



THE MANY FACES OF VIDEO AT FACEBOOK

IOANNIS KATSAVOUNIDIS

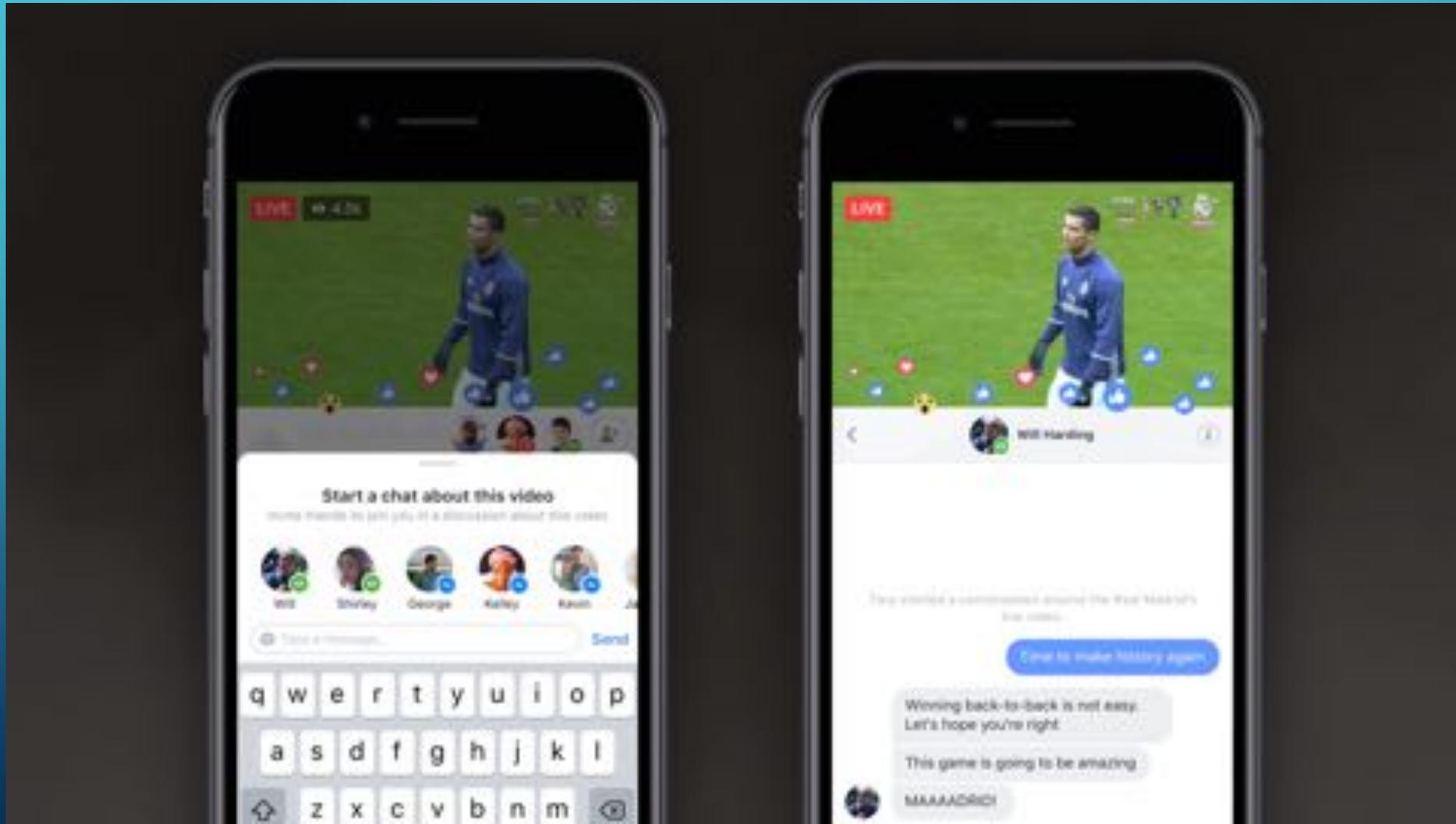
RESEARCH SCIENTIST

VIDEO INFRASTRUCTURE

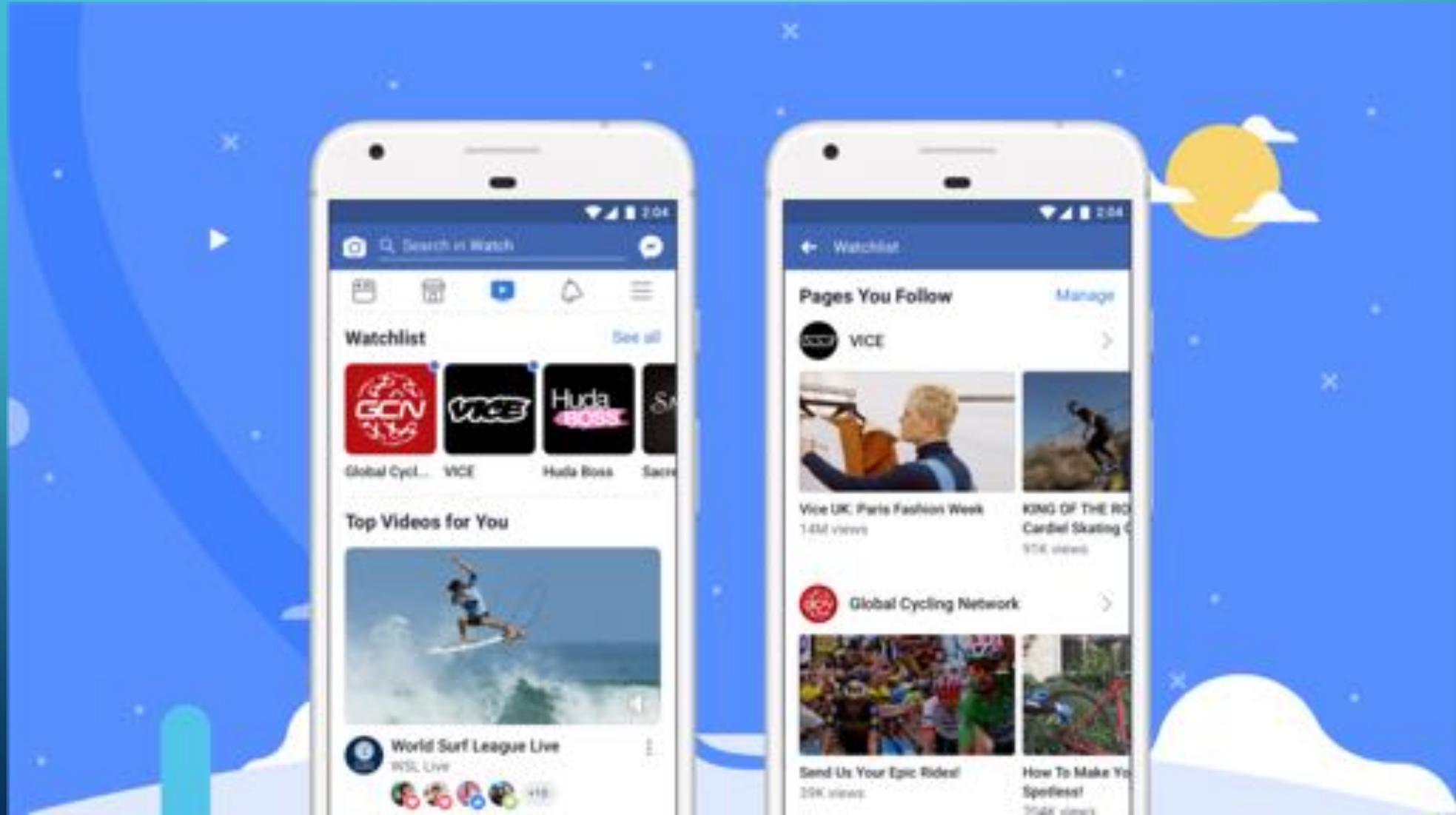
FACEBOOK

- The world's largest social network
- Over 2.2 Billion users
- Multiple products
 - Facebook
 - Instagram
 - Messenger
 - WhatsApp
 - Oculus
 - Portal

