



NATURAL DISPLAY

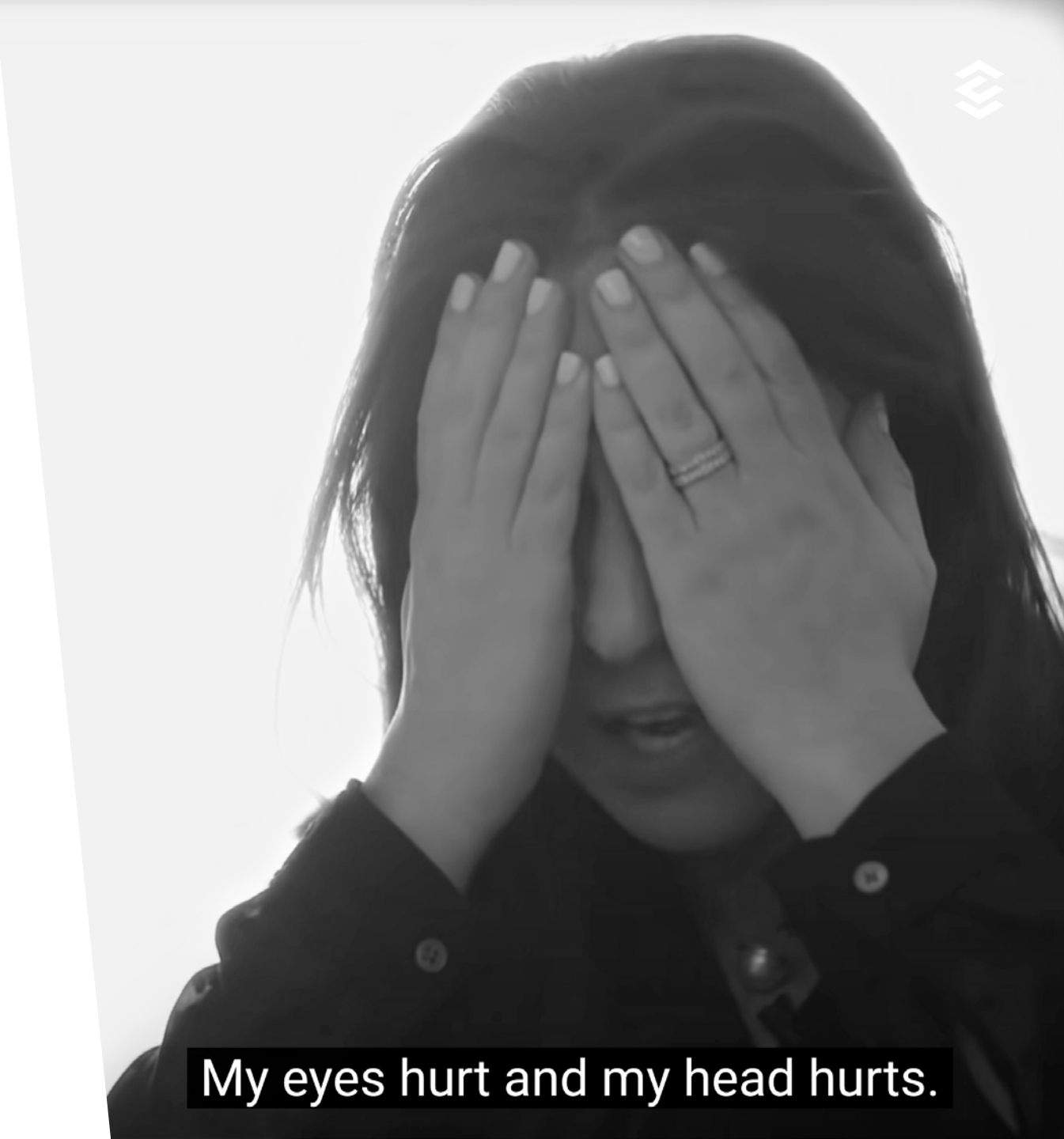


The industry's **first light-field display** allows **continuous focal depth**, opening a world of natural vision into the VR/AR domain.

