



Enabling Tomorrow's AR Market

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The AR industry is thriving | The AR market barely exists

What needs to happen to enable tomorrow's AR market

Augmented Reality: Are we there yet?

A lot of progress in VR – Meta Quest and other products

Years entrenched in development of today's AR technologies

Fundamental inventions and novel concepts are in place to create the AR era



1968 First head-mounted AR display

“Augmented Reality” term created

Google Glass wearable AR tech

Microsoft HoloLens AR Headset

Apple Vision Pro headset

Enabling Tomorrow's AR Market

1968

1990

2014

2016

2024

2025 and Beyond

Era of Spatial Computing Has Arrived



- Spatial computing now being introduced to the public
- Apple's entry into the AR market is a key catalyst generating excitement and enthusiasm
- The AR industry exists, but not much of a market, yet!
- Time to break the historic cycling through waves of excitement followed by periods of disillusionment

Collaboration is critical for the AR market to thrive!

AR Hardware Devices



Complex Space

- Not a technology, component, device or solution
- Highly integrated designs – even more complex for smart glasses
- Paradigm shift in computing, communicating and collaborating

Unified Ecosystem Essential

- For getting products to mass market
- Enabling an environment for integration of disparate technologies in highly constrained product development requirements

Technical Challenges – Hardware Integration:

- Displays, Optics and Photonics
- Sensors and Actuators
- Voice and Sound
- Compute and Connectivity
- Image Quality
- User Interfaces and User Experiences
- Size, Weight and Power



Challenges and Opportunities for AR Wearables



Practical and Useful

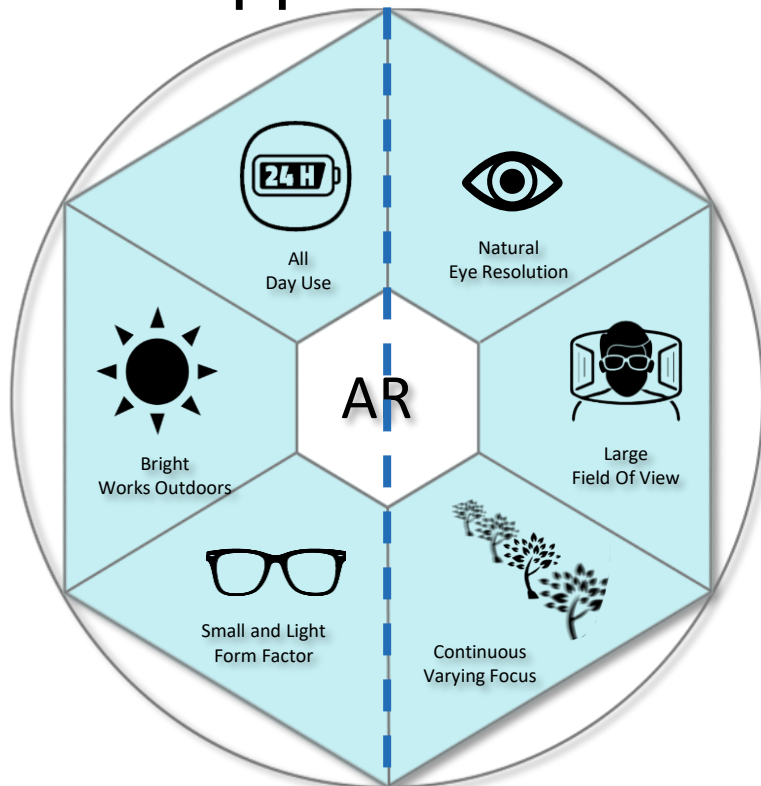


Image (adapted) courtesy of Nikhil Balram, Eyeway Vision, https://www.youtube.com/watch?v=Rt6zWDYL_dk



Immersive and Niche

One device CANNOT fit all needs!

Platform Based Approach



- Fosters technology integration
- Accelerates time-to-market
- Enables interoperability
- Delivers robust supply chain
- Facilitates lower costs



Drive Market Growth

The AR Alliance

Creating an ecosystem for advancing, unifying and proliferating technologies for AR

