Turning the key to LBS powered XR Technology

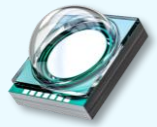
OQMENTED

THE WORLD IS YOUR DISPLAY

Laser Beam Scanning based Micro Displays

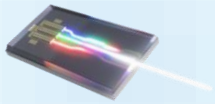
Inherent Advantages of Laser Beam Scanning

OQmented LBS Architecture:



2D MEMS
Single Chip

High Efficiency
MEMS Drive ASIC



Bright and compact
RGB Laser Module

- Laser are delivering highest Brightness and widest Color Gamut
- Efficient light source and effective illumination
- No or tunable Polarization and easily tunable Focus up to infinity

Questions to be answered

- How to realize the small form factor?
- Is there a visible trajectory?
- Is a small eye pupil limiting the use cases?
- Does the coherent light have to come with speckle?
  → In Waveguides and retinal projection are none

OQmented‘s MEMS Mirror Technology

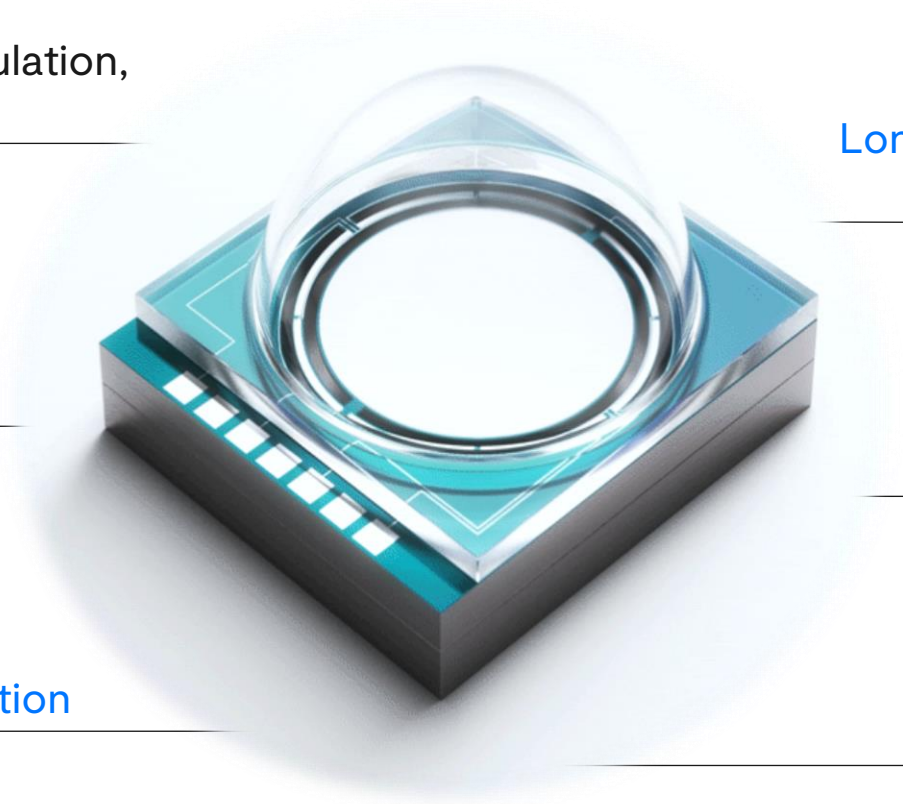
Energy efficient and robust

Efficiency **&** **Robustness**

Minimal Losses by vacuum encapsulation, mirror diameter options > 1mm

Resonant drive on two scan axes
Maximizes Mechanical Efficiency

Proprietary low-power MEMS & drive ASIC: <7mW Power Consumption



Long-term Durability and no corrosion by vacuum encapsulation

Total Protection from dust and particles through glass dome

Stable Image largely unaffected by shock and vibration

OQmented‘s precise Trajectory Control optimized for multiple Applications

Overcoming Motion Blur with dynamic Lissajous Projection

- ✓ Precise trajectory control (ratio and phase)
- ✓ Steadily progressive scanning
- ✓ Best perception of a homogeneous image
- ✓ Suppress motion blur

