

# Remote service

Providing service anytime, anywhere, anyway



## **SUMMARY**

What if remote working and servicing is needed and required for whatever reasons? How do we proceed? CSi has found a very good solution and started working with smart glasses.

In this white paper we will explain how using smart glasses can be of great benefit to you, our customer.

## **CONTENT**

- COVID 19 catalysator for Remote Service
- Factory Acceptance Tests without travelling
- How do smart glasses work?
- Other use cases
- Conclusion
- How can we help you?

# COVID 19 catalysator for Remote Services

The COVID 19 virus has a deep impact on all of us in our day to day work. For CSi it had consequences for various projects abroad. Because of travel restrictions, installation and commissioning activities as well as other on-site services stopped or were postponed.

Below, we will give you an update on the latest findings on how CSi is able to continue working on your project during these challenging times. The use of the latest tools on Virtual Reality and Smart Glasses will be discussed and we will share our findings regarding our first full **remote Factory Acceptance Test**. This FAT was conducted using these modern techniques.

Would you like to know how we kept your project on track? Would you like to find out how we provide service to our customers while we cannot go on site for whatever reason? Would you like to explore other use cases we see in the field of remote services? We will try to give you an answer to these and more questions.

Have a look at this video, recorded during the FAT on a Taros Palletiser:  
<https://www.youtube.com/watch?v=0T9CJUj-yY>

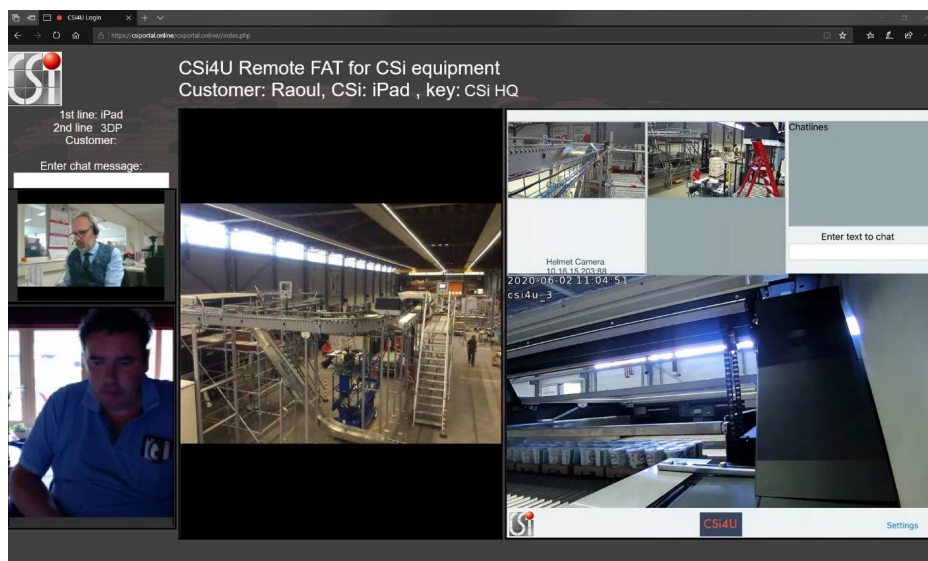


# Factory Acceptance Tests without travelling

In a lot of our projects we test and validate new equipment together with our customers at our location in the Netherlands. Also in the case shown below, we built a test rig for our customer, in order to demonstrate its proper functioning and to validate that the machine was built against the agreed specifications. And then suddenly the planned FAT could no longer be witnessed by the customer due to travel restrictions imposed by governments and company policies, because of COVID-19.

Back in 2015 we trailed with Industrial IP Camera's and an Apple IPAD application to stream both images and sound via the internet. A secure connection could be established through a website. The proof of concept was trailed at a CSi customer, but we decided not to roll it out any further, as camera systems were mostly not accepted on customer's sites.

Now, during the COVID-10 situation the necessity for remote working became of the utmost importance. And as a result, modern techniques in factories are now increasingly accepted.



Next to the website we use and the IPAD application, called CSi4U, another initiative was set up. We started working with modern VR/AR smart glasses. These smart glasses look like a head mounted tablet, but without a touch or input device. The model we use is the Realwear HMT-1. These smart glasses are of the monocular type, meaning that one display can be placed just below your normal field of view under your dominant eye.

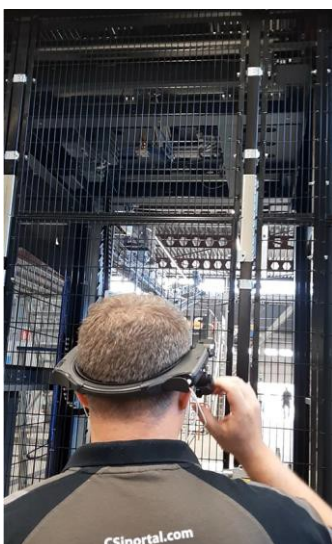


This small display shows the actual HD camera feed or the information that the contact person on-site wants to share with the field engineer that wears the glasses. The smart glasses can be controlled by voice commands.

The HMT-1 comes with a HD camera on the head mounted frame. With the right software application these images can be streamed via the internet to meeting attendees around the globe. With the help of both the CSi4U website and the Realwear HMT-1, we conducted the remote FAT with only a team of 3 people in our headquarters in the Netherlands. At the same time attendees around the globe dialled in. These were project team members from both our company and the customer, as well as members of the central engineering team from the customer's headquarter elsewhere.