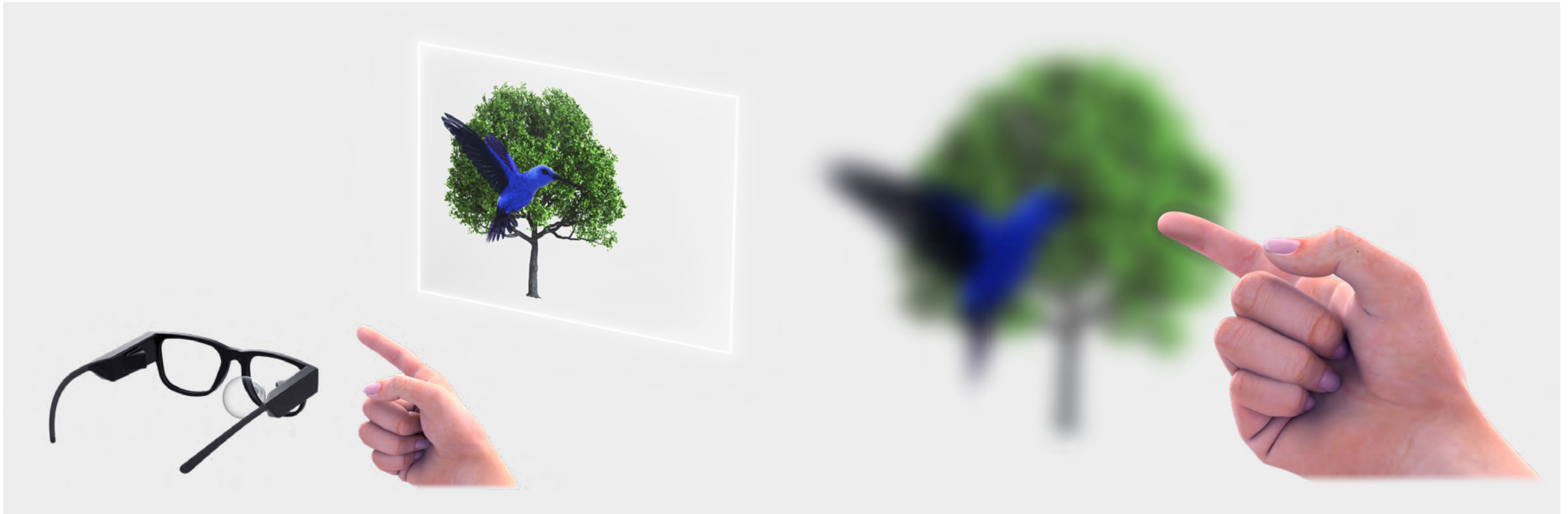
Light-field is the **key ingredient** to enable **widespread use of VR/AR glasses** in everything from cooking to neurosurgery.

Currently, the VR/AR glasses provide
unnatural, **unpleasant** and **unhealthy**
visual experience.

@ Wall Street Journal - <https://youtu.be/PTWkVYyljCk>



My eyes hurt and my head hurts.



VR/AR glasses display flat images at
a **fixed focal distance** ...

... preventing our eyes to focus correctly
on objects at another distance.



CREAL's technology displays light-field images at **any focal distance** ...

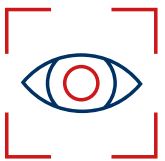
... providing a natural experience with a genuine image depth.



VS

VR/AR performance today

Light-field image by CREAL



- Visual conflict within arm's reach
- Eye-strain and nausea in <20 min
- Potential source of vision damage

