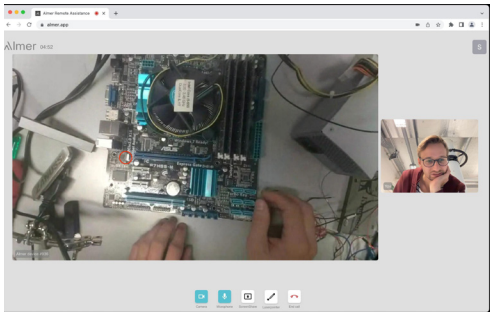
ALMER GLASSES

1. headband
2. transparent oled screen in front of the right eye
3. power / screen-on-off button(leftside),
   three navigation buttons arranged in a row (rightside).

The glasses can be charged using usb-c
and can connect directly to bluetooth headphones.

Almer Companion
App for android, used mainly for setting up the glasses.

On the receiving end, there is a web-based desktop app used for videocalling the glasses. The app has the ability to screenshare as well as live-annotate the incoming video-stream using a simple pen tool.



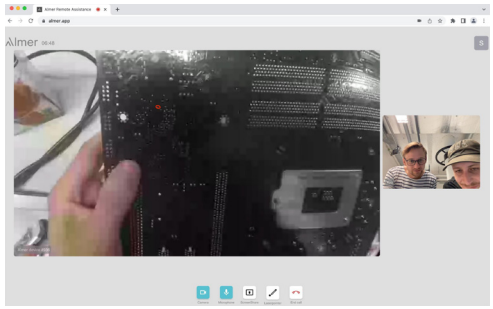
HARDWARE SOFTWARE

We've ignored the obvious limitation inherit to a device at this early stage in development, such as battery life, setup time, bugs and glitches. In our tests, the frontliner was handed a pair of glasses and (open-ear) bluetooth headphones that were already set up. The experience of using the Almer glasses is limited yet straightforward. The frontliner is wearing a fairly unobtrusive headband. While easy adaptibility of the band to different head sizes could still be improved, the glasses feel comfortable to wear. People with longer hair need to take care however, to keep the camera's view clear of any distractions .The frontliner was using the glasses passively, interacting only with the person on the other end, rather than the device itself. He or she can focus both thescreen and the environment around, one after the other. The screen is therefore not too distracting and the band can be worn continuously for a long time even when using both hands to act on the experts recommendations. One problem the frontliner faces, is that the field of view of doesn't always align perfectlywith the position of the screen. Content drawn on the edges of the interface can therefore bi invisible to the worker. The expert on the receiving end of the interaction has the experience of being in a video call with the frontliner, with the difference being the point of view of the camera being fixed to the persons head. In our testing, sharing content on our computer screens came easy to us, having done so many times now since the pandemic. The pen tool is straightforward and easy to use, even if limited in its usefulness. In our experience we came to think of the Almer Arc as more of a Point-of-view camera with a screen attached to it, as opposed to ar-glasses in any meaningful sense. In these limitations however lies the strengths of the device. These being its comfort, portability and ease of use.

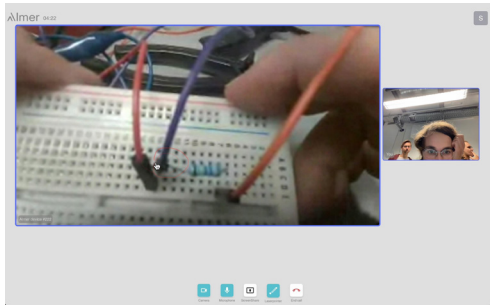
Implementables / Findings

- Value is on point-of-view for expert and hands-free interaction forfrontliner
- Screen edges can be out of sight.
  Design from center outward.
- Screenshare comes naturally to both experienced viceocallers and existing desktop workflow.
- Pen tool is intuitive but without real-world location tracking more confusing than helpful.
- Small details such as texts are both hard to highlight and read.
- Complex information is to dense and uncomfortable to read in the screen
- The products strengths lies in comfort, portability and ease of use.

EXPERIENCE/ FINDINGS

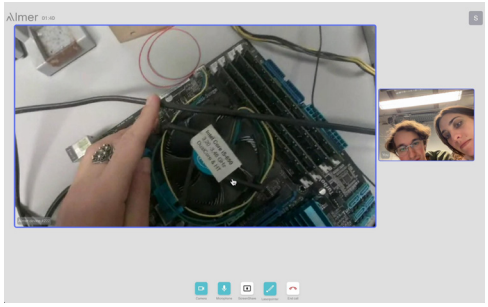


We were just barely able to highlight a single soldiering point on a board using the Almer glasses. The quality of the video is pretty poor, considering the good network quality in our controlled testing setup.

