COPRESENCE

Building the Most Natural Video Conferencing Experience

FACTS

COPRESENCE AG is a Spin-Off of the
University of Heidelberg

- Heidelberg University is Germany's oldest university and one of the oldest universities in Europe
- Heidelberg University is one of 11 Excellence Universities in Germany
- It is a founding member of the "League of European Research Universities".
- According to the World University Ranking 2021 it is the second best university in Germany (63rd worldwide)

UNIVERSITÄT HEIDELBERG
ZUKUNFT
SEIT 1386

PROBLEM

- **Zoom Fatigue** → People get tired very quickly in video conferences, unlike meetings that take place in the real world. All leading video conferencing products provide a similar, not optimal, video user experience.
- **Transporting non-verbal cues**, being essential for maximally effective communication between humans, is not reflected in current solutions.
- All video conferencing products are based on the transmission of pixels. This is associated with **high latency and connectivity issues**.
- **None** of the current leading vendors in the target market, is able to replicate the experience of a real meeting.

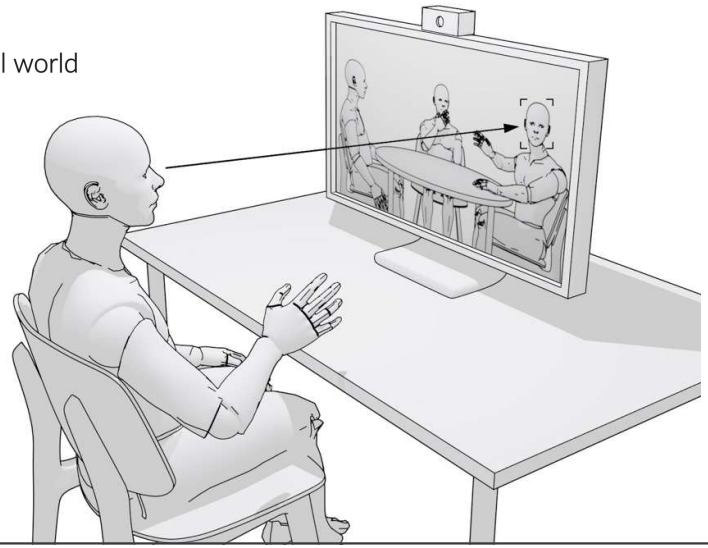
OUR SOLUTION

Copresence replicates the natural experience of meetings taking place in the real world.

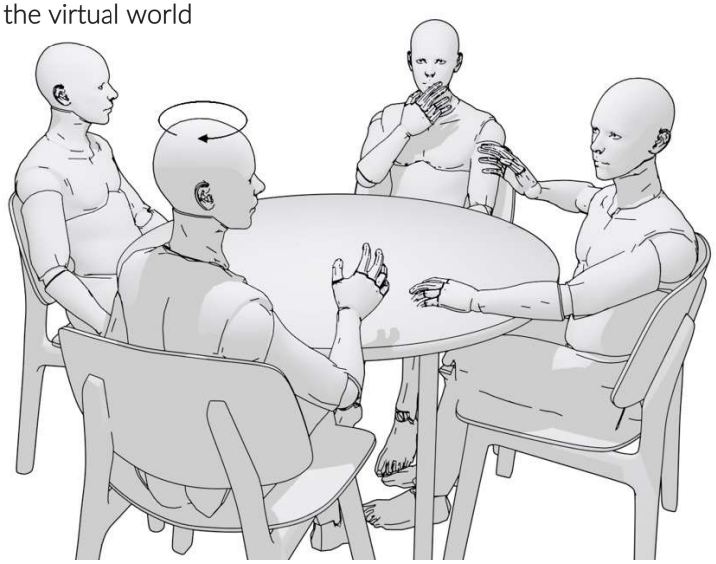
FIG. 1
Participants in a video conference. The virtual room with avatars of all other participants is displayed on the screen. The user's point of view (arrow), facial expression and body posture are estimated.

FIG 2.
Virtual room (display) of the video conference shown in Figure 1. All participants are represented by their avatars. The avatar in the bottom center represents the user shown in Figure 1. Its head pose is manipulated to match the user's estimated viewpoint. Thus, the user's avatar correctly makes eye contact with the avatar on the right, which is visible to all participants in the conference.

