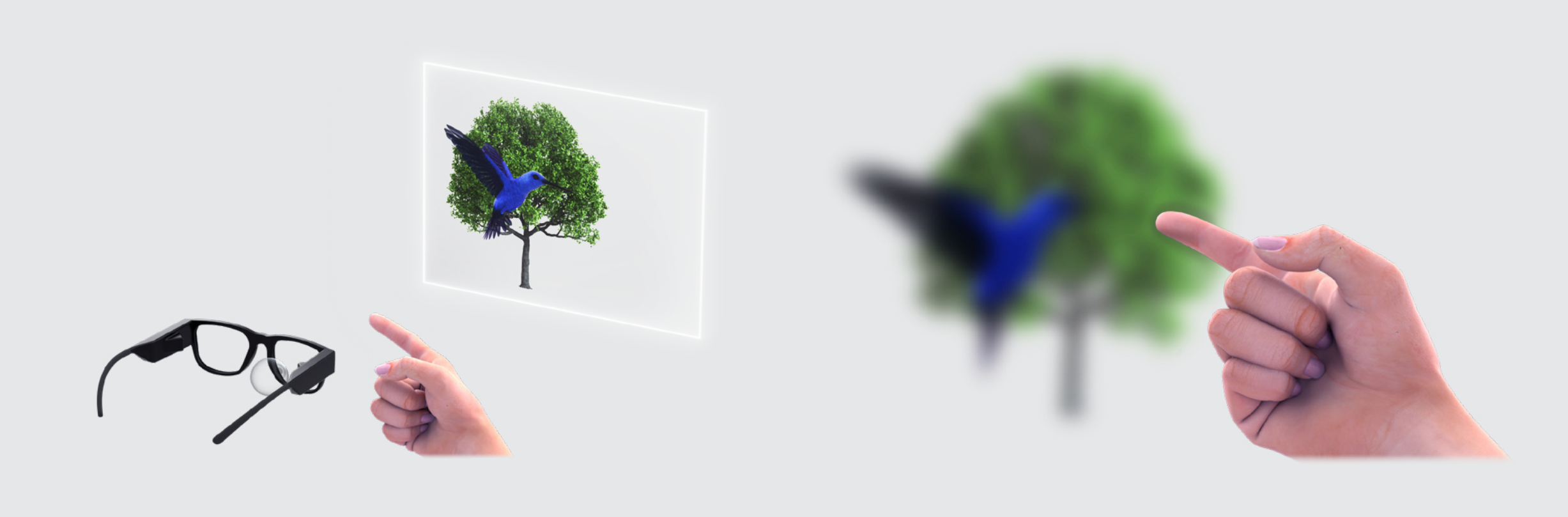
CREAL

THE DISPLAY
THAT CARES FOR
YOUR VISION

CREAL's unique light field display projects a digital image supporting the natural behavior of the human eye. The image has correct optical depth, enabling a natural and healthy visual experience with no trade-off on image quality, computational requirement and system architecture.

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



Today, most AR glasses display flat images
at a **fixed focal distance** ...

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

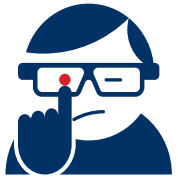
CREAL's light field technology displays digital images at any focal distance ...

