

# Teleport your residents to the operating room from anywhere: Live streaming surgery of sleeve gastrectomies in immersive virtual reality

**Alex Gandsas, MD, MBA**

**Interim Chair, Department of Surgery**

**Director, Weight Loss and Metabolic Surgery Program**

**Director, General Surgery Residency and Bariatric Fellowship Program**

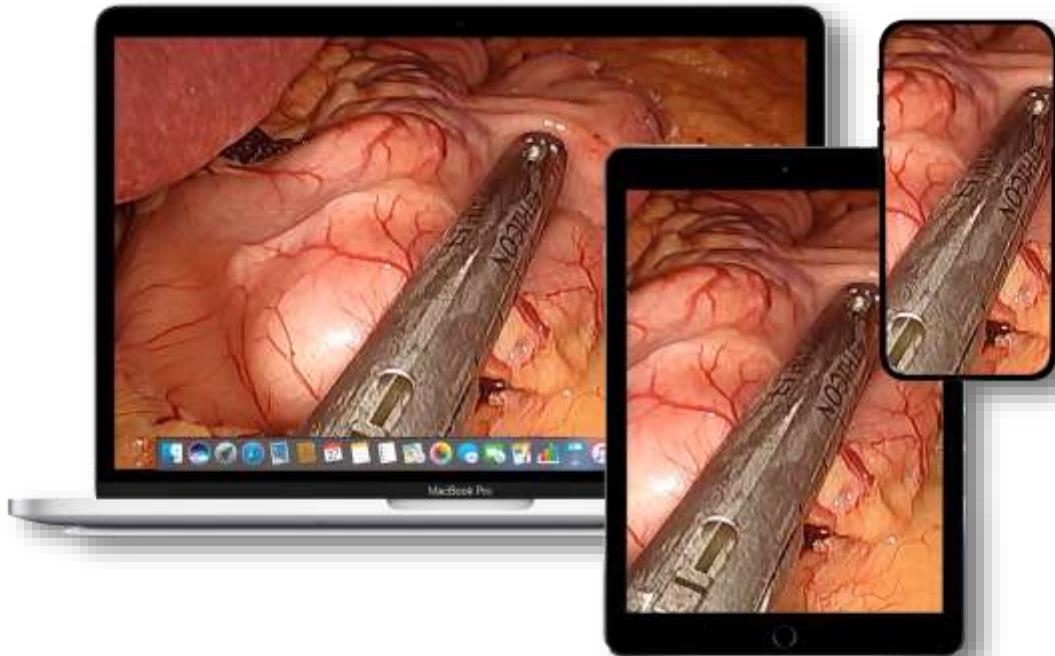


## Disclosures:

- I have no potential conflict of interest to report



# Live streaming surgery for remote learners in surgical training



Opportunity for multiple trainees to learn from a single case

Viewing across geographic boundaries instantly

Efficient means of knowledge transfer

- Virtual reality (VR) has emerged as a new and promising learning tool

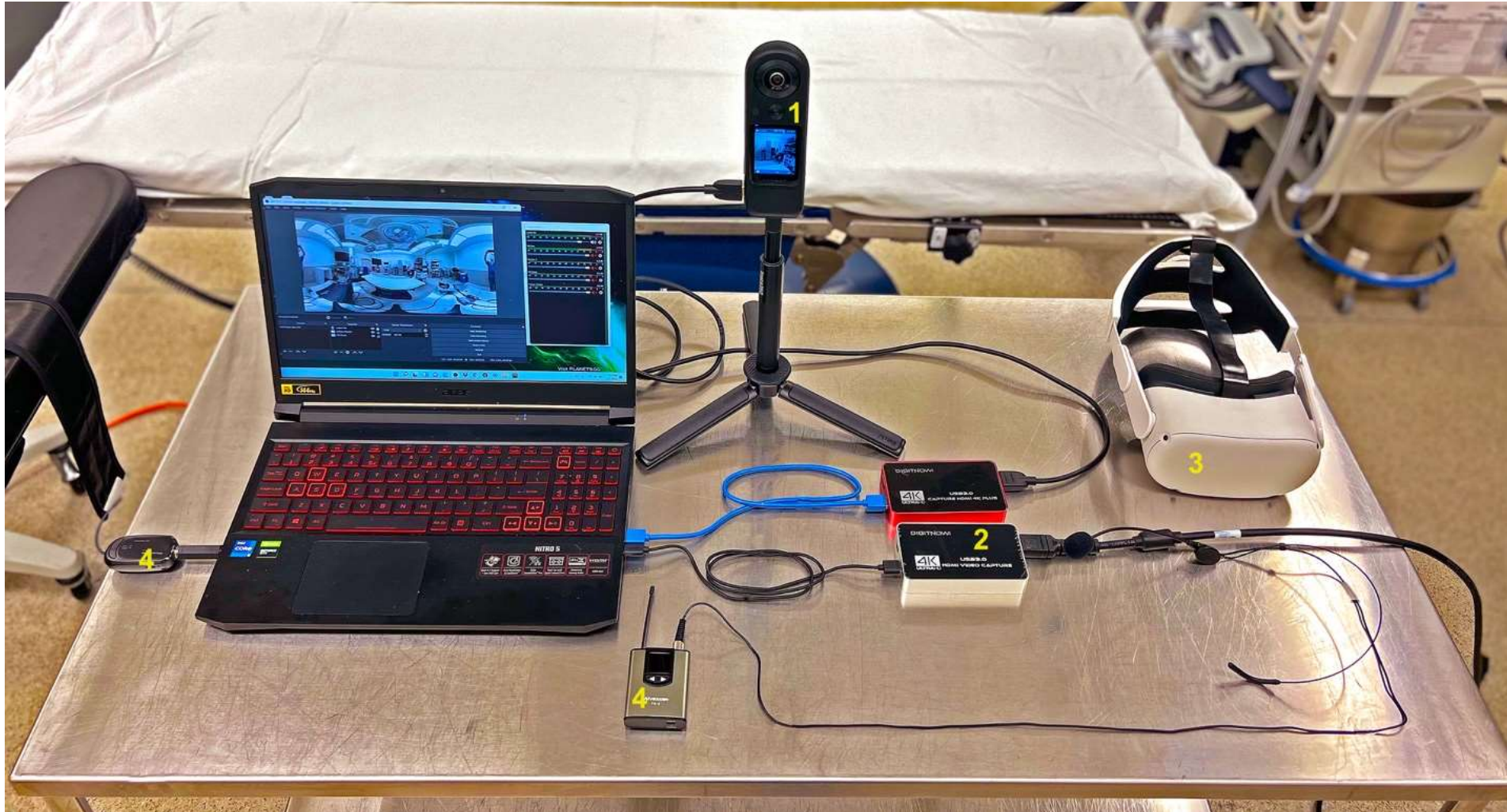


- Affordable consumer models
- Documented benefits: learner engagement, procedural confidence and fewer distractions

# Live streaming surgery + VR



# 360-degree Live Video Streaming

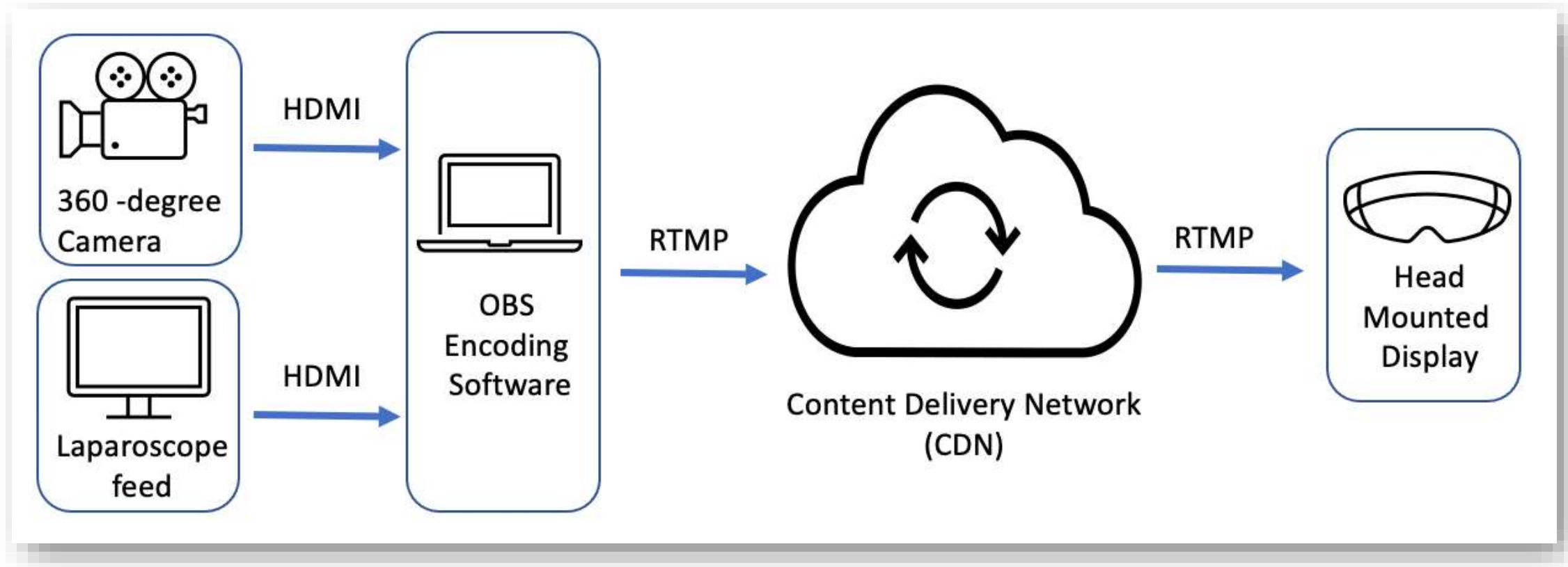




## Omnidirectional camera









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## Methods:

- 15 residents
- Live stream of 10 sleeve gastrectomy procedures
- Ample delivery of a stable video feed with an average 25 second latency
- No impact on operative times (76 minutes no VR; 73 minutes VR)

## Results:

- **80% of respondents would recommend virtual reality** for viewing surgical cases remotely
- **80% viewed it as a useful adjunct to surgical training**
- 60% indicated heightened appreciation of details of the OR and procedure vs 2D video
- 80% indicated the VR format was not a distraction to their learning
- 47% percent of respondents experienced some symptoms from using the VR headset, including headaches and eye strain

# Conclusion

## Live Streaming Surgery in 360-Degree VR:

- Can be accomplished with consumer-level hardware, and with reasonable latency
- Allows more surgical learners to be immersed in live surgical procedures without encroaching on the physical limitations of the operating room
- May usher a new paradigm in remote surgical education as technology improves