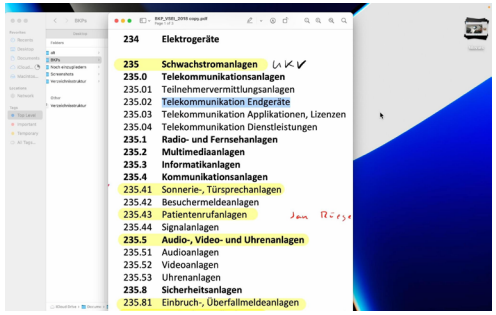


One of the challenges associated with using the marker tool to highlight parts of the image, is that whenever the wearer of the glasses moves his or her head, the highlight stays fixed to the pixel coordinates on screen, as opposed to the real world object shown in the video.

while the markers are of a disappearing nature anyways, this disconnect between marker position and background, can lead to a lot of confusion. Highlighting specific points of interest can sometimes be achieved using a verbal description. The frontliner can then point by simply using their fingers. At the size of a soldiering point however, a more precise way of highlighting is needed.



A combination of poor camera quality, the constant movement of the frontliner's head as well as the size of our viewport, led to a bad experience when trying to read text, such as a product label. The frontliner needs to bring his head so close to the label, that he or she nearly touches the object is is applied too.



We also wanted to test the frontliner's ability to read text of the glasses screen. We found that using screen sharing we could enlarge documents to a size that was easily readable for the frontliner while at the same time not being an unreasonable size to work with for the expert.

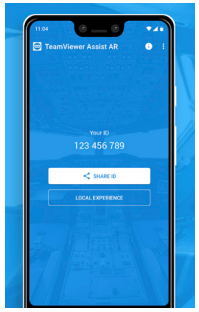
INSIGHTS

TEAM VIEWER

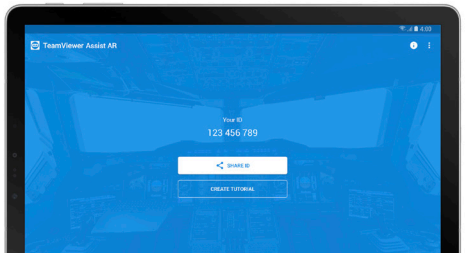
TeamViewer Assist AR ,
is one service in TeamViewers portfolio, promising remote assistance in places where screen sharing is not viable. There is no custom hardware included, applications are offered for iOS, Android, HoloLens, and other Android based smart glasses. Features include a pen tool for drawing, the ability to place arrows on the live video, OCR, File sharing, and a chat function.

The Android app ,
only has full functionality with a small selection of compatible devices, a limitation from Google. On iOS, installation was seamless.

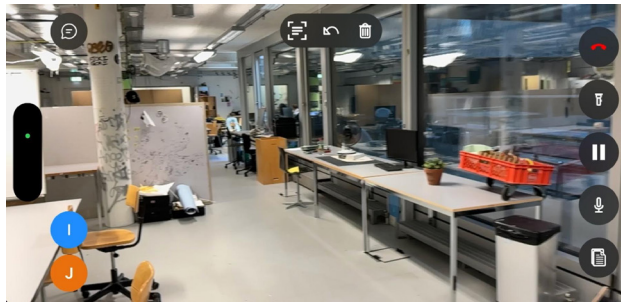
The procedure to set up a call is analogous to other TeamViewer products: A 10-digit ID is shared with the Expert, who enters it into their client and a connection is established.



Both the Expert and the Frontliner now see the live feed from the Frontliners camera and have the possibility to annotate it using numbered arrows or drawing lines. They are also both able to exchange files from their devices, turn on the flash of the frontliners phone, as well as use the text chat feature. The frontliner can scan text from the video and send it to the expert. All the existing annotations can be cleared with the touch of a button.



The process of setting up and connecting a call is very intuitive and quick. The video quality can vary greatly, from very good to blocky and stutter-y. The annotations placed on the video stay exactly where they are put, even when the frontliner moves far away temporarily. The arrows rotate slowly, and are numbered in the order they are placed, but the numbers are not always facing the camera, which makes reading them difficult at times.



