



SATELLITE ENABLED AUGMENTED REALITY FOR THE

REMOTE WORKER

HOW MINING, UTILITIES AND OIL AND GAS COMPANIES ARE BENEFITING FROM INCREASED PRODUCTIVITY, SAFETY AND CONVENIENCE





THE REMOTE WORKING CHALLENGE

Oil and gas, mining and utilities are different in many respects, but chances are your challenges are very similar. You operate in remote locations and are tasked with a heady mix of responsibilities, including setting up, managing and repairing your infrastructure while keeping all of your staff safe. All of this has to be done in a cost-effective manner.

For many years remote workers have had to be experts in the activity they are working on, meaning you need the right person on-site to do the job. Not only did that lead to lots of people needing to live in remote places at a cost and with a number of safety ramifications, it also meant that operations could grind to a halt if a specific expert wasn't there.

"Oh Jim doesn't have the skills to fix the broken down conveyor belt, we'll have to wait three days for Lizzie to get here, as she lives thousands of miles away." In that time your company is making huge losses in productivity, and to add to the problem you need to pay for Lizzie to get to site.

There is however, a better way. In this whitepaper we look at the role satellite-enabled augmented reality is playing in virtually bringing the subject matter expert to the source of the problem cost effectively from anywhere around the world.

HEADSETS: BRINGING AUGMENTED REALITY TO LIFE

Many of us will be familiar with Google Glass - the tech giant's brand of smart glasses which incorporate a headset, camera and LED display. While Google's innovation might not have gained widespread traction as yet, the general concept of augmented reality (AR) headsets is one that has massive potential for remote technical workers.

A key difference between a Palo Alto start up employee wearing Google Glass and a remote technical worker in mining, oil and gas and utilities, are the conditions they experience. Having to carry out maintenance work on rugged, sometimes hazardous terrain and in all manner of weather conditions means your equipment needs to guarantee both quality and durability.

AR headsets need to include best-in-class technology, such as high-definition cameras capable of taking photos, recording video and audio and streaming data, alongside a display and features such as voice-activated commands and fully hands-free operation.

At the same time, this hardware must be built to last, manufactured using the toughest materials so that it is water and dust resistant up to IP66, shock resistant and operational at extreme temperatures.

RealWear's® HMT series headset is a great option offering a rugged, highly reliable build, a variety of advanced technical features and long battery life, so that a remote worker can communicate and collaborate in the most difficult of conditions.





ENSURING YOU STAY CONNECTED IN THE FIELD WITH SATELLITE

It doesn't matter how great everything else is in your technology stack if it won't connect to the internet. You may as well use your equipment as an expensive hammer. Consistent, reliable connectivity is the bedrock of an AR solution and satellite is really the only option for these sorts of applications in remote areas where cellular connectivity doesn't reach or is intermittent.

But not all satellite is created equal. What you need is something that is highly portable; you can't be dragging a classic looking satellite dish across a desert. Something that is 2/3 the size of your laptop would be much more appropriate.

Also, you can't use something that breaks easily, or gets sand in it and grinds to a halt. It must be robust, something you can chuck in your bag and forget about. Perhaps most importantly of all it must be reliable. If it is cutting in and out, because of weather or latency it is going to be a supremely frustrating user experience. It just needs to work.

This is where Inmarsat's BGAN service has your back, offering a portable, dependable and affordable way of transferring data and staying in contact with colleagues.

BGAN services deliver simultaneous voice and data communications from anywhere in the world, through small and lightweight satellite terminals. BGAN uses Inmarsat's L-band satellite constellation, which offers up to 99.9% availability is used for mission-critical safety applications and governments across the world.