Developing and influencing standards and protocols to enable the AR market

Advocating for the AR industry through engaging with key stakeholders



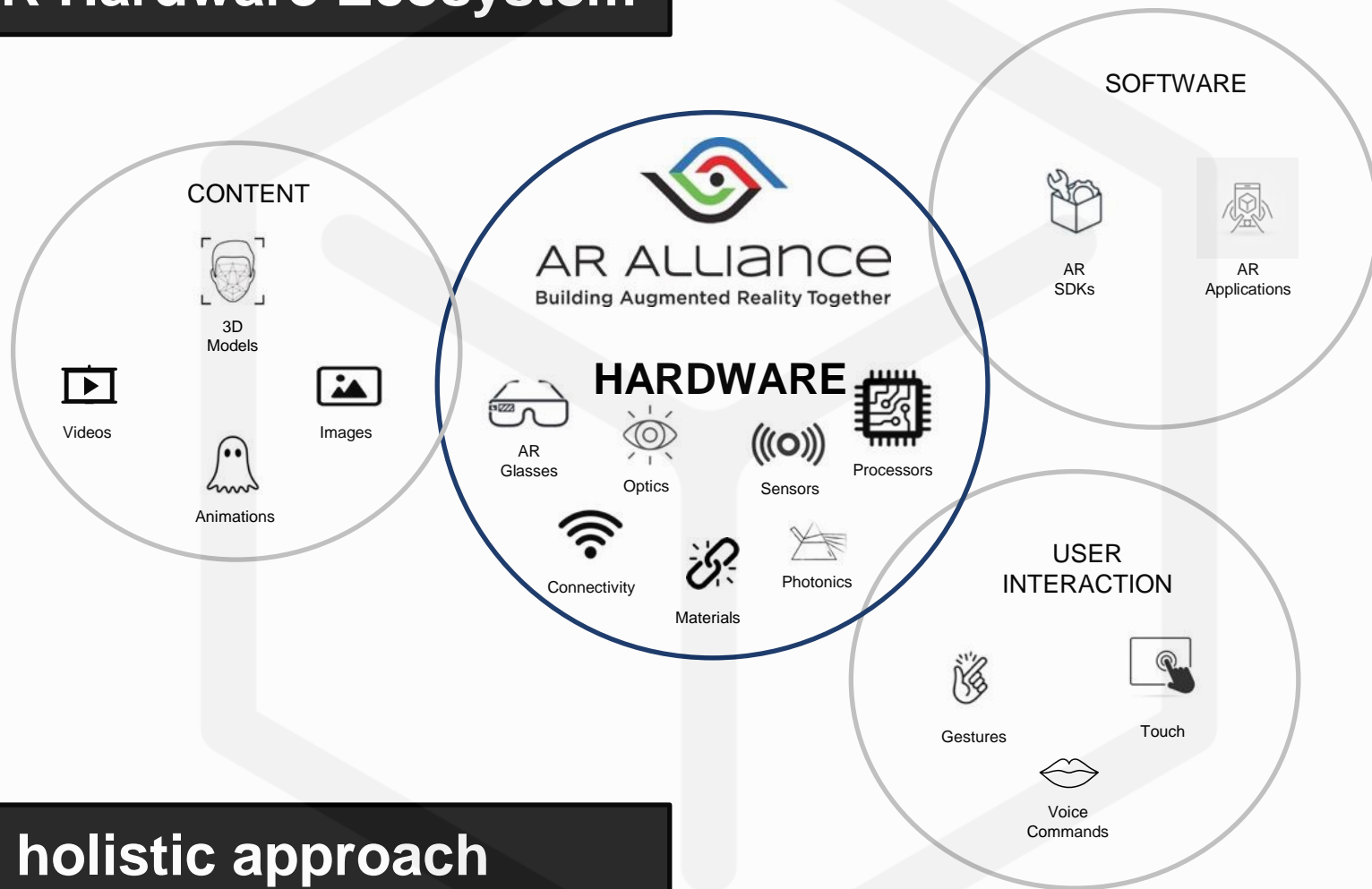
AR Alliance Mission Statement



The AR Alliance provides a supportive and neutral environment for companies and organizations of all sizes to take **an active role** in advancing and strengthening the diverse augmented reality hardware development ecosystem.



AR Hardware Ecosystem



A holistic approach

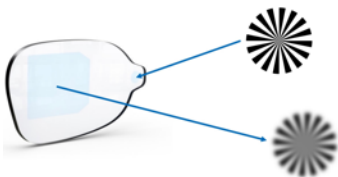
AR Alliance Working Groups Enable the Ecosystem

- First three Working Groups established
- Members will define, lead and actively engage in future Working Groups that address equally critical aspects of the AR hardware ecosystem



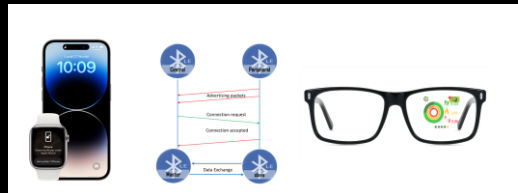
IQM3: Image Quality Methods, Metrics and Measurements

Chair: Murat Deveci,
OptoFidelity



“Light AR” Protocol

Chair: Xavier Bonjour,
MicroOLED



UL8400: Safety for AR, VR and MR

Chair: Michelle Hua,
Renew Optics



New Working Proposed: AR Accessibility Standards (AX)

- **Anticipates accessibility considerations to drive broad adoption of AR (see also UL safety proposals for VR/AR/MR and IQM3)**
- **Not intended as a medical criteria, rather ensure use of device in most environments and across a majority of users – some examples:**
 - Contrast ratio standards and user see-through world brightness controls (ambient contrast ratio)
 - Adjustable/variable display focal range (accommodation vergence conflict can vary with age)
 - Display resolution, FoV and text readability
 - Gaze dependent rendering and eye tracking standards
- Working group chair: Jasmine Sears, Meta



AR ALLIANCE

Building Augmented Reality Together

Founding Members



life.augmented

CORNING



Meta

EssilorLuxottica

dispelix



OPTOFIDELITY

microoLED

*New Founding member (another technology leader)
to be announced very Soon!*



Lochn Optics



META®
Go Beyond.



The bright light source company

RENEW OPTICS

Associate Members



SEIREN KST Corp.



MATERION

// BALZERS OPTICS

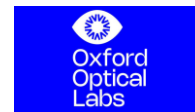


BRILLIANCE

The future is visible



XPANCEO



Oxford
Optical
Labs



Maradin

PROJECTING THE FUTURE



Let's Build AR Together!

Connect with us at:

thearalliance.org

Contact at:

membership@thearalliance.org





Q&A



UL8400 Safety Standards Working Group



Topics include:

- Optical see-through visual functions
- Flicker
- Skin compatibility
- Exposure of eyes to thermal energy
- Biochemical stress
- Mechanical robustness
- Safety and warning instructions
- Visually-induced motion sickness
- Risk assessment methods for the above

UL looks to the AR Alliance to be the “voice of the industry” to avoid any one single company driving the standard