User in the real world
Fig. 1



All users in the virtual world
Fig. 2



OUR SOLUTION

Traditionelle Kachelansicht

COPRESENCE

Video: https://tinyurl.com/yn3php58

OUR SOLUTION

EASY ADAPTATION

Novel technology that allows all participants to communicate as naturally as possible, while relying only on commodity hardware

LESS TIRED USERS

The possibility of non-verbal communication is preserved and enables an effective, never before demonstrated type of remote communication → The workforce is more productive and does not tire as quickly

UNIQUE COMPRESSION TECHNOLOGY

Introduction of a completely new type of video conference compression technology (patent pending)

TEAM

PROF. DR. ANDREW BLAKE
Chairman

- Decades of experience in AI/computer vision
- Former Director of Microsoft Research (Cambridge)
- Consultant to companies such as Siemens, Samsung, FiveAI and many more
- Former Director of the Alan Turing Institute
- Chairman of the Samsung AI Centre, Cambridge UK
- Honorary Professor at the University of Cambridge
- Member of the Royal Academy of Engineering
- Fellow of the Royal Society

RADEK MACKOWIAK
CEO

- Former industry PhD student at Bosch who researched the cost-effective development of semantic segmentation; a key enabler of fully autonomous driving. Saved 83% of associated costs through innovative invention
- Researcher at Siemens AI (Vienna, Austria), Bosch Corporate Research (Hildesheim, Germany), and Bosch Center for AI (Sunnyvale, Silicon Valley)
- 8 years of experience in the field of computer vision and AI
- Invented and implemented an award-winning AI-enabled video browser
- Published papers at world-leading AI and computer vision conferences such as CVPR and NeurIPS.

TITUS LEISTNER
CTO

- PhD student at the University of Heidelberg
- Expert in multiview image analysis
- Expert in image based depth estimation
- 6 years of experience in computer vision and machine learning
- Former IT freelancer
- Published in world leading 3D computer vision conferences (3D Vision)

TEAM

MERGIM KRASNIQI
CIO

- Long term experience as entrepreneur with a focus on corporate finance and business development
- Business Diploma from the Sigmaringen University of Applied Sciences
- Since 2016, he has been a partner in a Zurich-based private equity firm
- Many years of experience in the field of financing

PROF. DR. CARSTEN ROTHER
CSO

- Decades of experience in AI/Computer Vision.
- Among the top 10 most influential computer vision researchers in Europe
- Director of the Heidelberg Collaboratory for Image Processing
- Director of the Visual Learning Lab Heidelberg
- Former researcher at Microsoft Research Cambridge/UK.
- He was a professor at TU Dresden from 2014 to 2017
- He co-developed two Microsoft products, GrabCut for Office 2010 and AutoCollage.

TEAM

Engineers

LYNTON ARDIZZONE
M.Sc. in Physics
PhD Candidate at Heidelberg University (12/2021)

PHILIP GRASSAL
M.Sc. in Computer Science
PhD Candidate at Heidelberg University

MERLIN MANTHEY
M.Sc. in Computer Science,
Expert in Computer Graphics and Software Engineering
10 Years of Experience as a Freelancer

Other

SEE STAFF PLANNING

TECHNOLOGY

Main difference from other solutions

All video conferencing technologies stream pixels (30 full frames/second)

