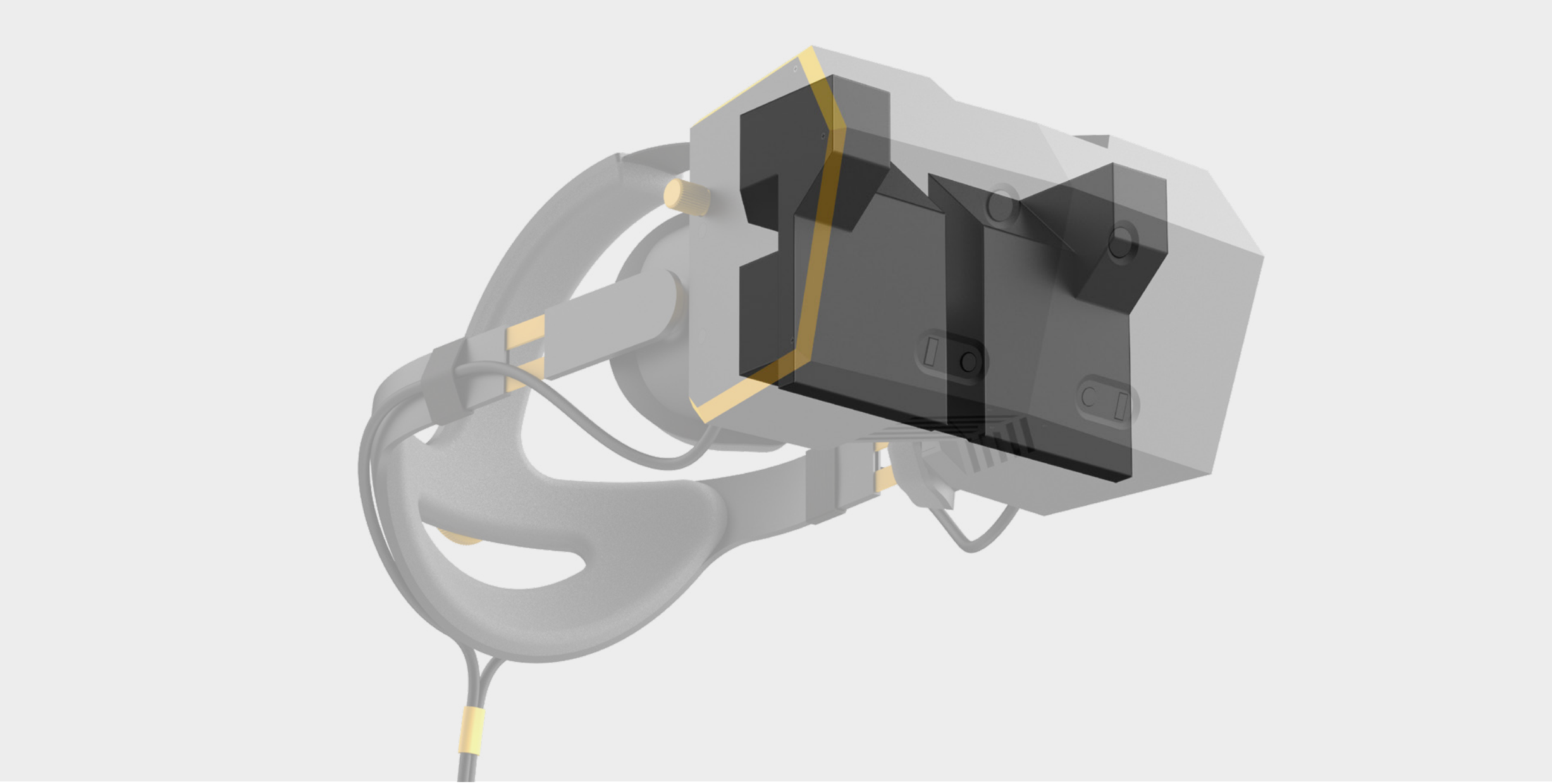
CREAL

VR IN FOCUS



Per eye	Today (demo available)	Target 2024
Depth resolution (planes)	Continuous	Continuous
Angular resolution at infinity	40 px/° light-field	40 px/° light-field
Modulator resolution	Light-field: 1 Mpix Periphery: 1600×1440 px	Light-field: 1 Mpix Periphery: 1600×1440 px
FoV (diagonal)	100° (Light-field: 36°)	100° (Light-field: 36°, possibly movable)