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

Current AR displays

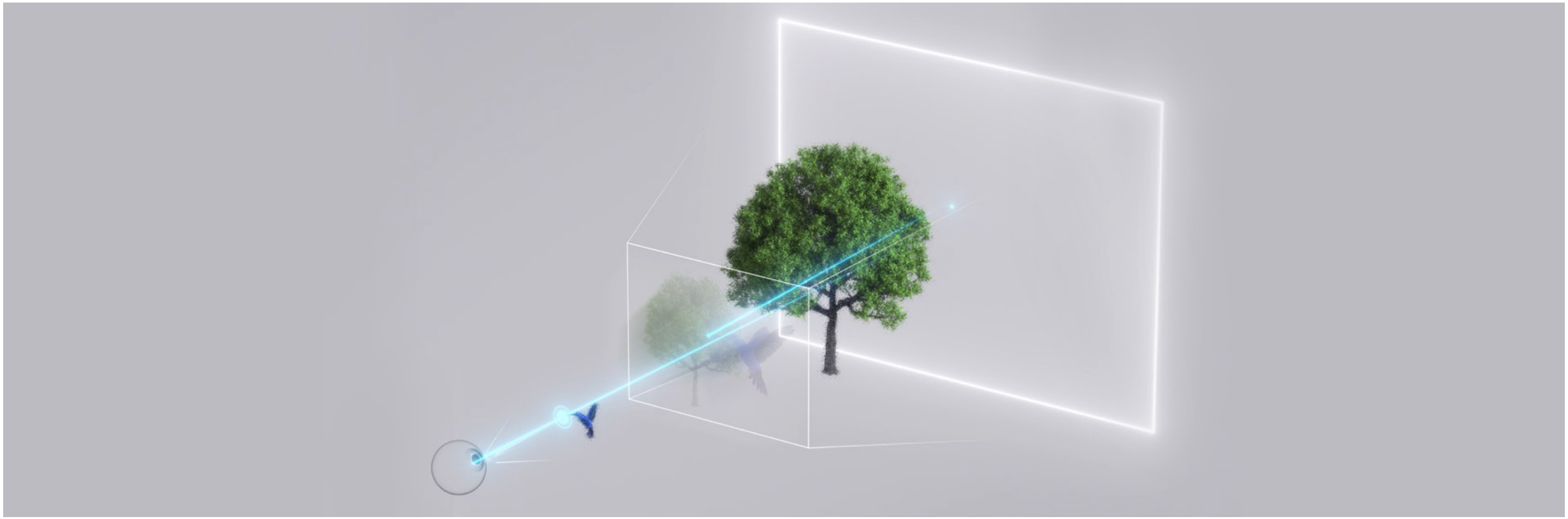
VS

CREAL's light field display



- 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

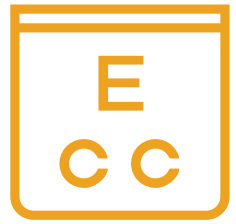


By recreating the light rays just like they exist in the real world, CREAL eliminates visual discomfort, **allowing full consumer acceptance of AR in the near future.**

CREAL's light field display explainer

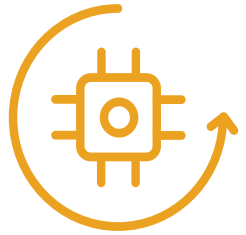
Natural image depth
offering extended use time without eye-strain or nausea.

Transparent lenses
bringing an aesthetic look to AR glasses, without glow or rainbow effect.

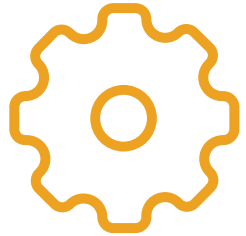


Prescription compatibility
offering users a tailor-made experience matching their visual needs.

High brightness
enabling clear visual experience, even outdoor.



Computational efficiency
allowing real-time light-field rendering on mobile platform.



Simple and robust system architecture
enabling easy scalability.

