



AR Traction Will Power Next Evolution of Devices

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The Evolution of AR & VR HMDs

Technology Searching for a Use Case



Searching for a Killer App



Real World Traction

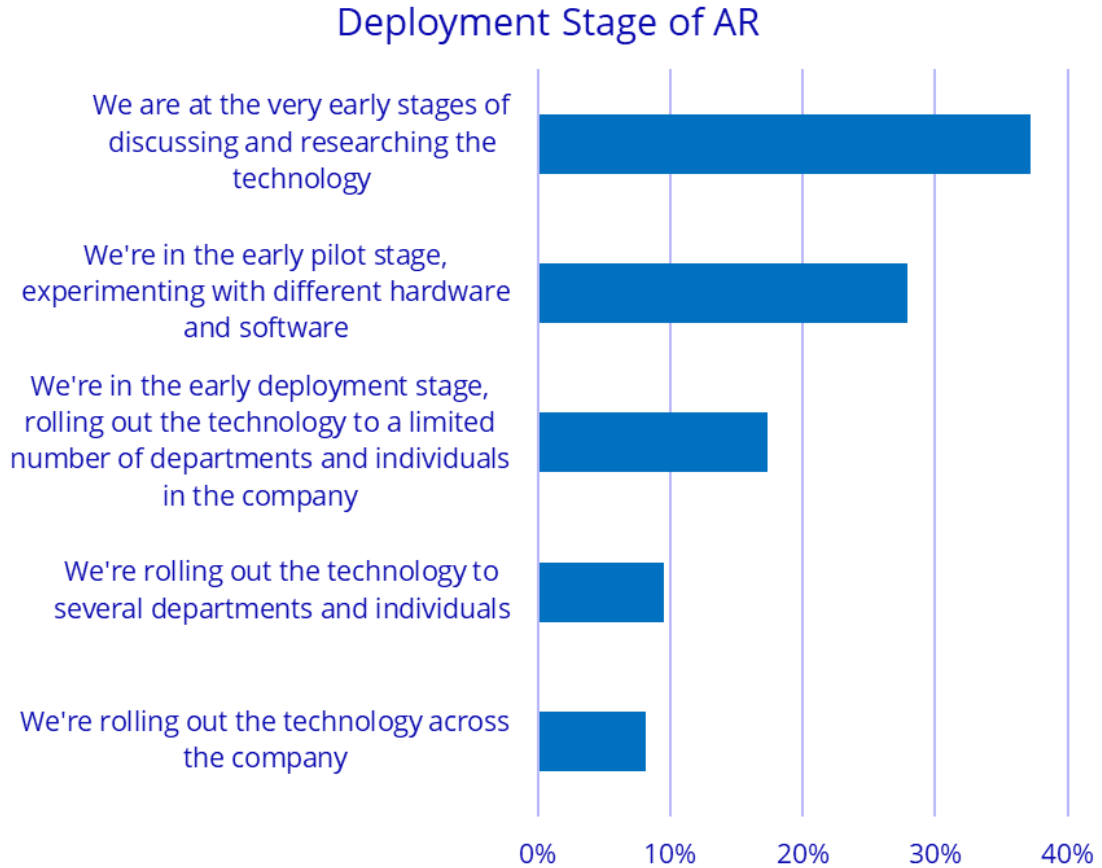