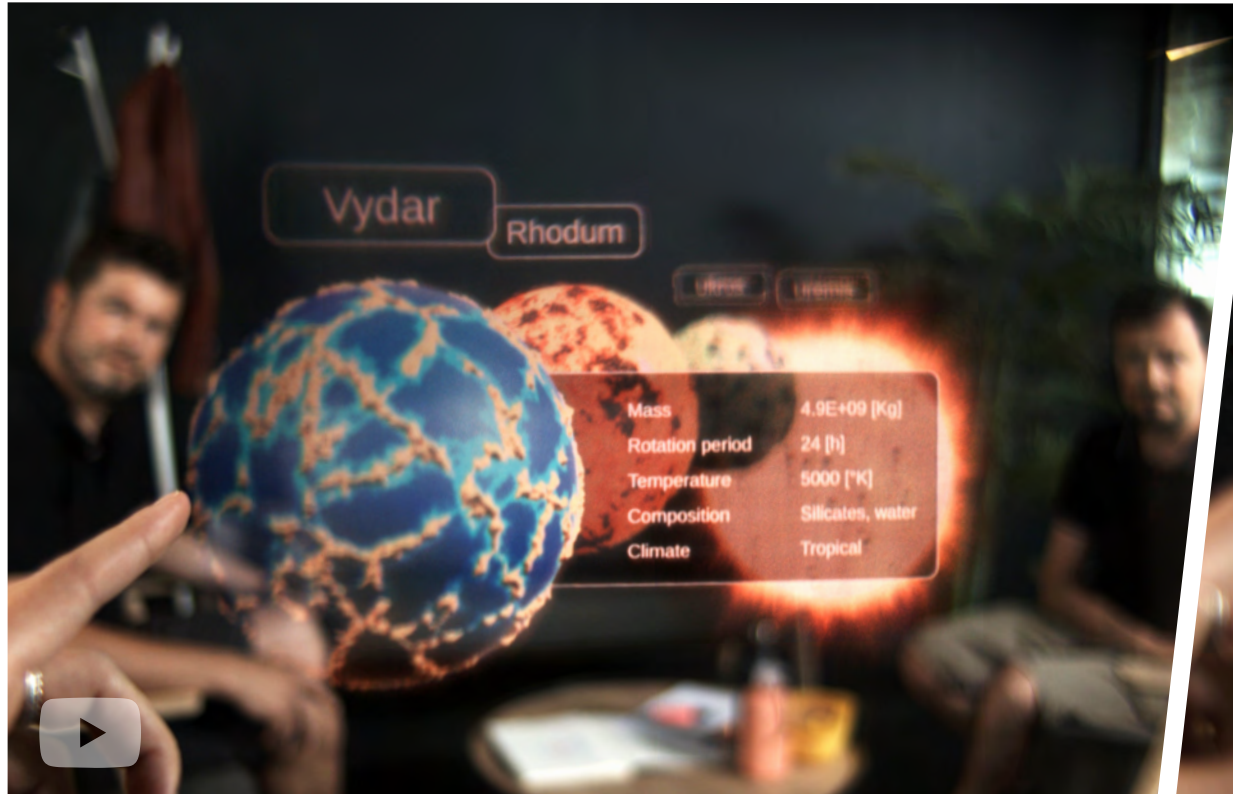


- Life-like visual representation
- Extended use without conflicts
- Natural for human vision



Light-field imagery eliminates visual discomfort and vision health risks, **allowing full consumer acceptance of AR in the near future.**





Focus

0.5 m



Focus

3 m



Focus

0.4 m



Focus

3 m



« Light-field will eventually be one of the most transformative display technologies since the invention of the television. »

Chris Chinnock
RedShark, October 2019

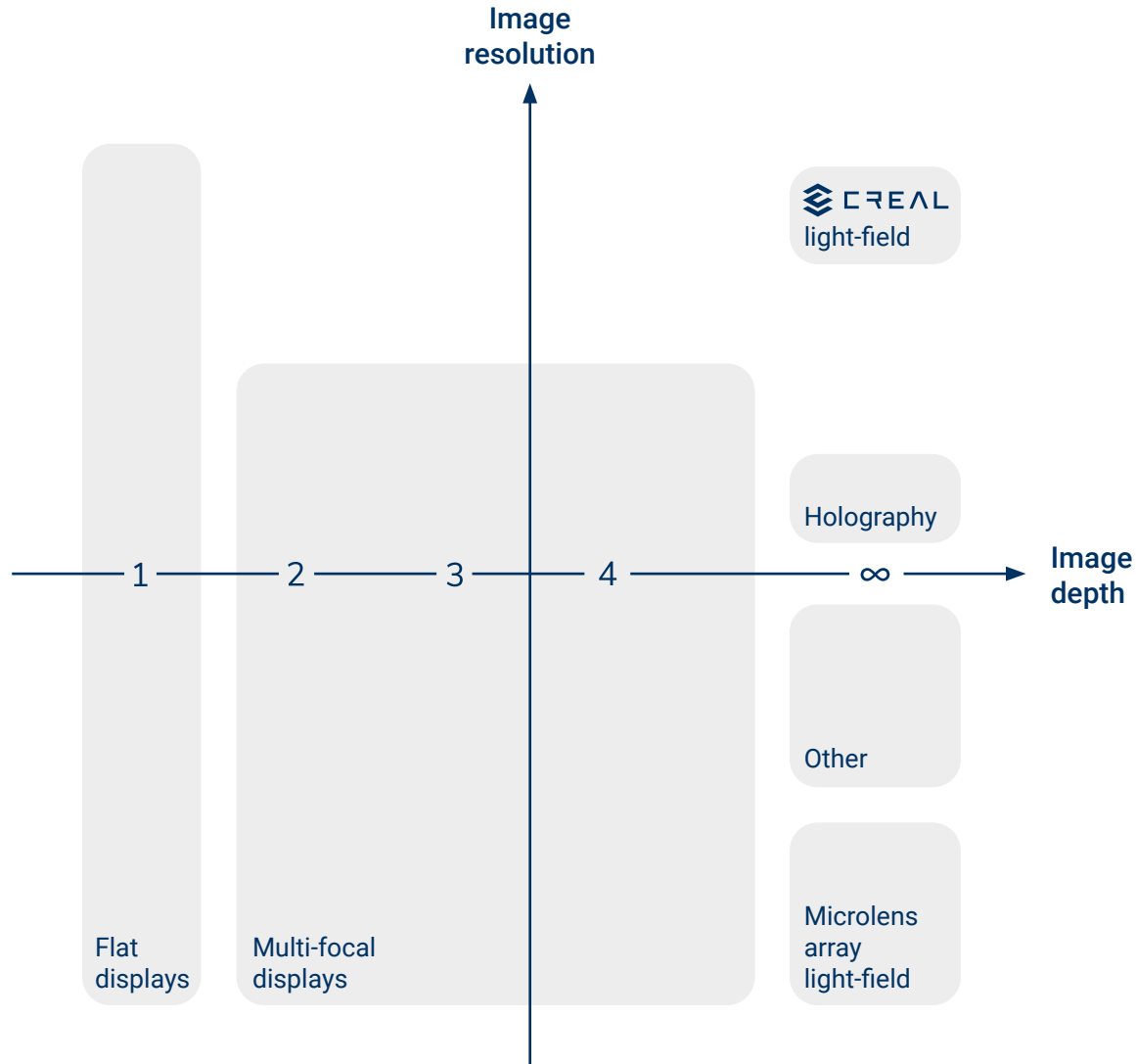
« CREAL ... the closest thing to a real light-field. »

