



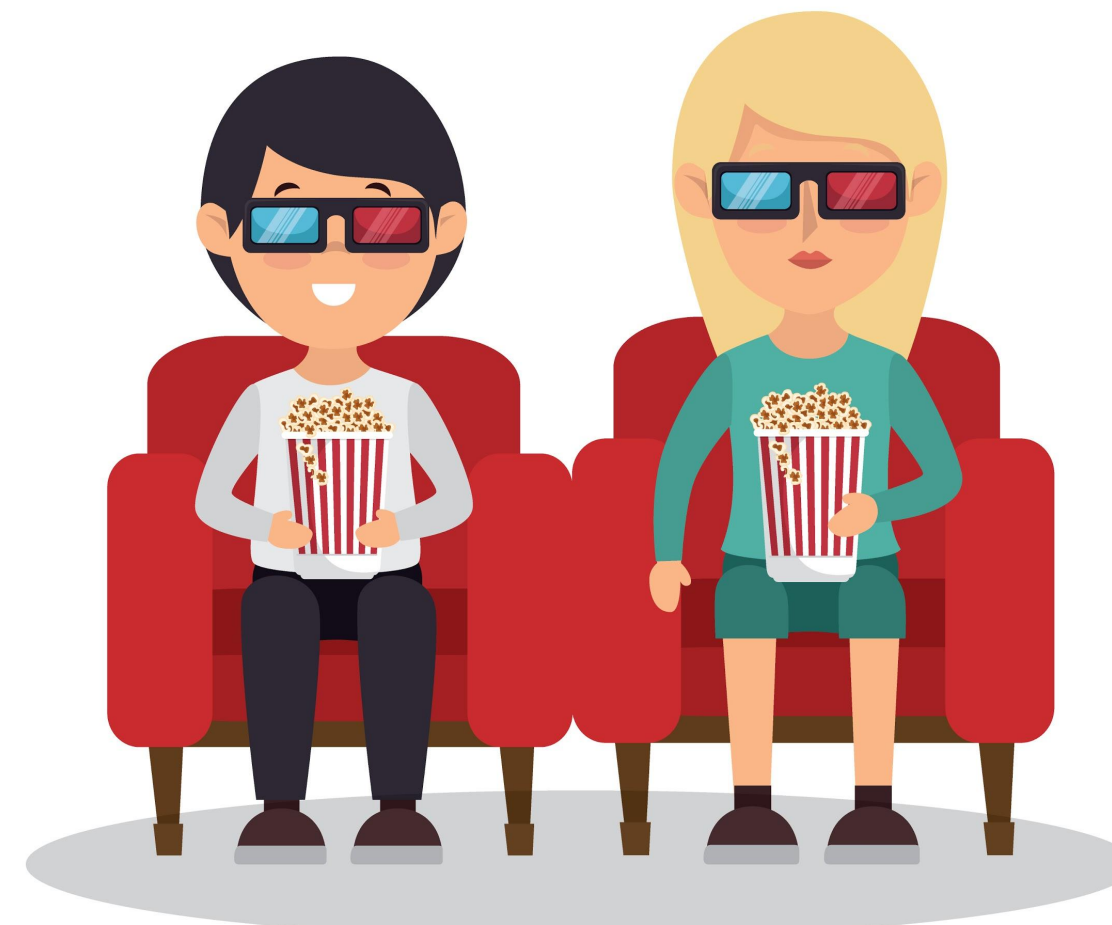
Wireless Access to Ultimate Virtual Reality 360-Degree Video

Huanle Zhang, Zhicheng Yang, and Prasant Mohapatra
University of California, Davis