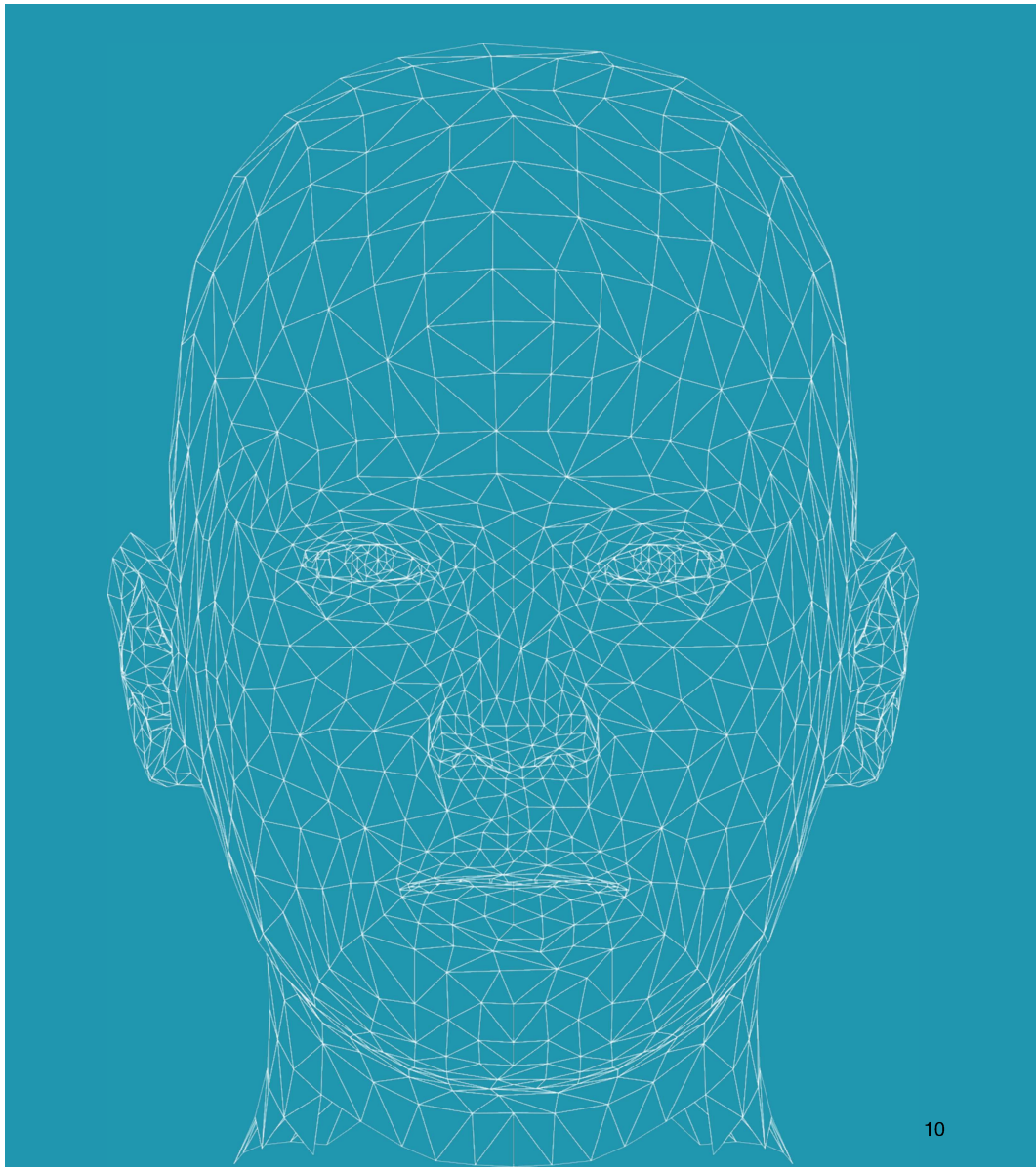
We send once

- The 3D model of the (upper) body.
- The texture or color of the upper body at any point