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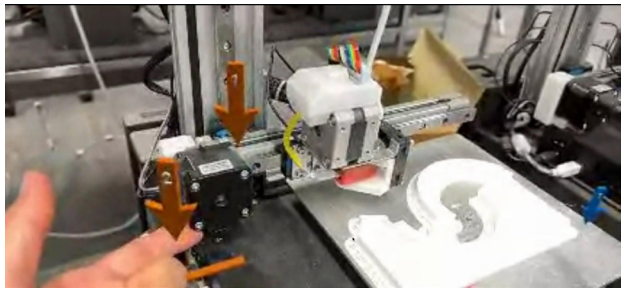
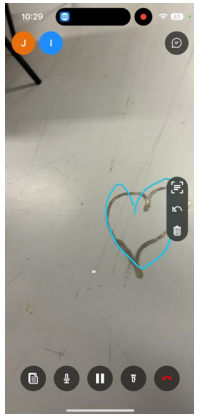
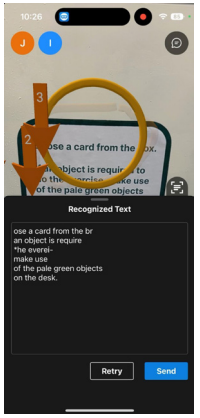
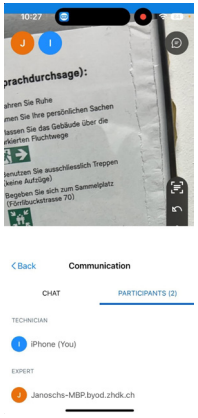


The pen places scribbles three-dimensionally, which is impressive, but not always very practical, as their direction is sometimes calculated incorrectly. Sometimes, drawn shapes like circles are recognised and geometricized. The accuracy with which details can be marked is good, but smaller details may be misread.

All in all, there is a sense of delay between what the frontliner and the expert experience, forcing the frontliner to slow down their actions to make them understandable or annotatable by the expert. The tendency is to focus on the camera feed instead of directly on the situation, as this is where the annotations are showing up. Since the frontliner has to hold a touch sensitive device at all times, their capacity to use their hands in troubleshooting is greatly impaired.







Findings

- Arrows with numbers as pointers work really well, their rotation makes them stand out visually.
- Features need to be simple and useful in many ways
- Delays and video quality can be a problem
- Because of that, the OCR function is very useful.
- Not seeing the expert can feel unpleasant
- Annotations should be undoable or editable one by one
- Depending on the work, holding a phone occupies an important hand

HARDWARE SOFTWARE

EXPERIENCE / INSIGHTS

FINDINGS

MBUX AUGMENTED REALITY HEAD-UP-DISPLAY

The Mercedes Benz augmented reality head-up display is installed in luxury class vehicles in addition to the standard multimedia systems, which are normally located on a display in the center console.

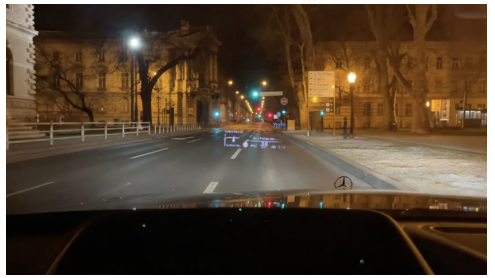
Therefore, the head up display is a third display in addition to the speedometer and other indicators located behind the steering wheel and the multimedia system mentioned above. The head-up display consists of a projection surface that can project visual content onto the windshield. In this example, it displays information about the current driving speed and the indicated maximum speed. Furthermore, basic information such as the current time, the fuel consumption and information whether driving assistance systems such as cruise control or lane assist are switched on. If you are using the navigation system, a route description and directions to the next intersection are displayed. Independently of the graphics mentioned, complex animations and understanding of the environment in real time are used to animate a direction arrow in such a refined way that it looks to the driver as if it is being projected into the real environment.

Car manufacturers promise the following benefits by installing this technology: This head-up display complements your field of vision with virtual cues without distracting you. For example, large directional arrows hover over the intersection where you need to turn. You know immediately what to do.

By displaying information semi-transparently on the windshield, you can keep your eyes on the road while driving, which reduces distraction. Even if you can't see the content on the windshield clearly when you look into the distance, you can still see brake lights or other obstacles in your line of sight that you might miss by looking at the traditional displays. A head-up display therefore contributes to driving safety when the driver also has to receive information while driving, such as directions.

In addition to the increased safety, the display can also help to improve navigation through complicated intersections. By incorporating the real world environment into navigation by projecting the directional arrows into the real world, drivers no longer overlook the correct exit.

Clear turn-by-turn directions improve navigation performance compared to voice prompts, such as „turn left in 50m", and are less distracting compared to looking at the center console display. The images in this example were all taken at night, as the readability of the head up display decreases as the brightness increases. The AR function is highly complex and requires high computational power to accurately capture the environment in order to display the arrows accordingly. Furthermore, the display area on the windshield is very limited in terms of size.



Findings

- Information that was previously displayed on traditional indicators is now also displayed on the windshield.
- Improves driving safety by maintaining visibility of the road while reading the information.
- The size of the head-up display is very limited and would increase its potential if it extended across the entire windshield.
- Readability suffers greatly in bright light conditions.
- Helped with navigation by incorporating the real environment in real time.

PRODUCT DESCRIPTION

EXPERIENCE / INSIGHTS

FINDINGS