

An Italian company offers a virtual reality technology simulating a real diving session into an underwater archaeological/cultural or natural site

## Summary

|                                      |                                                                                                                |                        |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------|
| Profile type                         | Company's country                                                                                              | POD reference          |
| <b>Technology offer</b>              | <b>Italy</b>                                                                                                   | <b>TOIT20220623021</b> |
| Profile status                       | Type of partnership                                                                                            | Targeted countries     |
| <b>PUBLISHED</b>                     | <b>Commercial agreement with technical assistance</b><br><b>Research and development cooperation agreement</b> | <b>• World</b>         |
| Contact Person                       | Term of validity                                                                                               | Last update            |
| <a href="#">Antonio Scornaienchi</a> | <b>23/06/2022</b><br><b>23/06/2023</b>                                                                         | <b>23/06/2022</b>      |

## General Information

### Short summary

An Italian company offers a technology that allows simulating a real diving session into an underwater archaeological site from the point of view of a scuba diver. It combines the advantages offered by the recent advances in VR technology with the newest 3D reconstruction techniques. It represents a novelty because of its capability to combine the educational purpose with playful activities.

They offer R&D cooperation agreement and commercial agreement with technical assistance.

### Full description

This company, established in 2008, is a spin-off company of an Italian university. It has considerable experience in the field of computer graphics and virtual and augmented reality applied to the cultural heritage and industrial engineering fields. In recent years it has focused part of its research and business activities in the blue economy sector, by providing innovative solutions for the marine and environmental protection, as well as for the sustainable tourism promotion of the underwater cultural and naturalistic heritage.

Since 2012, the company has focused on underwater technologies, developing innovative systems for underwater 3D reconstruction and technologies to help the divers during the exploration of underwater archaeological sites. These systems can be used both by tourists and by professionals, such as archaeologists and marine biologists. Moreover, the company has considerable experience in developing virtual underwater visits to simulate a diving session on the underwater archaeological sites using the most innovative technologies, like virtual reality.

In addition to the virtual underwater visits, the company has great expertise in designing and developing serious games and digital storytelling to provide the wide public with innovative ways to access the cultural heritage and underwater cultural heritage (UCH). Over the years, the company has been involved in several EU-funded successful projects.

The company offers a virtual reality (VR) application that allows tourists to enjoy the treasures of the sea (submerged settlements, shipwrecks, and natural assets), which, unlike the land sites, they are not accessible to the general public due to their environment and depth. It allows users to simulate a real diving session into an underwater archaeological/cultural or natural site from the point of view of a scuba diver. The technology represents a novelty in the field of the VR technologies applied to the promotion of underwater sites because of its capability to combine the educational purpose with playful activities that are able to emotionally involve any kind of user. Moreover, using it during briefing and debriefing operations is a very effective and innovative reinterpretation of the dive planning stage that precedes and follows each scuba dive session. In fact, dive planning gives important instructions for technical and safety purposes, but it is often a taught activity that could appear boring and demanding, especially for recreational divers. It is a unique proposition that combines the advantages offered by the recent advances in VR technology with the newest 3D reconstruction techniques to create virtual tours for the exploitation of the underwater cultural heritage. It is fully in compliance with head-mounted display (HMD) technology to provide the users with a totally immersive experience of the underwater site. Different types of embodiments can be chosen for the VR systems in accordance with specific needs. The VR application has been designed to be run in fixed museum installations in high-end systems or to be installed in portable devices (low-end systems) to be used by diving centres, tour operators during events, fair trades, exhibitions, etc.

The Italian company offers the technology under commercial agreements with technical assistance. The Italian company will provide the technology and tailored services to fit the needs of the technology partner.

The company is also willing to cooperate under research and development cooperation agreement in order to apply the technology to the development of the virtual underwater visit in other fields. Research activities can also be addressed to extend the functionalities or to create new scenarios, such as new submerged sites, both cultural and naturalistic. Cooperation to submit proposals under new European projects with the same aims can also be evaluated.

#### Advantages and innovations

The technology provides the general public with an innovative way to explore the underwater world. It allows those who cannot dive to simulate a diving session and to get additional information while exploring the submerged site. Moreover, it makes accessible unreachable underwater sites (i.e. a shipwreck more than 100 meters deep), overcoming environmental, physical and technical limitations.

It includes the digital replica of the underwater site (achieved through an innovative 3D reconstruction workflow) that is enriched with graphical effects, fishes and plants to simulate the underwater environment. The user can move around and explore both the surface and the submerged environment. Moreover, he can obtain additional information through point-of-interests that can provide texts, audio and video content. Additionally, the user can activate and explore the 3D virtual hypothetical reconstruction of the underwater site, representing the structures and artefacts as they most probably appeared in the past, thanks to a scientifically proven approach.

Its modular architecture makes the technology easily customizable and adaptable to different use case scenarios: a new underwater site can be added seamlessly, without any need to develop some features from scratch. Moreover, a mobile porting has been developed and released on the Google Play and App Store.

#### Stage of development

**Available for demonstration**

IPR Status

**No IPR applied**

#### Sustainable Development goals

• **Not relevant**

## Partner Sought

### Expected role of the partner

The company looks for commercial agreements with museums, tourist offices, marine protected areas, underwater parks, diving centers, and other entities involved in the promotion of the underwater cultural heritage. The Italian company will provide the technology and support to tailor it to the needs of the technology partner.

The company also welcomes cooperation with universities and research centers for joint research projects, or with companies working in complementary fields, under research and development cooperation agreement. The collaboration with universities and research centers can be applied both to the development of the Virtual underwater Visit in other fields (for example the training of diving operators, the simulation of operations in the industrial field) and to the extension of functionalities or to create new scenarios, as new submerged sites, both cultural and naturalistic. In this case the company can offer, in addition to the software license, also the content creation service, from 3D acquisition to the editing of texts, audio, video, etc.). The company is also available to participate in new European projects with the same aims.

As regards the licensing agreement, the company is available to start cooperations with both private individuals and public bodies. The company could ask in exchange for a fee for the use of the technology and also offer other services, such as 3D reconstruction and content editing. The license can also be sold free of charge with an agreement on the fee for the production of the content.

### Type of partnership

**Commercial agreement with technical assistance**

**Research and development cooperation agreement**

### Type and size of the partner

- **Other**
- **SME 50 - 249**
- **Big company**
- **University**
- **SME <=10**
- **R&D Institution**
- **SME 11-49**

## Dissemination

### Technology keywords

- **002006009 - Simulation, Simulation Engineering**
- **01004002 - Applications for Tourism**
- **01005006 - Visualisation, Virtual Reality**
- **01005001 - Cultural Heritage**

### Market keywords

- **02002004 - Graphics terminals**
- **02002007 - Other computer graphics**
- **02002002 - Graphics systems**
- **02002008 - 3D**

Targeted countries

- **World**

Sector groups involved