Based on a test protocol for factory acceptance, all related items where checked one by one. For instance, static inspection of the mechanical and electrical works were performed. Instant feedback from the customer to the technician wearing the glasses was possible and extra checks could be initiated via the video and voice conference.

*Real world*



*Customer camera feed*



# How do smart glasses work?

The HMT-1 model can be used in our typical environments.

A camera is mounted including a microphone for voice commands and transmission during video calls.

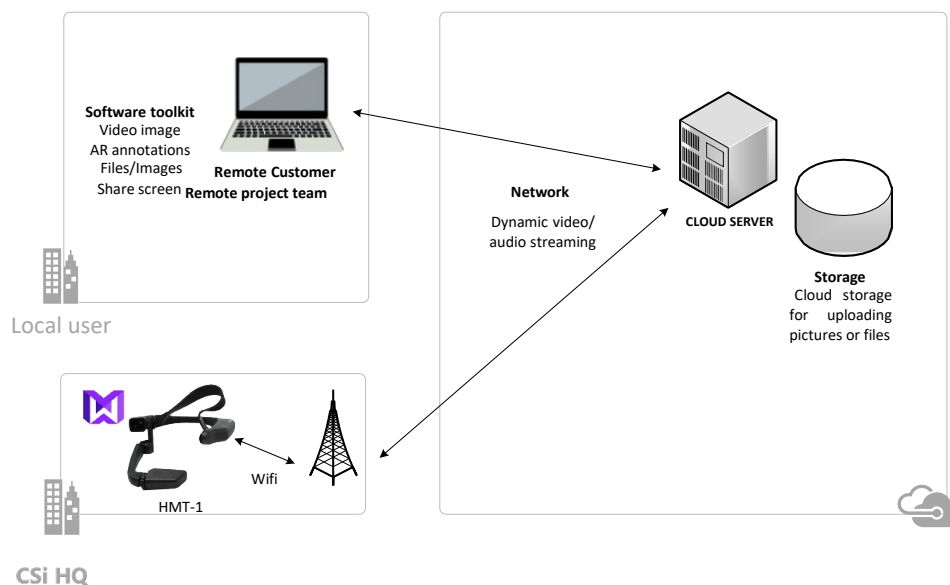
A 2<sup>nd</sup> microphone is mounted to suppress the environment sound. This noise cancelling feature helps a lot.

The HMT-1 is battery operated. This battery lasts approx. 6 hours, while sending images out. WIFI is used to stream the data from and to the HMT-1 .

As an alternative, LTE /4G SIM solutions or a wireless hotspot from your phone can be used. This may be useful in production environments were these devices are not allowed on the company WIFI. Videos up to 1080P and pictures with a 16MP resolution are possible.



In addition to the internet, the HMT-1 needs software. To date we tested XMREALITY 6 , HP-e MyRoom , Teams Preview, Teamviewer Pilot and Remote Eye software packages. In all situations the device is logged on via the application to a server, that hosts the stream of the device and distributes it to the attendees and vice versa.



The software toolkit that connects the smart glasses to others is a separate pack. Often these are based on a SaaS (software as a service) annual contract. If your company is on a Microsoft 365 you can use the free Microsoft Teams version, depending on the desired application. As an alternative you can purchase licenses for your whole company.

The following items are included in the kit:

- HMT
- Smart glasses
- MSA Front Brim Hard Hat with Clips
- Wall Charger
- Spare Battery (3250mAh Li Ion)
- Ear Bud Hearing
- Protection Headphones (noise cancellation)
- Ear Bud Foam Tips Sample Pack (Small, Medium, Large)
- Semi Rigid Carrying Case
- 64GB MicroSD Card (SanDisk Extreme®)
- LTE connectivity pack included
- License for 12 months.



## Other use cases

Obviously, smart glasses can be used for more applications than just the remote factory acceptance test. There are multiple use cases if you have the mobility and comfort of the smart glasses.

A good example of this would be remote mentoring of field engineers during an inspection or installation on-site. An expert can be contacted if the field engineer needs a specialist on a certain topic.

Or smart glasses can be of use if a break down occurs and the customer needs urgent support. Through the glasses a 24/7 service organisation can take a look at the issue, swiftly resolve the problem and thus minimise downtime.

What about remote inspections, during which the checklist and the step by step inspection method is shown on the display of the glasses.

If a connection to SCADA systems is established visual cues are directly shown in the visual field of the operator. These can then be directed to an alarm on the line or give access to Realtime performance data.

If we look at the speed at which the VR/AR area is developing, we can expect many more use cases in the short term.

## Conclusion

To conclude, we would like to mention that the remote FAT was passed successfully and the machine was signed off with only a few minor remarks. The other 4 machines upon approval of the FAT were also released for shipment. The project is now on track for on time hand over.

We have found that the most important benefits of the use of smart glasses for our customers are the following:

- downtime will be reduced;
- there is a faster and cheaper intervention as there are no travel costs and time;
- complex problems will be solved in a more efficient way;
- there is an intuitive way of operational use;
- sharing information is easier.



# How can we help you?

Please click on the video and see for yourself how remote services and a remote factory acceptance test works.

<https://www.youtube.com/watch?v=0T9CJUj-yY>

If you would like to receive more information, don't hesitate to contact Frans Mertens, Team Leader Middleware Software Solutions.

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