We stream

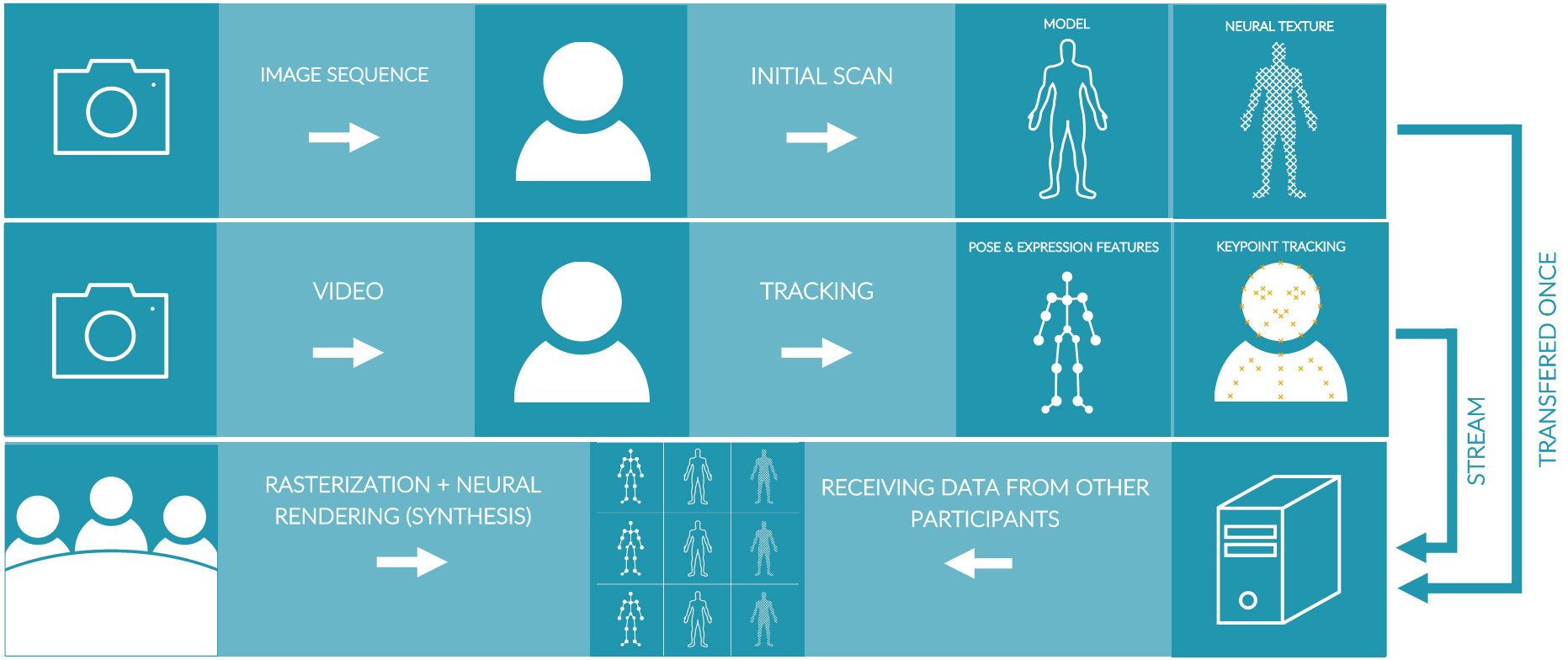
- The expression represented by its characteristic feature points
- The current position of the viewpoint on the monitor

Only a fraction (< 1/10) of the data needs to be transmitted compared to a traditional video conferencing solution. The hyper-realistic avatar can be controlled at will.



