Costain | Using HoloLens2 to Reduce Site Visits

Introduction

The M6 J21a to 26 SMP Alliance project, led by Costain, involves the transformation of 16km of conventional three-lane road, including a hard shoulder, into an All Lane Running (ALR) configuration, including substantial earthworks, drainage and upgrading of highways technology to support ALR.

Overview

During the conversion of the hard shoulder into a running lane, Variogard is installed to ensure the safety of the general public and construction workforce.

However, this safety measure creates a confined work area behind the Variogard, resulting in a narrow corridor for works and passing works vehicles and plant.

Consequently, site traffic is reduced to a single lane with few passing places during construction. Due to this, when site traffic passes work, work is temporarily halted to safely let traffic pass by and wait until it is safe to proceed with construction again.

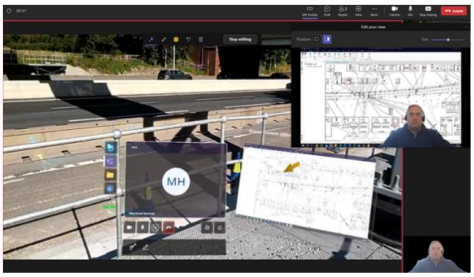
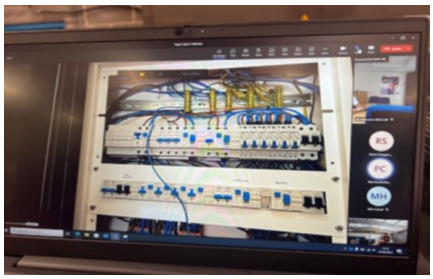
Challenges

Furthermore, the presence of site visitors exacerbates the congestion, especially when investigating issues on site, and visitors often need to be escorted around site due to the construction's complexity, which also puts a strain on resources.

The Solution

Using the HoloLens augmented reality headset, an operator can bring together a global team to observe their surroundings in real time. Through the HoloLens, team members can share the operator's perspective.

The HoloLens breaks down disciplinary barriers and enables real-time data sharing for effective project collaboration, reducing errors and delays. It empowers teams to visualise and interact, enhancing project clarity, productivity, and the proactive resolution of issues.


With the assistance of spatial mapping, remote participants can communicate with the operator, annotating their views to emphasise specific areas of interest. This advanced functionality facilitates collaborative discussions among multi-discipline team members, enabling them to collectively address challenges, guide on-site surveys by a design team, or even provide step-by-step instructions for operations, leveraging the expertise of more experienced team members, all while being separated by vast distances.

On-site workers can benefit from real-time safety information through HoloLens, including hazard warnings and site-specific safety protocols.

Further to the benefits of having global expertise to assist in problem solving, etc the key benefit to the site is from having only one of the construction team members' physically present on-site. This consequently leads to fewer site visitors, resulting in reduced site traffic volume and people / plant / vehicle interfaces.

Priced at approximately £13,000 for two units, including training, the units prove cost-effective after several meetings, paying for themselves when taking in to account travel costs of individuals to the contract (time and physical travel costs), reduction in carbon emissions (specialists are not required to travel from their home locations) and also potential downtime of works. With the restricted space for passing vehicles within works areas, work is often temporarily halted to safely let traffic pass by and wait until it is safe to proceed with construction again. This is reduced due to fewer vehicles at the workplace.

In conclusion, HoloLens integration in M6 construction enhances operations, transforming the entire construction process from planning to assembly, inspection, maintenance, safety while reducing site traffic.

★ Results

Key Benefit 1

Reduces on-site traffic and, therefore reduced people / plant / vehicle interfaces and minimal disturbance to construction activities.

Key Benefit 2

Multidisciplinary meetings can be held effectively without requiring all participants to be physically present, saving time, cost and carbon emissions. By enabling real-time data sharing and visualisation, HoloLens helps identify and address potential errors early in construction, minimising costly rework.

Key Benefit 3

The HoloLens facilitates swift collaboration between the team and designers, enabling them to resolve issues and reach solutions rapidly. It fosters effective collaboration among construction teams and engineers, reducing communication errors and promoting interdisciplinary cooperation. Cost savings are realised through error reduction, increased efficiency, and reduced rework, thanks to HoloLens technology. Project progress can be tracked and documented using HoloLens, providing stakeholders with real-time updates and ensuring construction stays on schedule. Workers can undergo immersive training with HoloLens to complete tasks with remote assistance, enhancing their skills and safety awareness.

Information

Learn more about Holoens2: www.microsoft.com/en-gb/hololens

"The application of this innovative technology has clear safety and delivery benefits especially in the confined working areas that we encounter on many highways schemes. It is a game changer for the industry moving forwards."

David Cooke, IPM M6 J21A - 26

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home safe and well