Google Glass and the Beginning

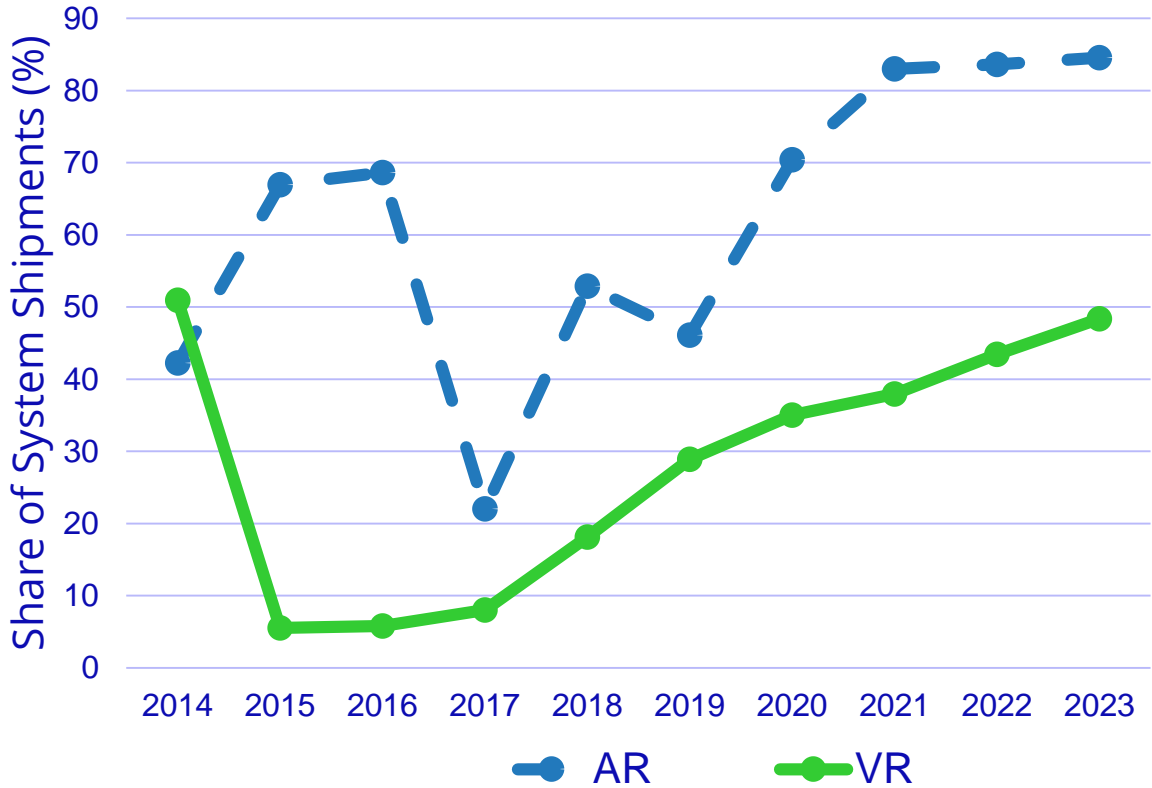


Augmented Reality Market Turns Commercial

At what stage would you say your company is regarding AR?



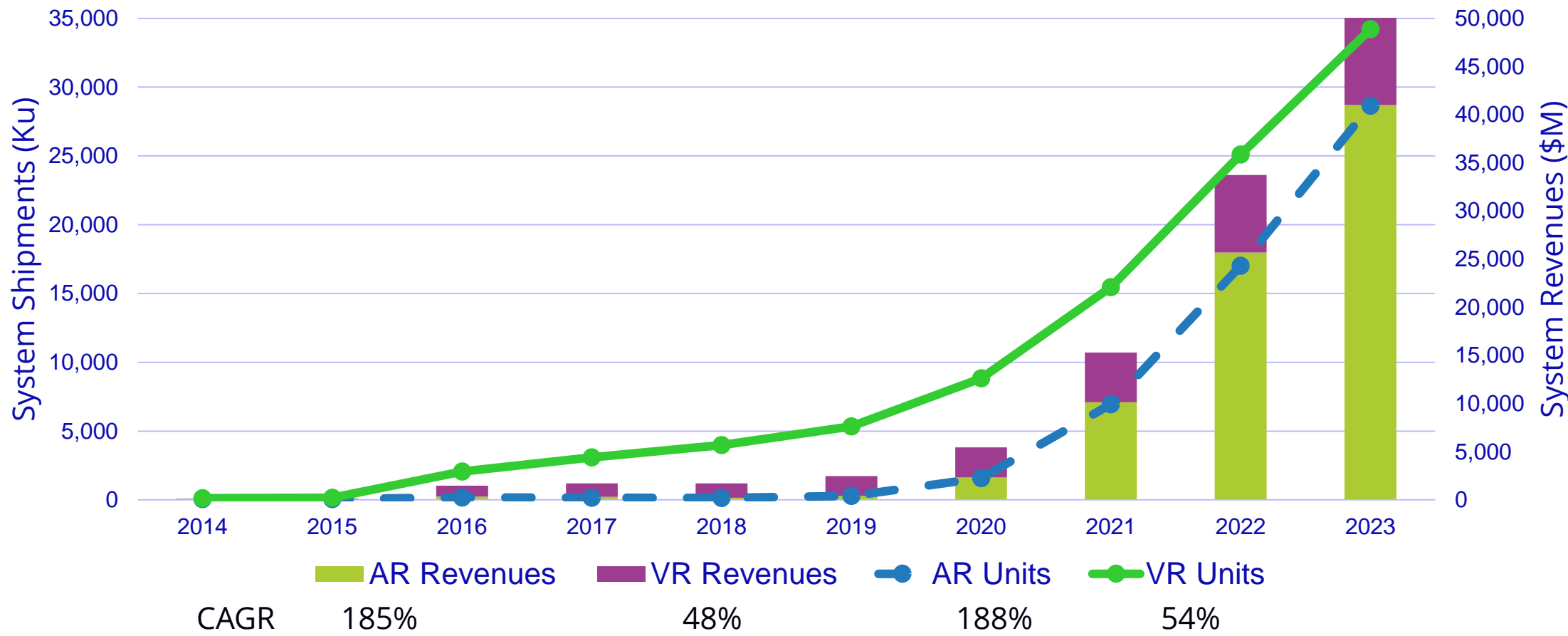
Share of Shipments for Commercial Customers



