



REAL HOLO

PHASE MODULATING MICRO
MIRROR ARRAY FOR
**REAL HOLOGRAPHIC
MR DISPLAYS**



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PHOTONICS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101014977.

This project is an initiative of the Photonics Public Private Partnership.



About

The merging of real and virtual worlds to produce mixed reality (MR) environments is becoming a realistic component of future society. The effective use of MR demands a natural visual experience without physiological side effects for the user. REALHOLO is a project developed to meet these needs by researching advanced micro-mirror-based piston-type spatial light modulator (SLM) modulating the phase of visible light with optical features far superior to any liquid crystal-based alternative. The SLM will facilitate 3D display applications and active illumination and sensing. REALHOLO will develop dedicated core hardware concepts and modules for integration. The goal is an application-specific demonstration of the micro mirror array (MMA) in automotive use in real holographic MR head-up display (HUD) and active head lamp projection system and to enable other future applications like real holographic head-mounted displays (HMD).



Vision

REALHOLO will pave the way for mainstream mixed reality environments by using MMAs to provide the best possible experience for the user without physiological side effects like eye fatigue, misjudgment, motion sickness and accommodation-vergence conflict, which are known from alternative and intermediate

technologies such as stereoscopic 3D. The required natural visual experience can only be achieved with real holographic displays which have been principally demonstrated on the basis of available component technologies -both for direct view (TFT-LCD) and projection (micro displays).



Motivation

The REALHOLO project will take the next step towards developing commercially available real holographic projection displays usable in a wide range of applications from automotive HUDs to active automotive head-lamps and personal HMDs. The

REALHOLO consortium is constructed with the whole value chain represented for subsequent development of market-ready MR displays for the automotive industry as well as other holographic and optical solutions.



Mission & Objectives

To be able to develop an application-specific demonstration of the MMA in automotive use in real holographic MR head-up display HUD and active head lamp projection system, enabling future applications like real holographic head-mounted displays

HMD. The aim is to develop an advanced micro-mirror-based piston type spatial light modulator SLM for real holographic 3D mixed reality MR display applications, active illumination and sensing. REALHOLO will focus on the following objectives:

**Development of
a novel MMA-
based SLM**

**Demo of a
MR display**
a real holographic
MR application
implemented as
a HUD module for
future vehicles.

**Demo of a
projector**
Active head lamp

Partners

The REALHOLO consortium consists of eight partners from six different countries. The consortium is a well-balanced group consisting of three industrial partners, four SMEs and one research organization. This constellation enables the project to undertake challenges with a comprehensive talent pool including researchers, developers and users. The consortium brings together the necessary expertise to achieve the project objectives.



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TECHNIKON

TECHNIKON FORSCHUNGS-
UND PLANUNGSGESELL-
SCHAFT MBH
Austria [Villach]

4



NSILITION
Belgium [Ottignies-Louvain-
la-Neuve]

7

Valeo

VALEO COMFORT AND
DRIVING ASSISTANCE
France [Paris]

2

sencio
functional packaging center

SENCIO BV
Netherlands [Nijmegen]

5

OmniChip

OMNICHIP SPOLKA Z OGRA-
NICZONA
ODPOWIEDZIALNOSCIA
Warszawa [Poland]

8

xfab

X-FAB FRANCE
France [Paris]

3

Fraunhofer
IPMS

FRAUNHOFER GESELLSCHAFT
ZUR FOERDERUNG DER ANGE-
WANDTEN FORSCHUNG E.V.
Germany [Dresden]

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SeeReal
Technologies

SEEREA TECHNOLOGIES
GMBH
Germany [Dresden]

Facts



Budget

€ 6 Million
100% EU-funded



Consortium

8 Partners
6 countries



Duration

48 Months
01/2021 - 12/2024

Contact

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Find out more about this Project:
<https://realholo.eu/>