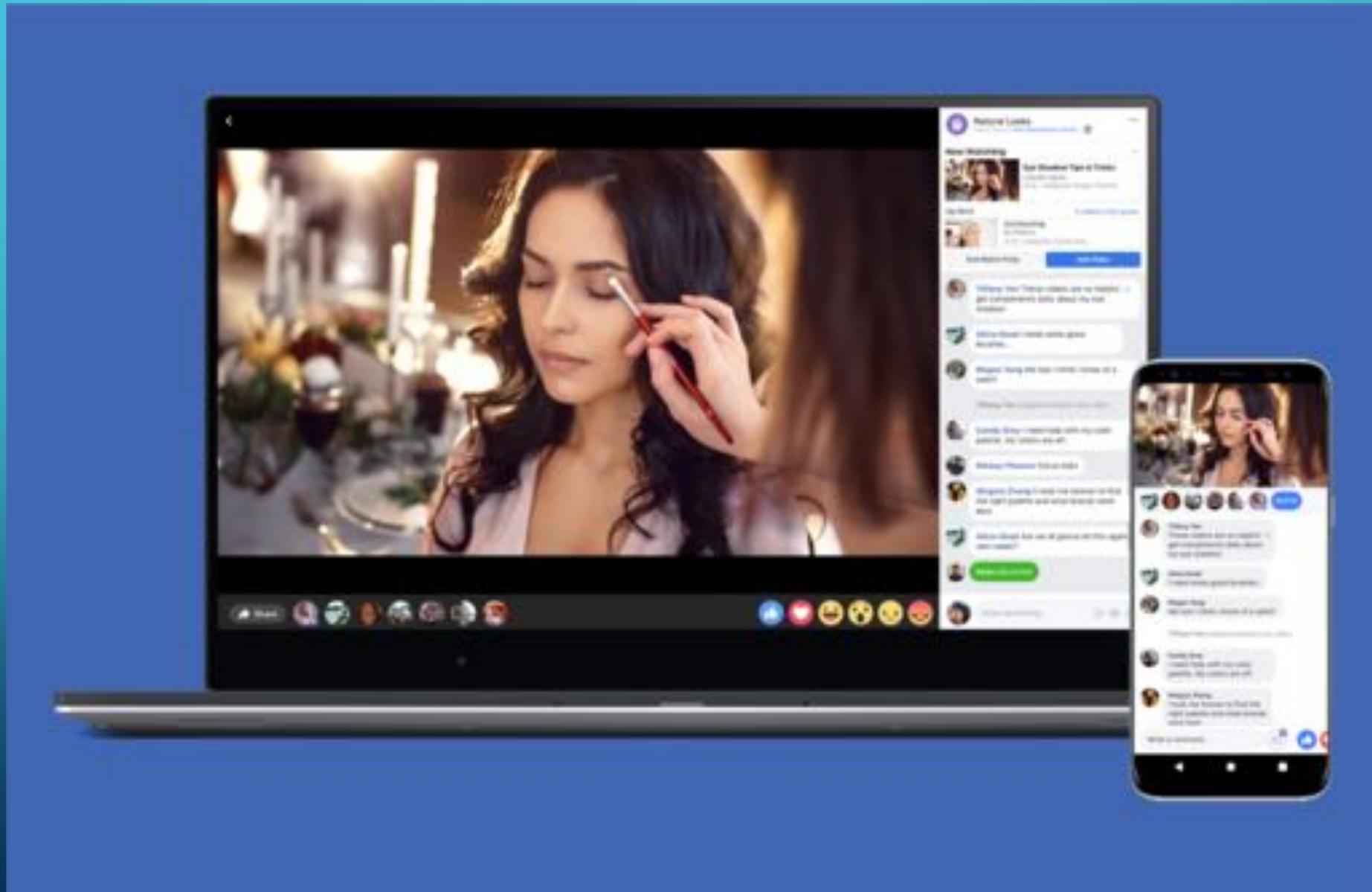
FACEBOOK - LIVE



FACEBOOK WATCH



FACEBOOK WATCH PARTY



FACEBOOK LIVE GAME SHOW

Take the Poll

Which one of these is a LIE?

- I've been slimed on Nickelodeon.
- I once proposed to Selena Gomez.
- I've never brushed my hair, it's just always perfect like this.