Effective eyebox (exit pupil)	13 mm (7 mm)	> 13 mm (7 mm)
Eye relief	17 ± 3 mm	17 ± 3 mm
Colors	5-10 M	5-10 M
GPU load	FHD (equivalent)	FHD (equivalent)
Frame rate	160 - 240 Hz	up to 180 Hz
Sub-frame rate	3.8 - 7.6 kHz	up to 8.0 kHz
Spatial tracking	Intel RealSense T265	Custom
Hand-tracking	Ultraleap	Custom
Eye tracking*	Pupil Labs	Custom

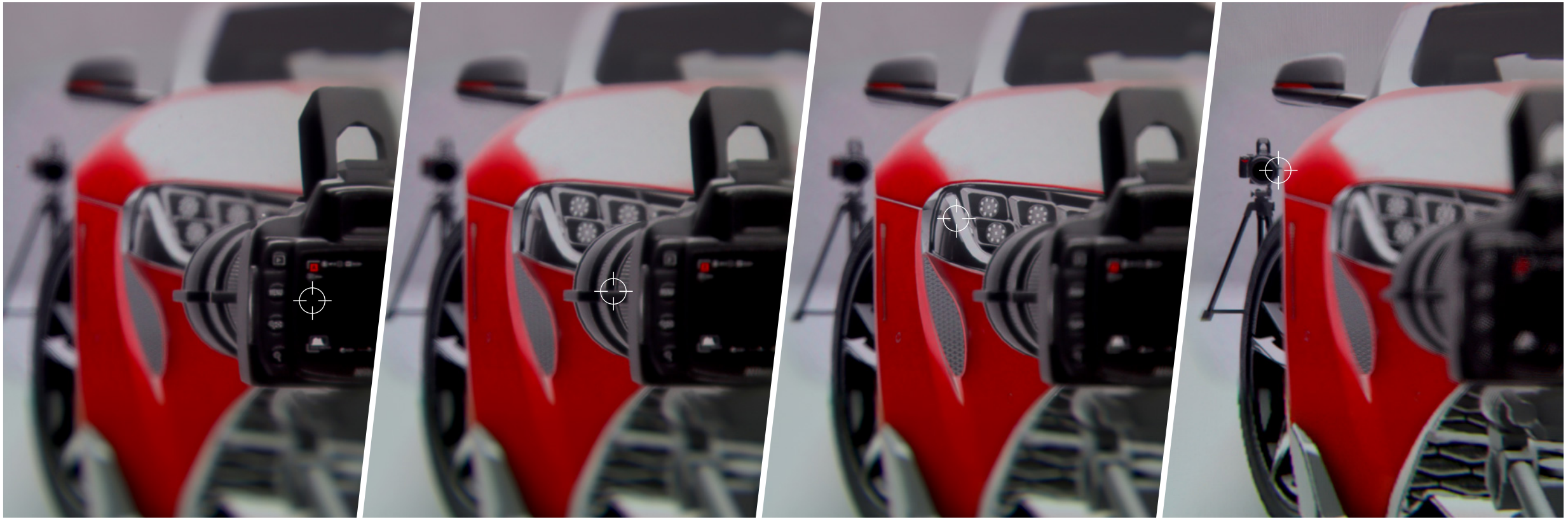
* Eye-tracking is not required for the essential function