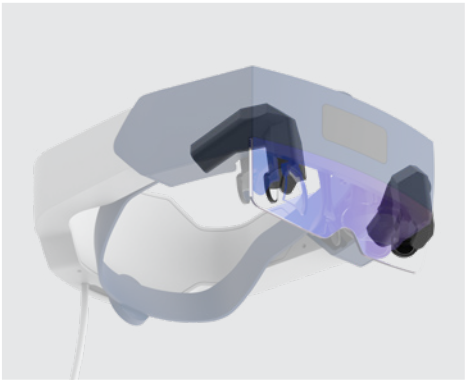
	Digital light field (sequential) CREAL	Holography	Classical light field (spatial)	Multiple depth planes	Varifocal element
Genuine image depth	Yes	Yes	Yes	No	No
Continuous focus (planes)	Unlimited[1]	Unlimited[1]	> 10	2 - 4	> 100
Spatial resolution	High	Medium	Low[2]	High	High
Adaptive prescription	Yes	Yes	Yes[3]	Only SHY	Only SHY
Computational efficiency	High	Very low	Medium[4]	High	High
Eye-tracking required	No	No	No	No	Yes
Hardware complexity	Low	High	Medium	Low	Low

[1] Resolution is finite, however much higher than an eye can resolve
[2] To achieve high spatial resolution would require HD microdisplay (8K and above)
[3] Only in small range
[4] Computational efficiency is usually limited by the image data transfer bandwidth