Jessica Kim, Henrik Ryberg and 16 others have voted in this poll

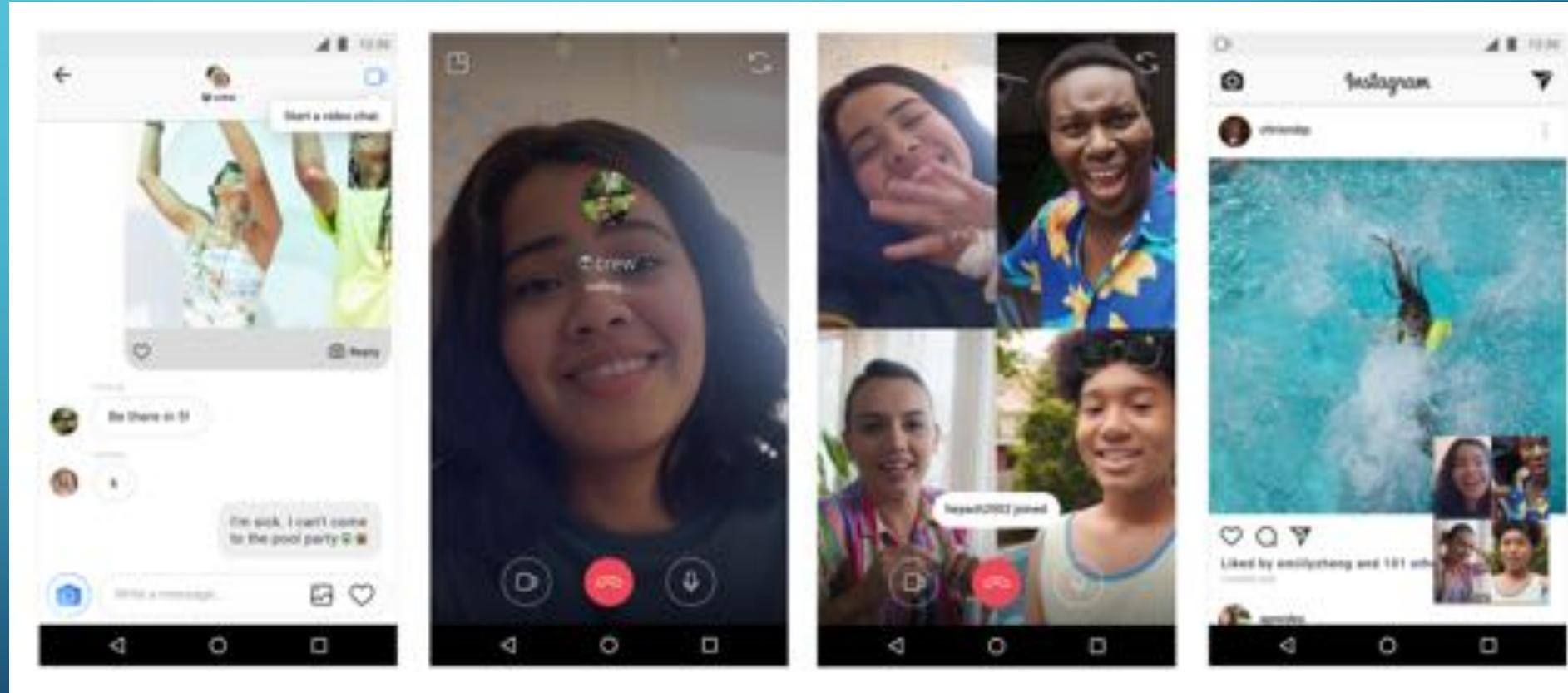
Question 1 ✓ Yes! (Right answer)

What did my husband Marcus say was something I did that made him not want to marry me?

- I didn't want to have kids. 1897
- I wanted an open relationship. 1621
- I backed his Ford Taurus into our garage. 982

People who can see the poll can see your answer. \$

INSTAGRAM TV (IGTV) AND INSTAGRAM VIDEO CHAT



MESSENGER



WHATSAPP



OCULUS



Oculus Quest

VIDEO INFRASTRUCTURE @ FB

- 100-member team
- Supports all video processing on the server side at FB
- Responsible for the HW configuration and SW stacks that product teams use for their applications
- Server-side video processing (encoding, decoding, computer vision algorithms, video understanding, copyright)

VIDEO FUNDAMENTALS AND RESEARCH @ VIDEO INFRASTRUCTURE @ FB

- New group within Video Infra
- Tech lead: Ioannis Katsavounidis
- Three main activities
 - Video codec research, including standardization
 - External academic and industry collaborations
 - Joint HW-SW optimization for video processing
- Video quality optimization throughout all FB video products

VIDEO CHALLENGES AT FB

- No-reference video quality assessment, mostly for user-generated content
- Live encoding quality optimization (end-to-end)
 - Low-delay (e.g. Facebook Live)
 - Real-time communication (e.g. WhatsApp video call)
- Adaptive bitrate streaming for all video content
 - Not one-size-fits-all
 - Need variety of full-reference and no-reference metrics

VIDEO CHALLENGES AT FB

- Energy efficiency (own data-centers)
- Storage considerations
- Contribute technologies to new video coding standards that can solve these problems
- Offer solutions for billion-scale problems