

## Projected augmented reality system for remote expert assistance

Category: Other Technologies

Reference: TDO0091

Broker Company Name: Turku Science Park Oy

Broker Name: Timo Huttunen

Telephone: +358-40-7192335

Email: timo.huttunen@turkusciencepark.com



### Abstract:

A Finnish SME offers a new communication system based on projected augmented reality. It allows a more effective level of communication and remote instruction between on-site personnel and support experts. Business cases are in off-nominal repair, installation, on-the-job training, upgrades and any applications where fast response time and equipment uptime is critical. The company is looking for industrial partners interested in advancing their service business to the next level.

### Description:

Downtime for expensive complex equipment can lay a heavy financial burden on operators. Waiting for maintenance may cost 100 000 – 1 000 000 euro per day in the worst cases. Remote experts can help solve critical problems for which on-site personnel are unprepared and when travel to the equipment is both time-consuming and often expensive. Expert knowledge is necessary to support operation, maintenance, and repair of complex equipment in aerospace, energy, transport, machinery and other industries.

A Finnish company has developed a projected augmented reality system that implements a new collaboration solution: connecting the remote expert and on-site personnel by projecting the expert instructions directly on to the equipment. It takes communication beyond chat, voice, and video. The system is natively multiuser and hands-free as it does not require glasses or head-mounted displays. The system consists of a camera, wireless internet connection and a laser pointer. With the patented system, the expert can see the situation and assist the on-site personnel from their office

as if they were there. The remote expert can provide assistance using the integrated laser pointer that is synchronized with the video image, for example showing exactly what bolt to open or where to measure voltage. With the expert knowledge, straight to the point, the on-site personnel can fix the problem, getting the equipment back in service and avoiding the expense of, and delay caused by, an on-site site visit.

#### Innovations and advantages of the offer:

The key practical advantage of this system is its high usability. For the remote expert, it is as easy as pointing at the equipment with a remote laser pointer. Instructions projected directly on to the work area can be seen simultaneously by several on-site personnel without the need to wear glasses or other devices or use displays. The system enables precise communication beyond voice and video, leaving no room for error.

The system also helps to shorten equipment downtime, leveraging expert knowledge without delay, and saving on travel costs and spending time on inaccurate phone support. The system makes it possible to utilize the best available expert support that is not restricted by traveling distance or similar obstacles.



### Application:

System suppliers that need to offer maintenance and/or operational support services for their clients in various industrial sectors, for example:

- Aerospace
- Electricity & Power
- Heavy duty vehicles (i.e. mining)
- Transport
- Machinery

### Space Heritage:

In 2012, the Technical Research Centre of Finland (VTT) and Thales Alenia Space Italy developed a prototype system to meet the contextual information support needs of astronauts and conceptualize alternatives for 40 year old ways to give written them instructions.

Demonstrations held at Thales Alenia Space Italy and ALTEC in Italy in December 2012 received very positive feedback from industry representatives for usability and application potential in complex assembly and maintenance on ground, undersea and in space. The projected augmented reality system has been further developed and commercialized through Delta Cygni Labs, a spinoff of VTT.

Advanced Logistics Technology Engineering Center (ALTEC) is the Italian centre of excellence for the provision of engineering and logistics services to support operations and use of the International Space Station and the development and implementation of operations control centre dedicated to robotic planetary missions. Thales Alenia Space is a joint subsidiary of Thales and Finmeccanica. Thales Alenia Space has more than 40 years of experience in the design, integration, testing, operation and commissioning of innovative space systems. Thales Alenia Space is also a leading supplier to the International Space Station, and a pivotal player in space systems designed to explore the Universe.