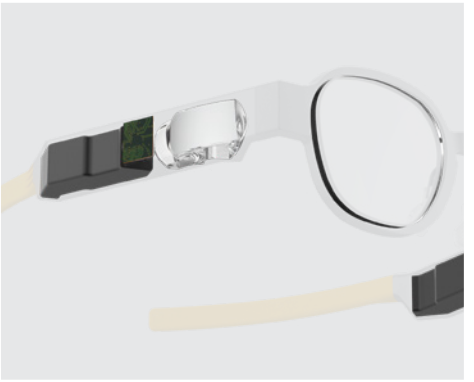
2019

2020

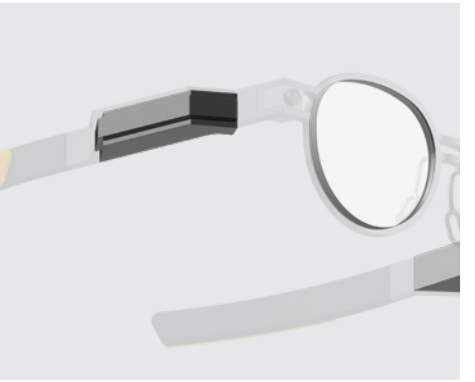
2021

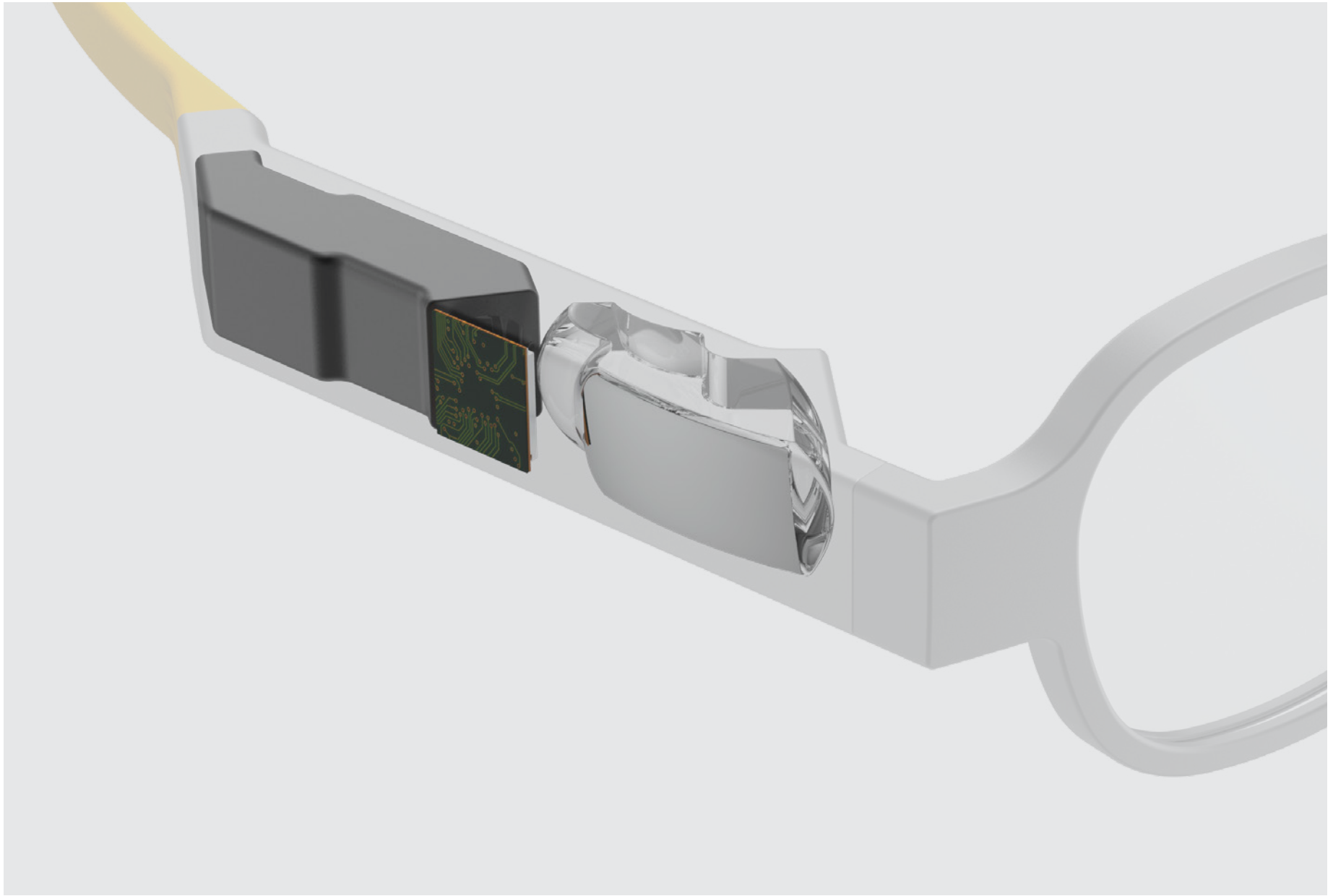


2024



2025+





CREAL'S LIGHT FIELD DISPLAY FOR AR

Eye focus

0.3 m

Eye focus

1.5 m

Eye focus