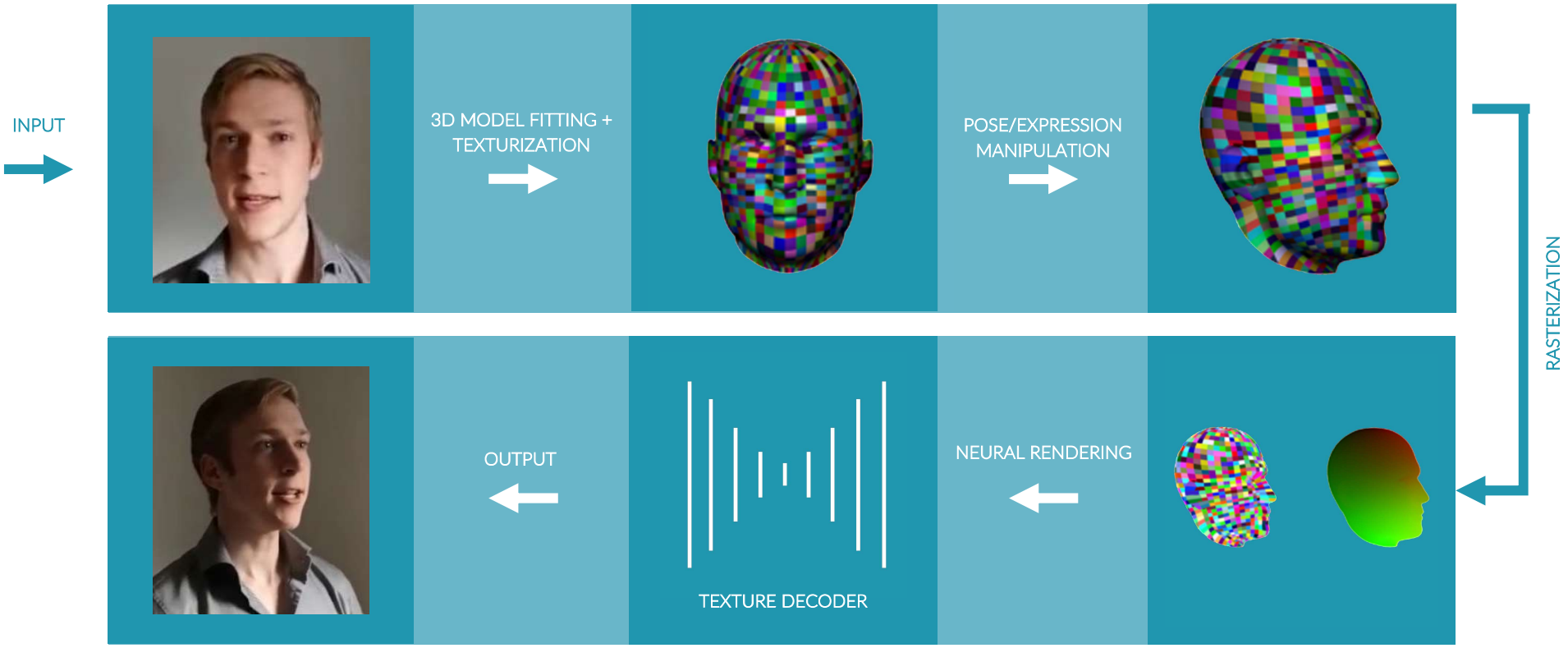
TECHNOLOGY

System



TECHNOLOGY

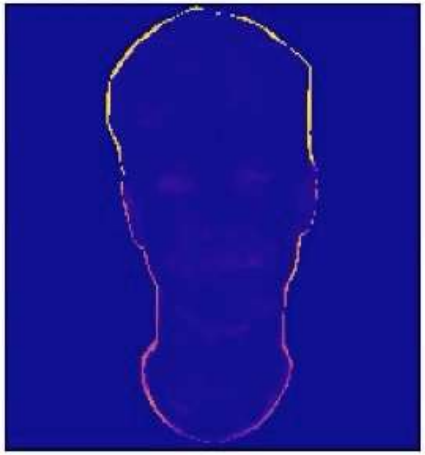
Synthesis - Rendering



TECHNOLOGY

Synthesis - Result

900 frames

GT	PRED	DIST	NORMAL
			
Original Video	With our technology reconstructed 3D model, fully controllable	Error image between original and reconstruction (Error not visible to the human eye)	Normals for lighting adjustment

Animated Version: https://tinyurl.com/2a4jwn2t

COMPETING TECHNOLOGIES ANALYSIS

Animated Version: https://tinyurl.com/d4wva594

CURRENTLY IN NEGOTIATIONS WITH

ZEISS

HUAWEI

STUDIO BABELSBERG

TRENDS

SUSTAINABILITY

- Extinction Rebellion, Friday's for Future: Crossing the Atlantic from London to New York for a half-day meeting could become as socially unacceptable as smoking.

HOME OFFICE

- Working from home. 2/3 of managers say working from home would help with employee retention
  -"Impact of Video-conferencing" Report, Lifesize, 2019. Video.
- Companies like Siemens, Salesforce, Facebook, Google and many others are moving to hybrid mode where work happens in both modes -> half at home, half at office or 100% at home
  - Forbes, July 2020.
- Home office policies can be legally enforced in many areas (work-life balance)