Ben Lang
Road to VR, January 2019

« The 3D looks more 3D. It is like objects feel more alive, it is like you can feel better all the nuances of the differences of depth of all their various parts. »

Antony Vitillo
The Ghost Howls, November 2022

AR/VR DISPLAY COMPETITION



CREAL provides light-field images of both **high image quality** and **«infinite» depth resolution**.

The **technology is simple** in terms of manufacturing and required computational effort.

BENCHMARK COMPARISON - DISPLAYS WITH FOCUS CUES



	Real light-field	No eye-tracking required	Depth resolution (planes)	Spatial resolution	Complexity (HW/SW)	Image quality	Eye box
CREAL	✓	✓	Unlimited*	> 1 Mpix	✓	✓	—
Holography	✓	✓	Unlimited*	> 1 Mpix	✓	—	—
Microlens array	✓	✓	> 10	< 100 Kpix	—	✓	—
Multiple depth planes	✗	—	2-4	> 1 Mpix	✓	✓	✓
Varifocal elements	✗	—	> 100	> 1 Mpix	✓	✓	✓

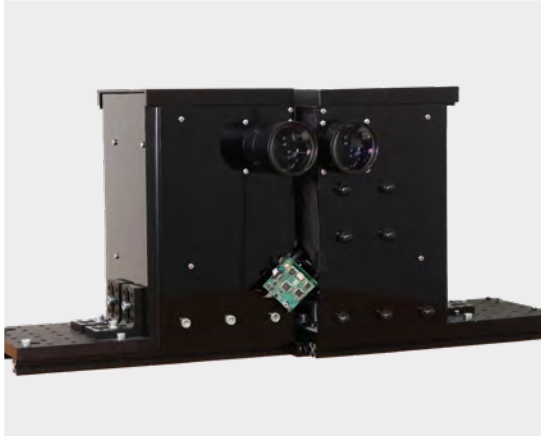
* Resolution is finite, however much higher than an eye can resolve