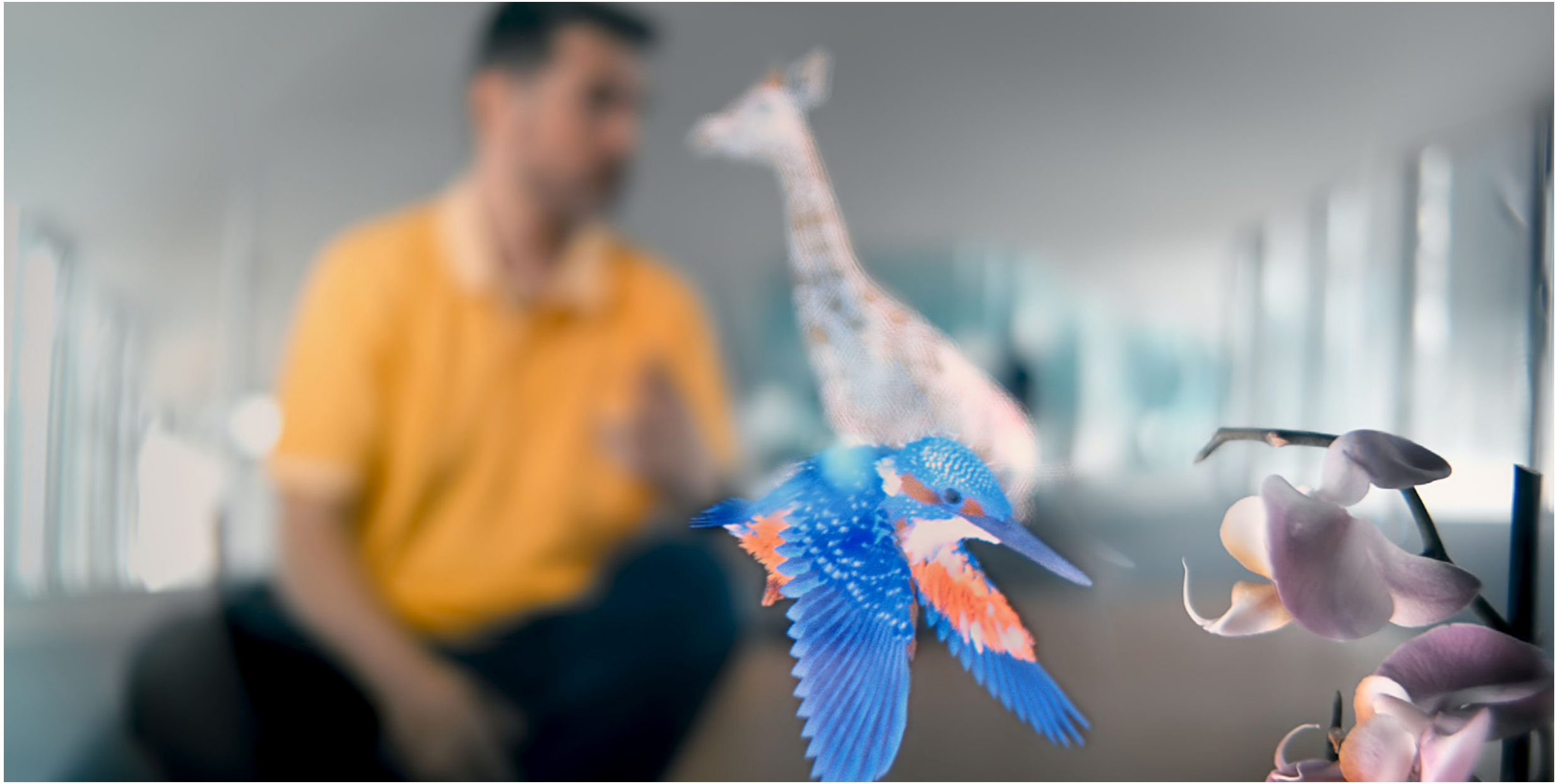
0.25 m

Eye focus

0.5 m

Eye focus

1 m



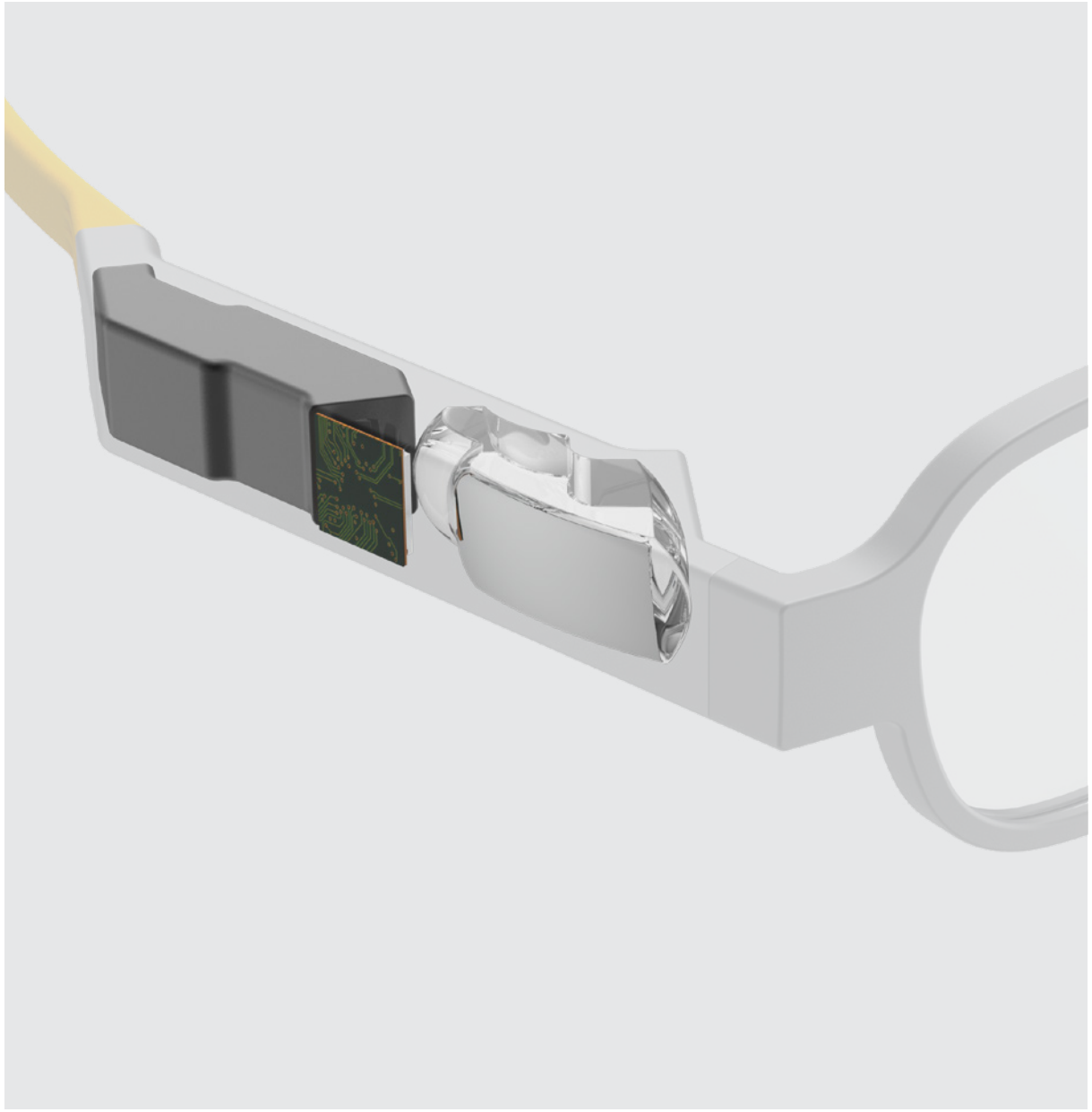
Per eye	Q1 2024	Achievable with optimization (2025+)
Angular resolution at infinity	40 ppd	50 ppd
Modulator resolution	1 Mpix	1+ Mpix
Depth resolution	Continuous	Continuous
FoV (diagonal)	36°	60° (Foveated LF.: 20-30°)
Effective eyebox (exit pupil)	13 mm (6 mm)	16 mm (10mm)
Eye relief	20 ± 3 mm	20 mm
Rendering load (equivalent to flat image)	HD	n/a (on chip)
Frame rate	160 Hz	Up to 240 Hz
Sub-frame rate	6.5 kHz	8 kHz