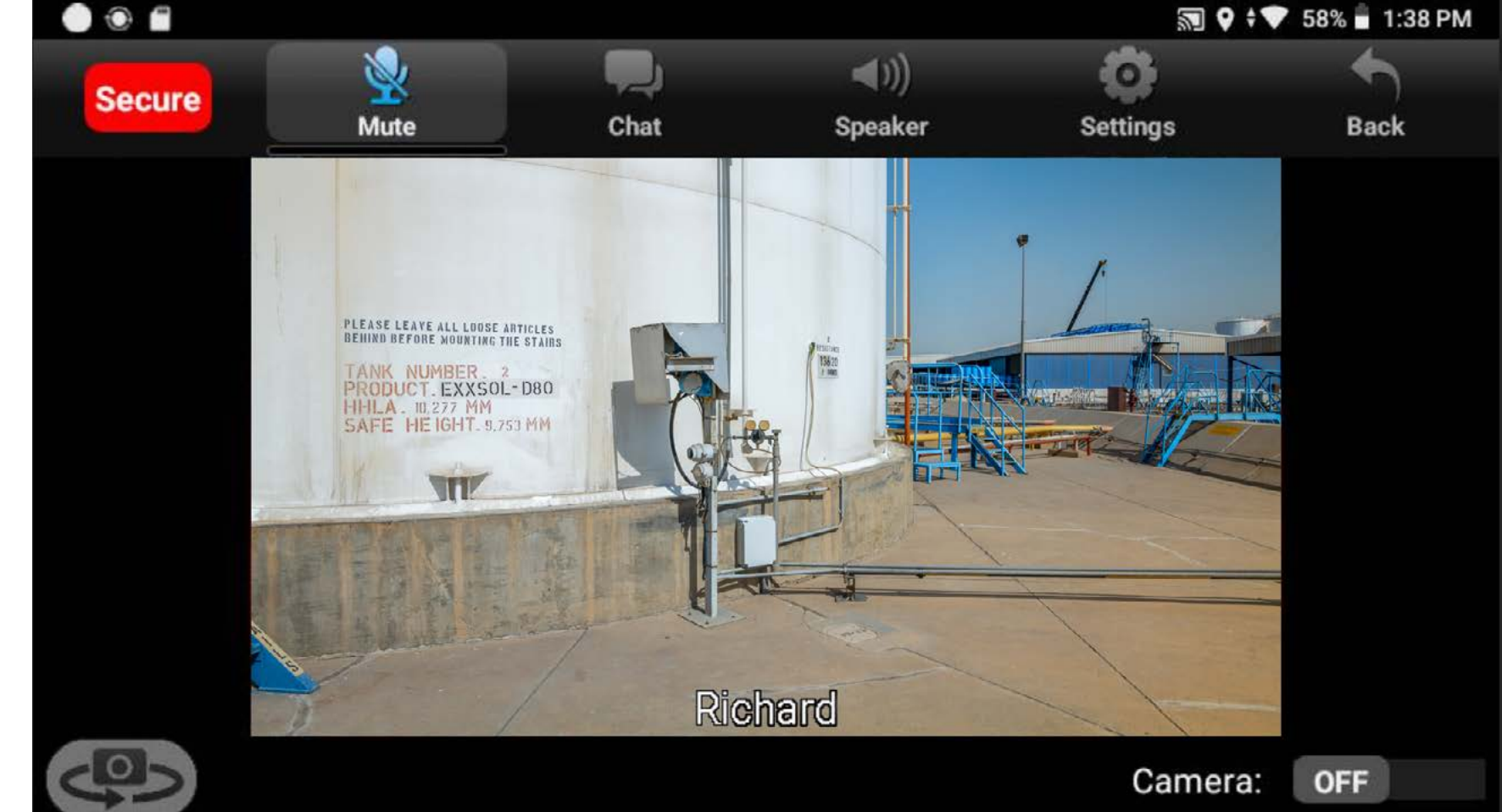
ADVANCED COLLABORATION SOFTWARE

Selecting the right hardware and connectivity without the right software to complement it would be an error. Sending photos, video and audio, as well as live-streaming data to colleagues in faraway locations, over satellite requires some very specific capabilities.

Highly portable satellite makes a trade-off in terms of its bandwidth, so the right software needs to be able to cleverly compress and de-compress the video so that it is optimised to be sent over satellite. Critically the remote worker or anyone at the other end just experience high quality video and audio.

