CLIRIO
TECHNOLOGIES

ADA PLATFORM

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

ADA PLATFORM

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 2 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 50 projects, totaling over 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).

Clirio Inc. and The Ada Platform

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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.

"*During the post-COVID shelter-in-place order, I was equally impressed with the ability to engage with colleagues that were equipped with the same model and HoloLens apparatus, just as effectively as when we were meeting in person. A very effective tool indeed!*" – Kenneth A. Johnson, PhD, CEG, PE, WSP, USA.

Clirio's Ada Platform + Microsoft Azure and HoloLens 2

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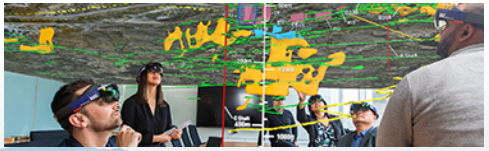
Leveraging the power of Azure, complex 3D and geoscience data is rendered in the cloud and delivered securely to clients anywhere in the world for viewing and collaboration on HoloLens 2. Experts and non-technical stakeholders alike can visit a holographic version of their project site at any point in 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.

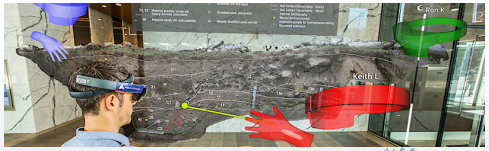
Travel in Time

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. Participants can collaborate remotely, communicating directly through the software.



The Ada Platform & Last Chance Grade (LCG)

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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. Clirio's consulting engineering partner, BGC Engineering Inc., was brought in as part of an expert panel to assess the different route options.

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 & Federal Highway Administration

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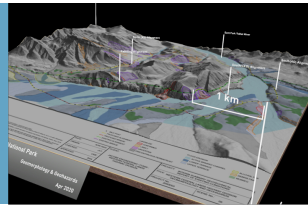

Denali National Park is six million acres of wild land, bisected by one ribbon of road. The Office of Federal Lands Highway (FLH), of the US Department of Transportation(USDOT) Federal Highway Administration (FHWA) manage this vital route.

The current route through the park is continually impacted by landslides and in the area of Polychrome Pass. Technical experts from within government and private consulting engineering practice were slated to meet at Denali in Alaska to study the site and the proposed alternatives. However, conducting an in-person, expert-based risk assessment (EBRA) meeting was no longer possible due to Covid 19. The schedule did not have flexibility for an uncertain delay.

Win Results

The Ada Platform (Ada) assisted in coordinating a remote, virtual technical review using holographic visualization. HoloLens 2 headsets were couriered to eleven review committee members located across North America. Ada was used to create a set of project visualizations using data provided. EBRA committee members viewed holographic representations of the site, including key geological features and relevant terrain data. The scenes consisted of terrain and geological data combined with existing and proposed highway alignment options.

The meeting was successfully accomplished on schedule and in a safe, remote manner that did not compromise the outcome. The meeting also was executed at a lower cost than originally planned, as the cost of Ada support was less than the original travel and in-person meeting budget. It brought experts to the field in a way that was not previously possible due to the remoteness of the site and created a deeper understanding of the issues than could be accomplished with 2D drawings and reports.

The Ada Platform & Giant Mine

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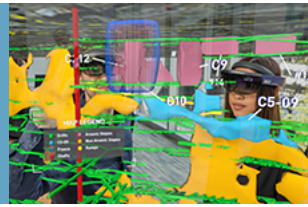

Canada

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

A combined effort of earth science and software development expertise generated 3D scenes for Ada, which were viewed using the Microsoft HoloLens 2 to communicate remediation plans to local community members, project team members, and external reviewers.

Multiple 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.