	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	˄	–	–
Lens array	✓	✓	> 10	< 100 Kpix	–	˅	–
Multpile depth planes	✗	–	2 - 4	> 1 Mpix	˄	˄	˄
Varifocal elements	✗	–	> 100	> 1 Mpix	˅	˄	˄

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

Phone
Music
Maps
Messages
10:13
LTE
Now Playing
JVC
HOME
Spotify
WhatsApp

Phone
Music
Maps
Messages
JVC
Spotify



Focus
0.2 M

Focus
0.3 M

Focus
0.6 M

Focus
3 M

Standard display

Standard display doesn’t allow focus up-close (it is a flat image)

Light-field display

CREAL’s light-field display allows natural eye focus within arm’s reach distance

1600x1440 px in 100°FOV ≈ 20 px/°

Additional 1280 x1024 px in 30°FOV ≈ 40 px/° foveated light-field

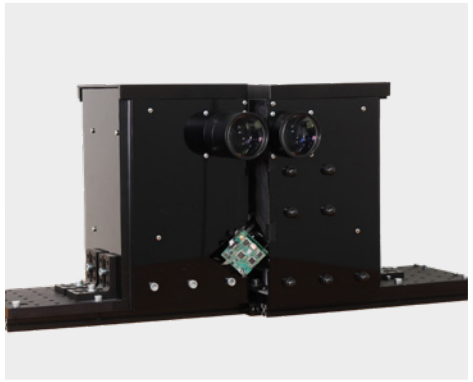
Standard display