Other critical features to consider include true end to end encryption so that potentially sensitive data is protected, as well as file transfer and even an audio-text chat function in the case of ultra-low bandwidth.

DigiGone's® digiTech® solution has all of these capabilities and is a great option for those looking to deploy augmented reality in a mining, oil and gas or utilities setting.





USE CASES

Combining the right hardware, software and connectivity results in a solution that can deliver in multiple scenarios.

REMOTE COLLABORATION

A remote technical worker needs easy access to experts at the edge. In the past, this might have been done by sending out large crews to remote mining facilities, oil wells or power distribution lines. Thanks to satellite enabled AR, there's no longer a need to spend as much money, time and human resource on this.

When fully equipped and connected, a remote technical worker has instant access to colleagues wherever they are in the world. This means an expert can give their input for a job quickly and safely, leading to faster resolutions and greater operational efficiency.

INSPECTIONS AND REMOTE DIAGNOSTICS

For a lone maintenance worker, inspecting a gas pipeline or a well head is a complex and demanding task. Fortunately, the technical capabilities and connectivity offered by an AR satellite solution make this job much easier, and safer.

The ability to stream live videos or send photos means workers can get rapid assistance from colleagues in discovering and solving maintenance issues. What's more, reliable connectivity ensures personnel can record and send diagnostics data to base for archiving and further analysis. With all of this in place, your organisation has greater visibility of your entire operation, while empowering your staff to do their jobs more effectively.

REPAIRS

The stakes are always high when it comes to repairing equipment or infrastructure to ensure operations don't grind to a halt. Fail to properly fix the hydraulic system of a tipper truck or a pressure damaged valve and you'll likely face severe consequences, but what if you haven't seen an issue like the one that confronts you before? With an augmented reality satellite solution you're not alone.

Using the in-built camera, voice communication capability and connectivity to Inmarsat's BGAN network, remote maintenance workers can carry out repairs while speaking to expert colleagues on the job. This second pair of eyes can be crucial to the success of any repair task, as guidance and feedback can be provided as the job progresses. This keeps mistakes to a minimum while keeping quality high.



EQUIPMENT SETUP

Setting up equipment can be a complex technical task. It's likely you are under time pressure and you may not have worked on this sort of kit before. Setting things up incorrectly could have a serious impact on operations and even on the safety of your colleagues.

A satellite-enabled augmented reality solution allows experts to instruct the installation of complex equipment through the eyes of the remote technical worker, as if they were there themselves. They can keep in close contact with workers, while monitoring the situation to provide support and ensure equipment is installed safely. Again, this saves a huge amount on costs, so a large crew is not needed, without compromising on quality of service.

TELEMEDICINE

While you make every effort to keep all of your on-site personnel safe, accidents do sometimes happen, or staff do get sick. When a worker is based on an oil rig or at a mining complex several hours from the nearest medical facility, getting them the help they need is a real challenge. This is where the digiTech/RealWear® solution as a means of providing telemedicine services come to the fore, especially in combination with DigiGone's digiMed® telemedicine kit.

Through live video streaming and remote data connectivity, remote maintenance workers can immediately access live consultations with qualified medical professionals, providing rapid diagnosis of injuries and health conditions. This helps quick decisions to be made about whether a worker can stay on-site or needs to be transported away for more comprehensive treatment. With safety being such a key concern, this brings peace of mind to everyone involved in your operations.



WHAT NEXT?

The good news is it is simple to get started. You don't have to source connectivity, hardware and software separately either. Contact Inmarsat today and we will direct you to one of our partners who can offer an end-to-end solution. You can be up and running and enjoying the benefits of satellite enabled AR in no time at all.

ABOUT INMARSAT

Inmarsat is the leading provider of global mobile satellite communications services. Since 1979, Inmarsat has been providing reliable voice and high-speed data communications to governments, enterprises and other organisations, with a range of services that can be used on land, at sea or in the air. Inmarsat operates around the world, with a presence in the major ports and centres of commerce on every continent. For more information, please visit www.inmarsat.com

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