeholders understanding of distant locations and future outcomes by immersing them in a virtual tour of the site.

Data can be intermixed models of geographical forces for clearer understanding and better-informed feedback.

“The federal government is using BGC Engineering’s Ada Platform for community consultation for Giant Mine Remediation Project.” – Glenn Mason of CIRNAC, BGC client

BGC Engineering's Ada Platform + Microsoft Azure and HoloLens



Leveraging the power of Azure, complex 3D and geoscience data is rendered in the cloud and delivered securely to clients anywhere in the world for viewing and collaboration on HoloLens. Experts and non-technical stakeholders alike can visit a holographic version of their project site at any point in time – past, present and future.

Visual Experience

Complex projects brought to life: Ada uses the power of Azure to combine terrain and survey data, engineering designs, and real-time computer graphics to visualize applied earth science data as 3D holograms.



Travel in Time

With Ada, experts and non-technical stakeholders can visit a digital version of the landscape or project site at any point in time—past, present or future—as simply as donning a HoloLens headset or iOS device.



Shared Experience

Ada Platform users can access holographic presentations quickly and securely anywhere in the world through the power of the Azure Cloud.



The Ada Platform and Last Chance Grade (LCG)



The Last Chance Grade section of Highway 101 in Northern California is in an extremely landslide-prone setting and has been in a near constant state of repair for decades. Caltrans developed a series of options ranging from a 7.8-mile detour to a 1.1-mile tunnel to address environmental sensitivities in the area. BGC Engineering Inc. was brought in as part of an expert panel to assess the different route options.

BGC was involved in the consultation process for one year, and leveraged BGC's mixed reality software the Ada Platform. Using imaging, mapping, surveys, and engineering design requirements, Ada was used to convey the complex challenges of the project. As a result, the client was able to compare the different alignments in ways that had not been previously possible.

Win Results

With Ada, "you can be places you can't go, as there are no roads where these alternative alignments are" says Scott Anderson, Principal Geotechnical Engineer with BGC. Ada allowed Caltrans' expert panel on risk assessment, stakeholder groups and the general public an understanding of the challenges that they could not see otherwise.

Ada created an environment of universal accessibility, as well as a shared experience, to help the community dialogue become more democratic and collaborative in a way not previously possible. This common understanding dispelled intimidation and resolved the misunderstandings and mistrust that are sometimes associated with highly technical subject matter.

Questions about feasibility, longevity and maintenance were evaluated by the design team on level footing by using Ada to visualize structures that hadn't yet been built, and to see how they would interact with the challenging geologic landscape.

The Ada Platform and Ten Mile Slide



Ministry of
Transportation
and Infrastructure

Ten Mile Slide is a landslide near Kamloops in the Southern Interior of British Columbia, Canada. It impacts numerous parties, including a railway and a provincial highway that provide key access to the Xaxli'p (pronounced hawk-lip) community and the town of Lillooet.

Slope activity was first documented in 1988 and recently began to accelerate, emphasizing the need for stabilization and improvements to the highway. BGC was hired to characterize the slope and provide mitigation options to the BC Ministry of Transportation and Infrastructure (MoTI).

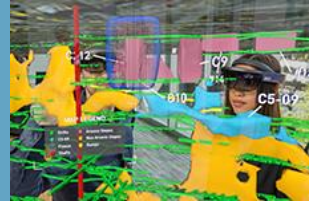
Win Results

With the understanding that landslide movement and construction activities are difficult to visualize using technical drawings and graphics, three HoloLens scenes were developed to show existing conditions, maximum slope displacement and completed stabilization representing the final design.

Ada's visual depiction of the Ten Mile Slide was showcased by BGC and MoTI to Xaxli'p membership during multiple community sessions held in Lillooet, Kamloops and Vancouver. At each open house, participants were able to wear the HoloLens hardware and interact with the Ada platform to walk around and better visualize the Ten Mile Slide as well as the proposed solutions.

Ada's holograms allowed people to interact with the project, giving each participant control of their experience. Ada enabled clearer communication and more confident decision making for owners and stakeholders, thus helping to identify, anticipate and mitigate challenges earlier in the project lifecycle. It created a shared reality that allowed meaningful input and decisions to be based on facts, evidence and common understanding.

The Ada Platform and Giant Mine



Canada

The Giant Mine is an abandoned gold mine in Yellowknife, in the Northwest Territories of the Canadian North. The mine operated from 1948 until 1999 and has a long history of environmental concerns, including 237,000 long tons of arsenic trioxide dust produced during the gold roasting process stored in 14 underground chambers.

After the owner of the Giant Mine went into receivership, the Government of Canada took responsibility for the existing environmental liabilities on the property. The Giant Mine Remediation Project is a 10-year, \$900 million cleanup effort to address the long-term containment and management of waste and abandoned infrastructure.

Win Results

BGC's combined earth science and software development expertise generated 3D scenes for Ada, which were viewed using the Microsoft HoloLens to communicate remediation plans to local community members, project team members, and external reviewers.

Up to 10 viewers were able to simultaneously experience these scenes, which walk the viewer through the remediation plan: regional context, present-day and reclaimed landscape, underground remediation measures, and immersion in a reclaimed landscape.

With Ada, the technology and technical complexity of the project are no longer barriers to understanding. The system allowed people to see for themselves what is going on, even more than 600 meters below ground.