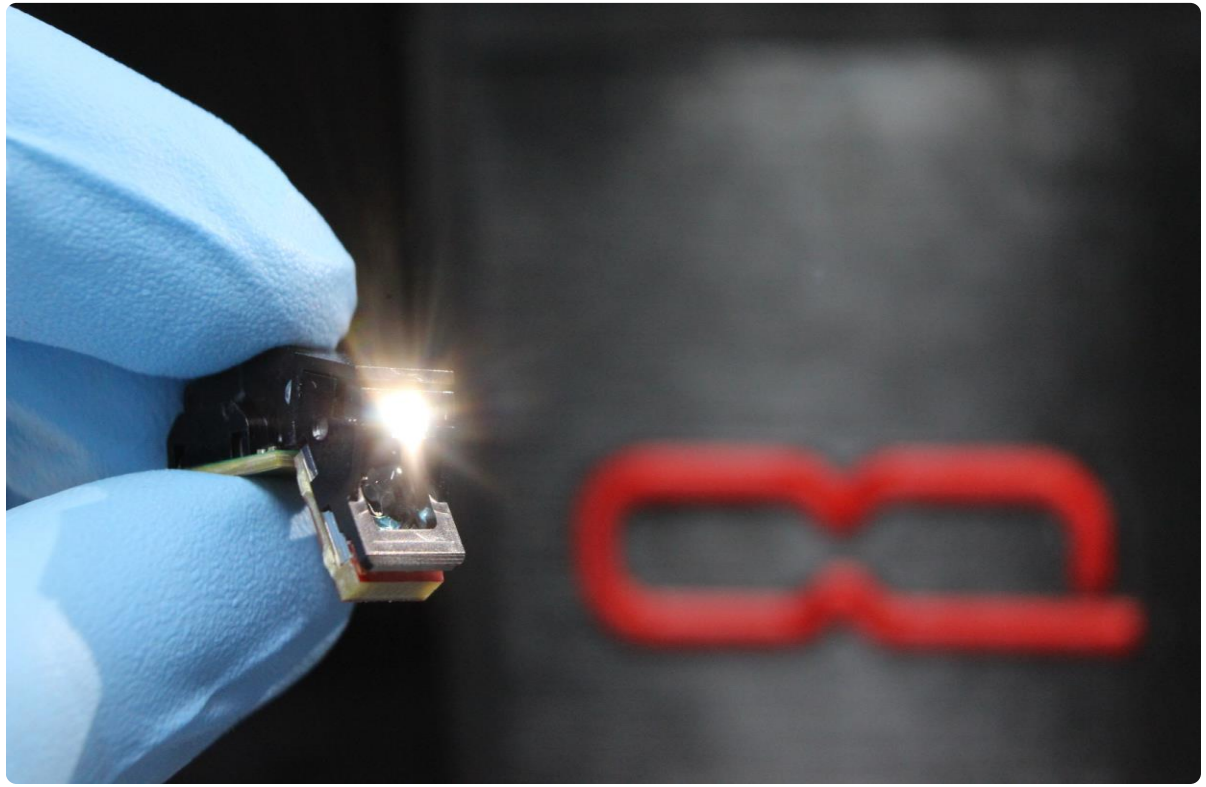
Ideal Image Projection
Progressive Scanning

Ideal 3D-Depth-Sensing
Interlaced Scanning

- ✓ Entire scene filled quickly and homogeneously
- ✓ Optimized spacing between the lines
- ✓ Full frame capture after shortest time
- ✓ Overcome motion distortion

OQmented's Laser Beam Scanning Light Engine

UltraLITE XR™



- Highest Brightness:
  19 lumen (> 3,000 nits to the eye)
- FoV:
  > 30°
- Ultra Compact Size:
  1.2 cc
- Ultra Low Power Consumption:
  < 200mW @ sparse content
- Mass Production in automated assembly process

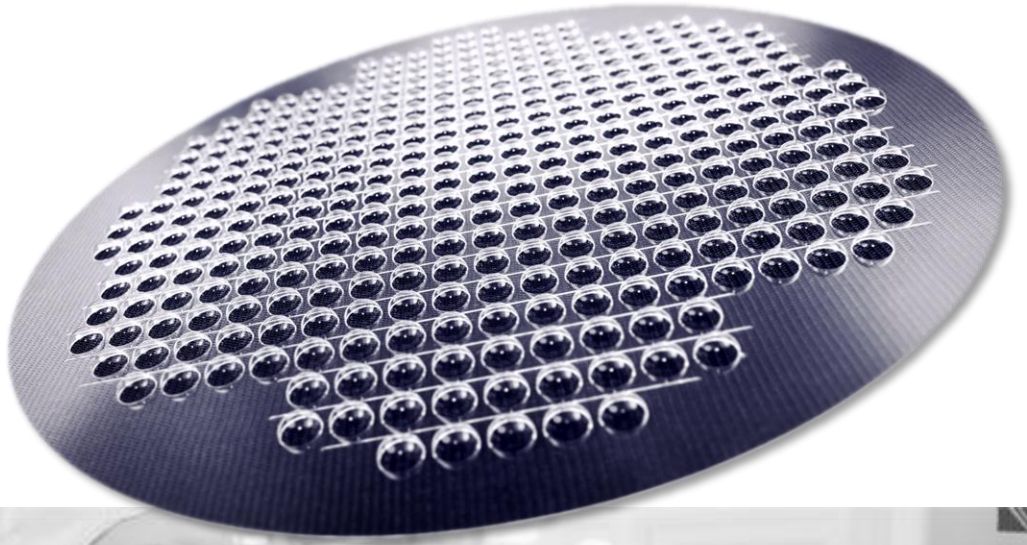
BubbleMEMS Technology™

Mature MEMS Scanning Platform for Display and 3D Sensing

Born out of 25 years of core research and development at Fraunhofer.

