

- Photonics West**
- 2018 Onsite News
- BIOS
- LASE
- OPTO
- Brain
- Translational Research
- 3D Printing
- Photonics West Exhibition
- BIOS Expo
- Special Events
- Industry Events**
- Prism Awards
- VR, AR, MR One-Day Industry Conference**
- Proceedings
- Photonics West Sponsors
- BIOS Expo Sponsors
- For Authors and Presenters
- For Chairs and Committees
- For Photonics West Exhibitors
- For BIOS Expo Exhibitors

**SPIE. PHOTONICS WEST**

The Moscone Center  
San Francisco, California, United States  
**27 January - 1 February 2018**



**VR, AR, MR One-Day Industry Conference and Demo**



**Monday 29 January 2018, 9 am to 5:30 pm**  
Moscone Center, North Hall, Lower Level, Rooms 20-22

**Schedule**







- Presentations**  
9:00 am to 4:30 pm
- Panel Session and Reception**  
4:30 pm to 5:30 pm
- Hands-on demonstrations**  
9:00 am to 5:30 pm

This daylong industry conference consists of 19 invited talks, a panel on the current optical technological challenges and successes for Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), and hands-on demos.











*"This is the largest event in AR/VR hardware planned for 2018, especially for optical architectures (optics, displays and sensors), one of the main challenges for next generation AR/VR headsets."*  
- **Bernard Kress, Microsoft HoloLens**

**9 am to noon: The coming of age for VR headsets: hardware challenges**

"VR / AR is dead, long live MR!" Well, maybe not yet, but soon. Virtual Reality (VR), born as a tool for gaming, enables people to immerse into a synthetically created environment. Augmented Reality (AR), augments the natural world with virtual objects. Mixed Reality (MR) can be described as a seamless experience ranging from VR to AR. Addressing key hardware challenges (especially optical), visual & wearable comfort, and immersion are key to consumer mass adoption of any of these technologies.

-  **9:00 am**  
**Opening: Introduction to hardware challenges in VR / AR**  
**Bernard Kress**,  
Conference Chair and Partner Optical Architect at Microsoft HoloLens
-  **9:20 am**  
**Four challenges facing VR/AR/MR displays**  
**Ronald Azuma**,  
Principal Engineer and Research Manager, Intel Labs.
-  **9:40 am**  
**VR at HTC**  
**Vinay Narayan**,  
Executive Director, VR @HTC VIVE, Tech Strategist and Advisor
-  **10:00 am**  
**VR at Google**  
**Jerry Carollo**,  
Optical Architect at Google
-  **10:20 am**  
**Computational Displays at Oculus Research**  
**Doug Lanman**,  
Director of Computational Imaging at Oculus Research
-  **10:40 am**  
**Photonics and the low power future of AR/VR**  
**Tish Shute**,  
Director AR/VR/MR, Corporate Technology Strategy, Huawei USA
-  **11:00 am**  
**Infrared mirrors for eye-tracking application**  
**Timothy L. Wong**,  
Electronics Materials Solutions Division, 3M
-  **11:20 am**  
**Optical sensors for human-computer interaction in AR/VR and beyond**  
**Yiwen Rong**,  
VP, Product Development of uSens
-  **11:40 am**  
**High performance, low-cost, lightweight near eye display in glasses form factor allowing ophthalmic correction**  
**David Chaum**, TreCento
-  **12:00 pm**  
**How LCOS (Liquid Crystal on Silicon) technology addresses AR glass issues**  
**Po King Li**,  
VP of Marketing & Sales, LCOS display at Himax Display