Even when in focus, standard display provides limited resolution only at 1.4 m

Light-field display

CREAL's light-field provides high-resolution image at any focal distance

Q1 2020



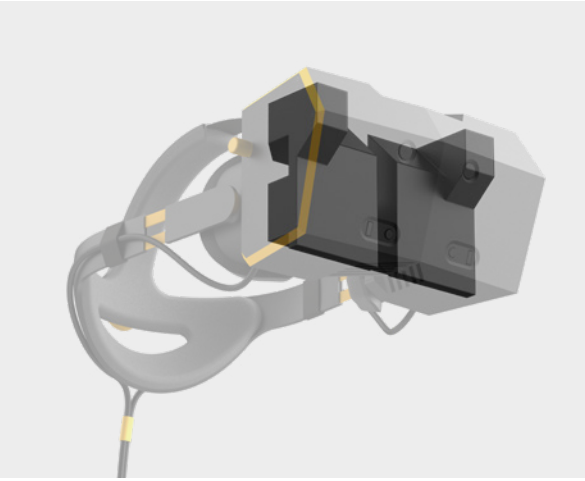
Q1 2021

Q1 2022

2024

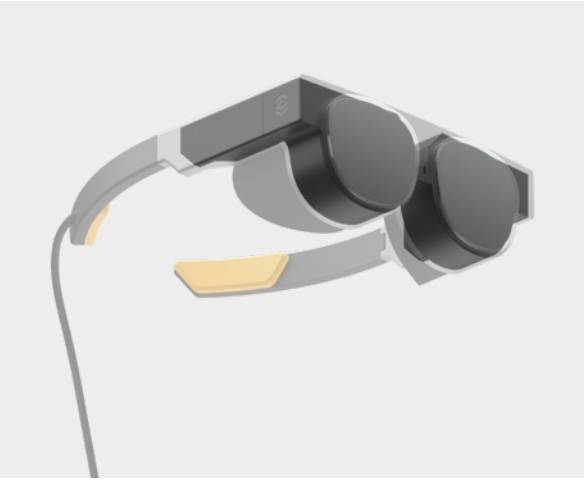
2025+

Q1 2022



Full evaluation kit and optical engine available today

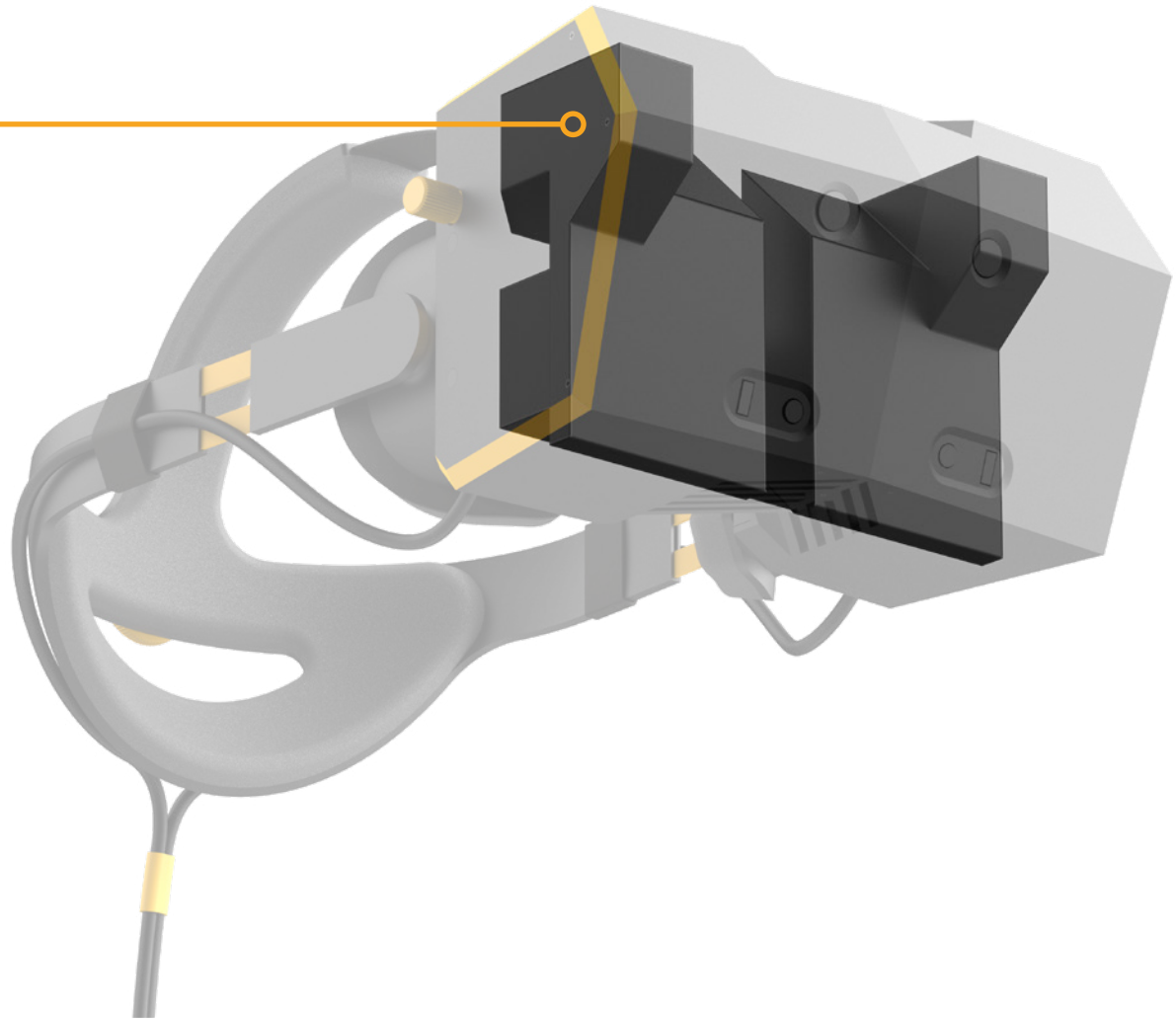
2024



2025+

+ **Complete light-field optical engine**

+ **Foveated light-field “addon” to integrate with your existing back screen**



Light-field can help you to build
the ultimate VR headset where
the virtual looks just like real.

Please ask us at sales@creal.com for:

1 VR technology evaluation kits

2 Engineering and integration support

CREAL.com |

contact@creal.com |

EPFL Innovation Park, Switzerland