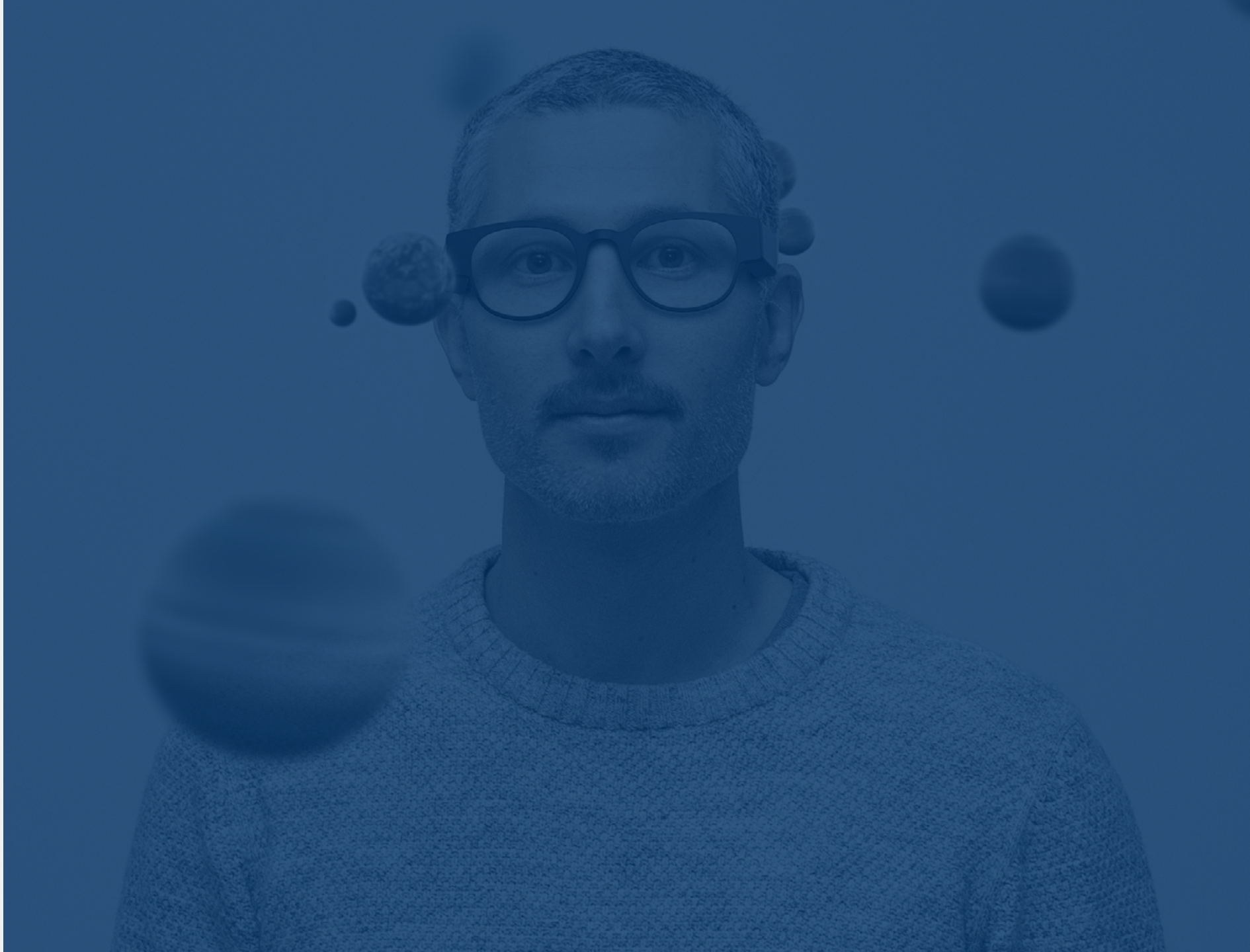
Per eye	Q1 2024	Achievable with optimization (2025+)
Colors	2 millions	~10 millions
Brightness	2000 nits	Up to 7000 nits
Contrast	1 000/1	10 000/1
Combiner type	Holographic, prescription compatible	Holographic, prescription compatible
Transparency	91%	97%
Power consumption	800 mW	~100 mW
- light source and driver	50+50 mW (@500 nits)	4+3 mW (@500 nits)
- modulator and driver	200+500 mW	13+30 mW

+ Complete light field optical engine solution

By allowing comfortable extended interaction with virtual objects at any distance, CREAL's light field technology can unlock the full potential of next generation AR glasses.

For further information on CREAL's AR display, engineering and support integration and more, please contact sales@creal.com.





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