MEMS fabrication on fully established Wafer Level Process – precise and efficient

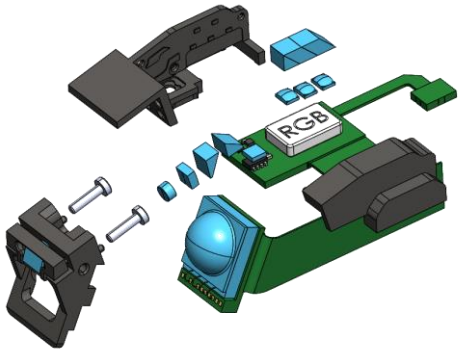
Our BubbleMEMS Technology™platform is the foundation of compact 2D scanning, ultra-low power, high-performance light engines.



Breakthrough in low-cost Mass Production of Light Engines

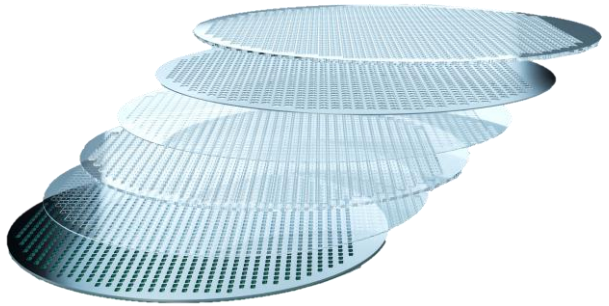
A paradigm shift in micro projector production

Conventional state of the art assembly of Light Engine
Automated production – unit by unit



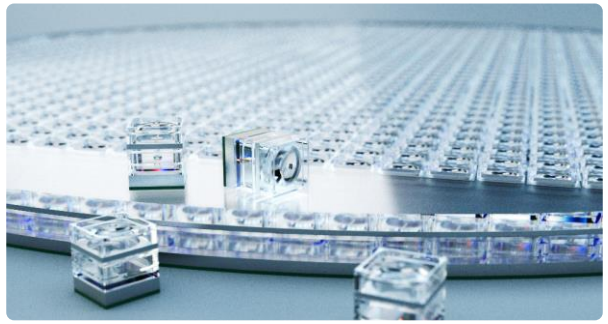
Gen 1

Full wafer level integration processing up to 1000 Light Engines manufactured in parallel: Significant size and cost reduction



Gen 2

0.5 cc to 0.2 cc



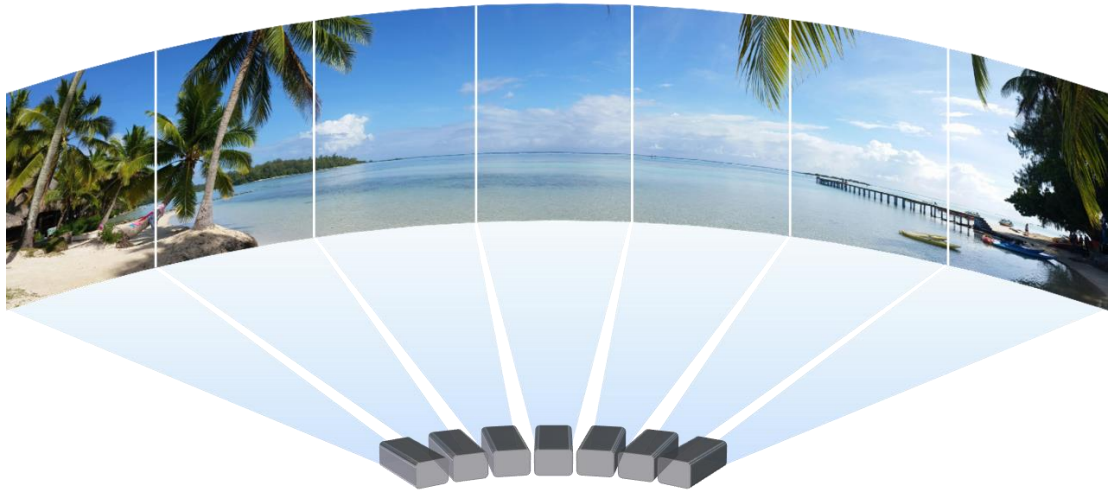
High Brightness, Resolution and Smallest Size

From single Projector to unlimited Scalability by seamless Image Stitching

Minimal form factor and weight

Example 1: Tiny Light Engine mounted to glasses frames direct incoupling into diffractive Waveguide

Expanding the FoV while maintaining brightness and resolution per projected area



Example 2: Multiple Light Engines arranged for wide Field of View Projection per automated seamless alignment

OQmented - Company Introduction

Core Technology: MEMS Mirror based Laser Beam Scanning Micro-Displays

- Founded in 2018
- Spin-off from Fraunhofer Institute for Silicon Technology ISIT
- 80 employees
- 140+ patents and applications
- Latest Lead Investor SHARP

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