Combining IoT and VR-360



(a) IoT only
Inferring students' attentions



(b) VR-360 only
Passive virtual classroom



(c) IoT and VR-360
Interactive virtual classroom

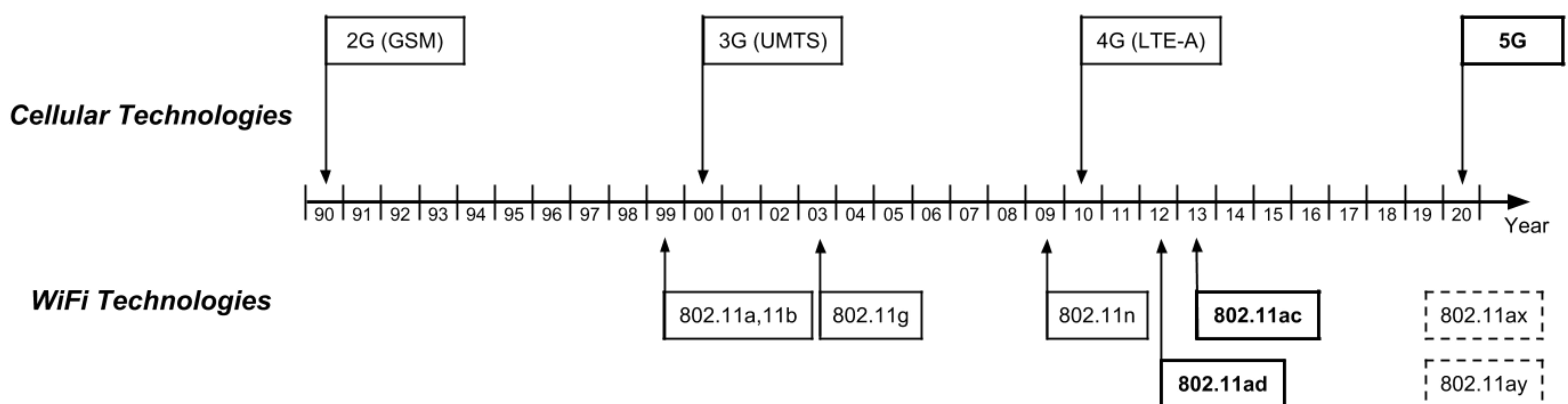
Ultimate VR-360 Networking Requirements

VR 360 Ultimate Viewing: **1.5 Gps**,
VR 360 Ultimate Live Broadcasting: **6.6 Gps**
8.3 ms RTT

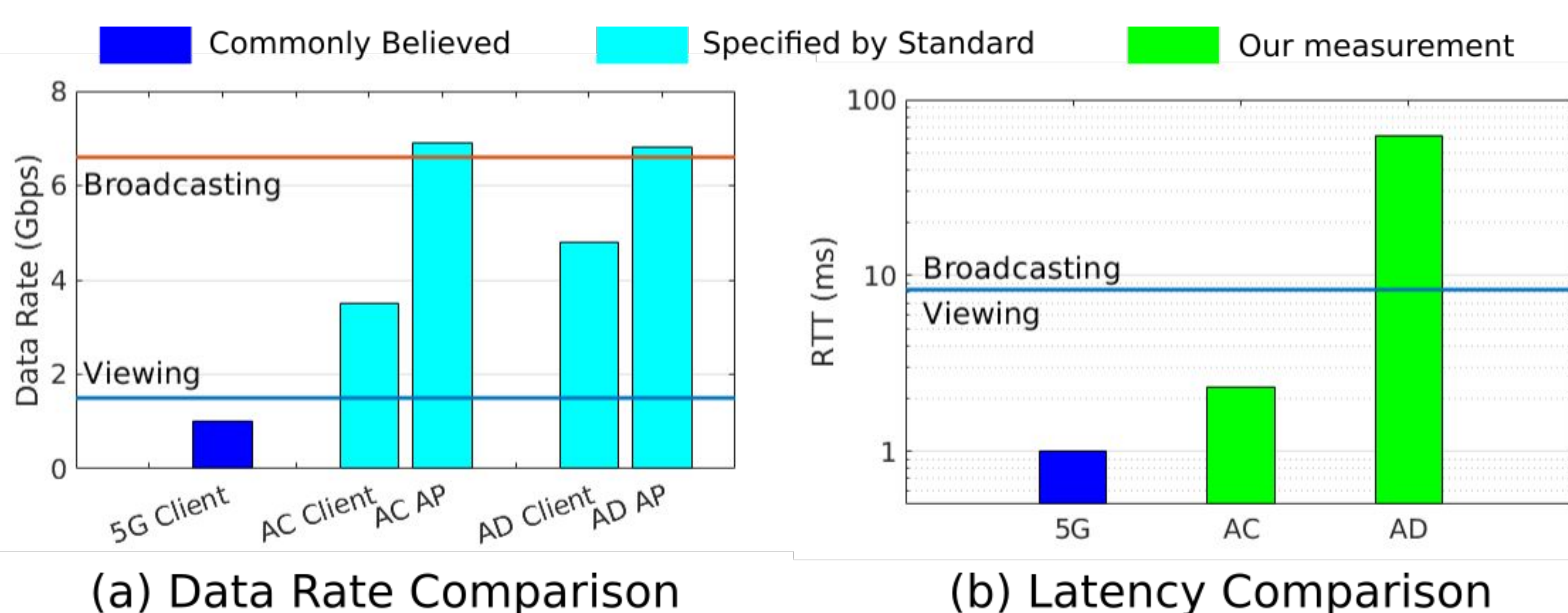
Human Eye Fidelity
64 Pixels Per Degree (PPD)
12-bit color-depth
120 Frames Per Second (FPS)

350:1 compress. ratio, 120° part-view transmission

Advanced Wireless Technologies



Preliminary Results



1. 5G cannot support the ultimate VR 360 because of the limited user data rate
2. IEEE 802.11ac can support the ultimate VR viewing, but fails to support the live broadcasting
3. IEEE 802.11ad has the potential to support the ultimate VR 360 viewing with implementation enhancements to reduce the latency

Highlights the needs for

- More advanced wireless technologies
- More research efforts on building VR 360 within IoT platforms