**1 pm to 4 pm: Visual comfort for immersive see through displays**

-  **1:00 pm**  
**Smart glasses and AR headsets**  
**John Haddick**,  
CTO at Osterhout Group (ODG)
-  **1:20 pm**  
**Mixed reality headsets and gesture sensing**  
**Kari Pulli**,  
CTO at Meta Vision
-  **1:40 pm**  
**Monocular waveguide combiners for AR**  
**Jonathan Waldern**,  
Founder, Chairman & CTO at DigiLens
-  **2:00 pm**  
**Optimizing Head-mounted light field displays for quality and comfort**  
**Hong Hub**,  
Professor at University of Arizona, College of Optical Sciences
-  **2:20 pm**  
**3D vision cues challenges for AR and VR**  
**Marty Banks**,  
Professor of Vision Science at UC Berkeley
-  **2:40 pm**  
**Near-eye light field displays**  
**Gordon Wetstein**,  
Assistant Professor, Electrical Engineering and Computer Science, Stanford University
-  **3:00 pm**  
**Light field displays for flat panels**  
**David Fattal**,  
Founder & CEO at LEIA
-  **3:20 pm**  
**Light field AR headset**  
**Ed Tang**,  
Founder and Chief Technology Officer at Avegant
-  **3:40 pm**  
**The real destination of "augmented reality" is not the phone, but smartglasses MR**  
**Robert Schultz**,  
Head of Optics Research and Development at Vuzix
-  **4:00 pm**  
**'Holograms' in the Wild: Ethnography, data, and design**  
**Micah Tinklepaugh**,  
Engineer, AR and AI at Electric Power Research Institute (EPRI)

**4:30 pm to 5:30 pm Panel Session and Reception**

Listen and interact with some of the biggest names in VR, AR, and MR. Panelists include pioneers in VR, smart glasses, cryptography and more. Grab a beverage, prepare questions, and be part of this interactive panel discussion.








**Moderators**



**Bernard Kress**  
Microsoft HoloLens

**Leo Baldwin**  
Amazon

**Panelists: The Pioneers**

-  **Jaron Lanier**  
A pioneer in the field of virtual reality, as well as a computer philosophy writer, computer scientist, visual artist, and composer of classical music.
-  **Ronald Azuma**  
A pioneer and innovator in augmented reality, visualization, and mobile applications at HRL Labs, Nokia Research Center, and Intel Labs.
-  **Thad Starner**  
Early smart glasses pioneer. Founder and director of the Contextual Computing Group at Georgia Tech's College of Computing.
-  **Mark Bolas**  
A VR pioneer that helped jumpstart the technology. Now at Microsoft working on the "vision strategy" for Microsoft's Mixed Reality platform
-  **Marty Banks**  
Vision specialist for head-mounted displays, studying the effects emerging technology, screens, and virtual reality headsets have on our eyes.
-  **David Chaum**  
AR hardware developer, recognized as the inventor of digital cash and other fundamental innovations in cryptography, including privacy technology and secure election systems
-  **Jim Meizer**  
One of the pioneers for defense and military head mounted displays. He is currently the Technical Director at Thales Visionix.

**Hands-on VR, AR, MR headset Demo Sessions**

Take this opportunity to test-drive the hottest new headset that are currently on the market—or, are about it be. **Reservation times are all full.** Monday 29 January ONLY. Please go to Moscone North, Lower Level, Room 20 to enquire about the "wait-list"

**Participating companies**

Microsoft, Oculus, Google, Sony, Avegant, DigiLens, HTC, Lumus, Meta Vision, ODG, uSens, Vuzix.

**Related courses, events, and conferences**

- Course: [Head-Mounted Displays for Augmented Reality Applications](#)
- Course: [Optical Technologies and Architectures for VR, AR, MR Head-Mounted Displays](#)
- Course: [Introduction to VR, AR, MR and Smart Eyewear](#)—Market Expectations, Hardware Requirements and Investment Patterns
- Course: [Designing and Specifying Digital Cameras](#)
- Special Event: [Student Optical Design Challenge for VR, AR and MR](#) at Photonics Europe, Strasbourg, France
- Conference: [Digital Optics for Immersive Displays](#) (DOID18) at Photonics Europe, Strasbourg, France

**Participating companies**