TECHNOLOGY ROADMAP



VR

Q1 2020



Q1 2021



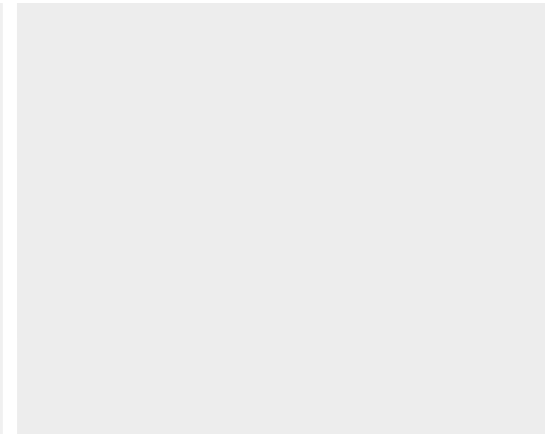
Q1 2022



Q1 2023



AR



Full licensing package available

Evaluation kits available

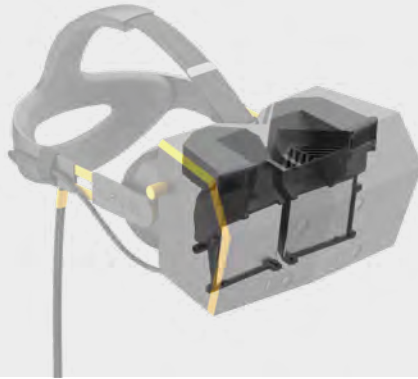
AVAILABILITY FOR INTEGRATION



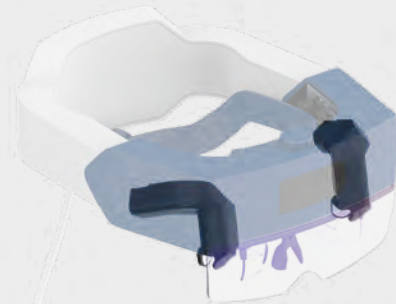
Q1 2021

Q1 2023

VR



AR



Evaluation kits available

Light-field optical engine
available for integration

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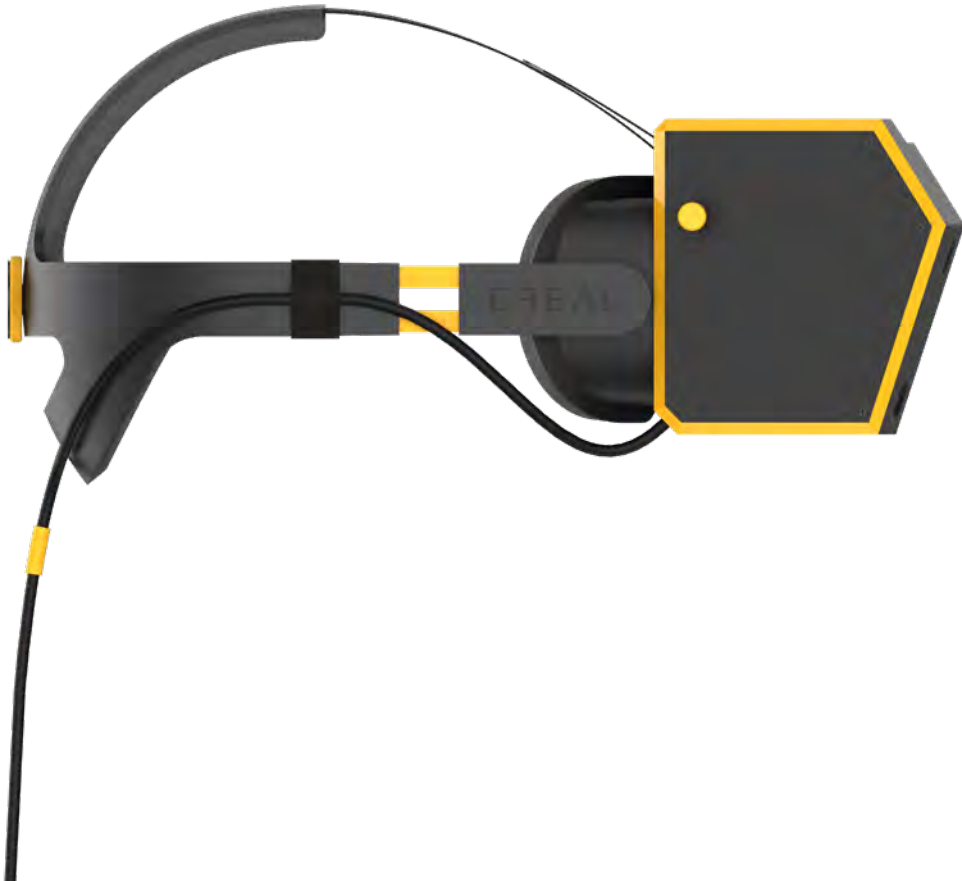
CREAL OFFERS



1 VR/AR light-field technology evaluation kits

2 Light-field engines

3 Engineering and integration support





CREAL.com | contact@creal.com | EPFL Innovation Park, Lausanne, Switzerland