Note: Includes tethered and stand-alone HMDs

The Augmented and Virtual Reality Opportunity

Augmented and Virtual Reality HMD Opportunity



Sensor opportunity

- Evolving growth of sensor usage on HMDs – Increasing use of sensors to capture context
 - AR – Initially just IMUs, a basic camera, and a microphone,
 - Now seeing multiple IMUs, cameras, and microphones, along with other additions
 - VR – Different set of priorities, still a limited use of IMUs, but growing use of cameras, especially for inside-out position tracking



Sensors to Drive New HMI and Position Tracking

Smarter Faster Smaller Lower Power



Camera Based

- Eye Tracking
- 3D sensing
- Position Tracking
- Gesture Recognition
- Display control

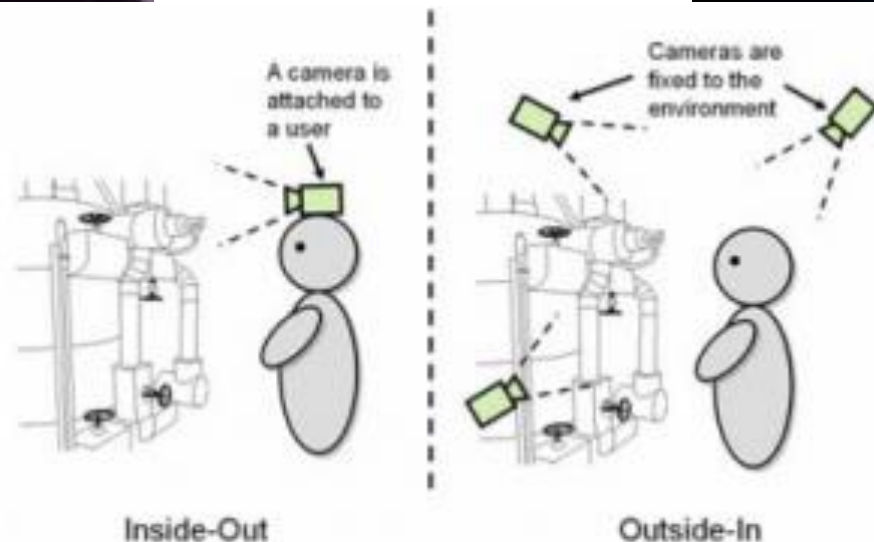


Optical & Proximity

- Replace Buttons
- System Power Control

Microphone

- Voice Interaction
- Audio position sensing



Movement

- Tracking precision
- Headset and controller

Lidar/Rada

- Spatial mapping
- Obstacle detection

Processor Ecosystem

Augmented Reality Processor Relationships

	TI	Intel	NVIDIA	Qualcomm
Epson	X			X
Microsoft		X		X
Vuzix	X	X		X
RealWear				X
Google	X	X		X
Magic Leap			X	
Atheer			X	
DAQRI		X		
Intel		X		
Lenovo				X
ODG				X

Virtual Reality Processor Relationships

	Intel	NVIDIA	Qualcomm	Samsung	Allwinner	Rockchip
Facebook			X			
Pico			X			
Xiaomi			X			
HTC			X			
DPVR				X		
Lenovo			X			
Baofeng			X			
Inlife-Handnet	X	X				
Omimo					X	
Dlodlo			X		X	
Magicsee						X
Nibiru						X
Pico			X			

Driving the Next Generation of Experiences

Processing



- Real-Time Performance
 - Image Processing
 - Position/tracking
 - HMI
 - How will ecosystem respond to the opportunity?
 - How will AI requirements be met?

Connectivity



Connecting HMDs to devices and beyond



- Growth of tethered HMDs in AR dependent on WiGig
- 5G will improve video delivery

Displays



Experience & Performance

- Limiting impact of ambient lighting
 - Size and power consumption
 - Field of view
 - Transparency

Essential Advice

- Offer buyers end-to-end solutions with precisely targeted projects that drive discernable benefits that don't overpromise and underdeliver.
- Driving AR into more enterprise companies will require platforms for managing AR and developing compelling content – focus on your ecosystems
- AR vendors must accommodate an IT organization's eventual move from mobile AR to headset-based solutions. For VR, most organizations will not understand the complexities of deploying VR; partners will be critical.
- The opportunity is now, evaluate partners on ability to execute now, in addition to a vision for the future.
- For VR, technology will drive platforms, but use cases must be demonstrated and ROI established for enterprise opportunities.

For More Information

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