VIDEO CONFERENCING

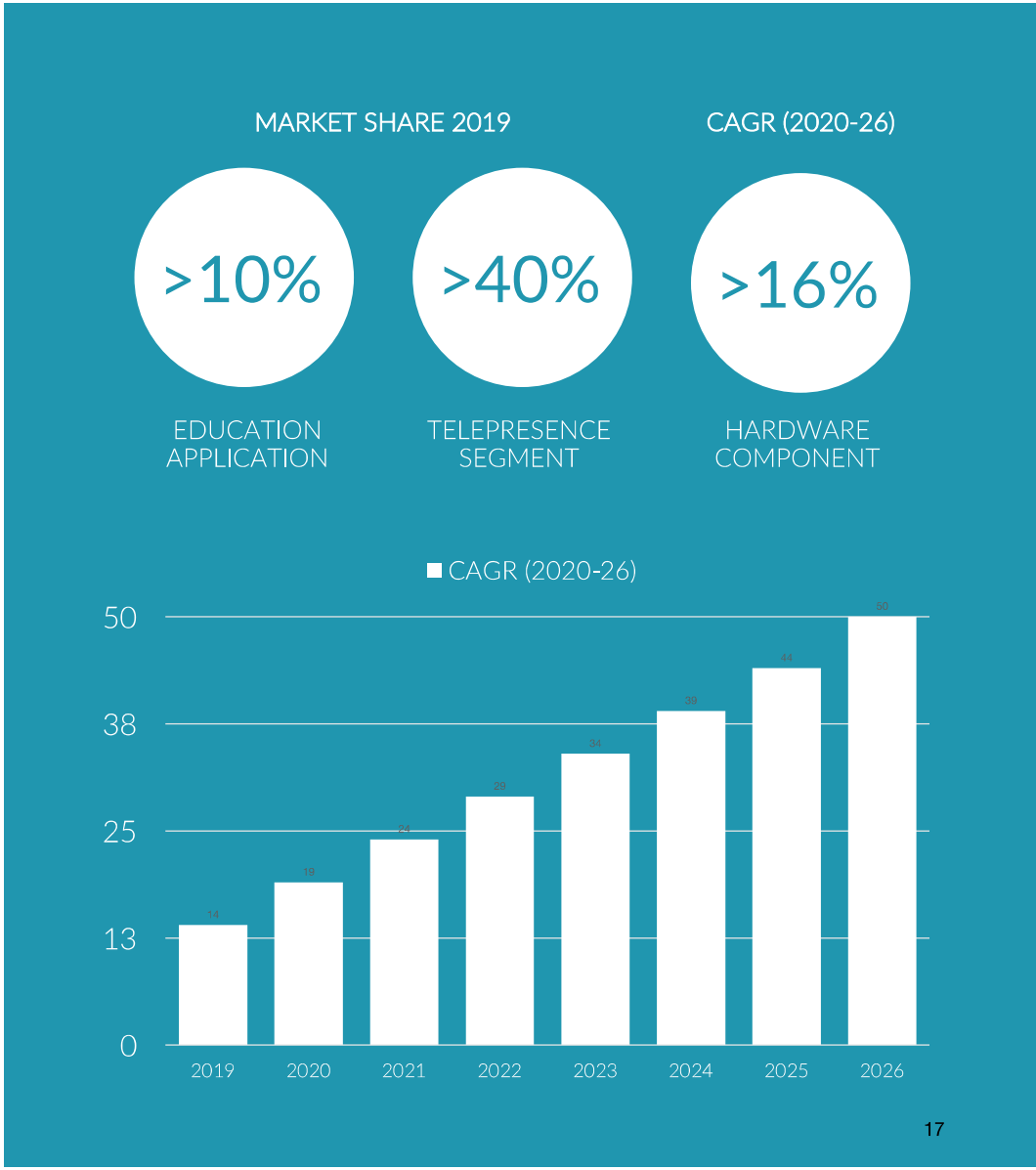
- 90% of distributed enterprises say video conferencing is as good as being on-site, and that audio alone is not enough.
  — VIDEO-LED COMMUNICATIONS REPORT,
  FORBES-ZOOM, 2019.
- 90% of distributed enterprises say video conferencing is as good as being on-site, and that audio alone is not enough.
  — ZOOM FATIGUE, REPORT, SANDER & BAUMAN, TED 2020.

MARKET

Global Market Insights

- "The government sector has seen rapid change in recent years with the advent of digitization. Government agencies and institutions require secure, efficient, and reliable communications for real-time collaboration and information updates between distributed offices."
- "Demand for high-quality, face-to-face videoconferencing is driving adoption of telepresence technology."
- "High demand for efficient compression technology in the Asia-Pacific market due to the low-quality Internet infratructure prevalent there."
- "Innovation pressure on industry major players (Microsoft, Zoom, Cisco) to remain competitive in the market"
- CAGR 2020-2026: 19%

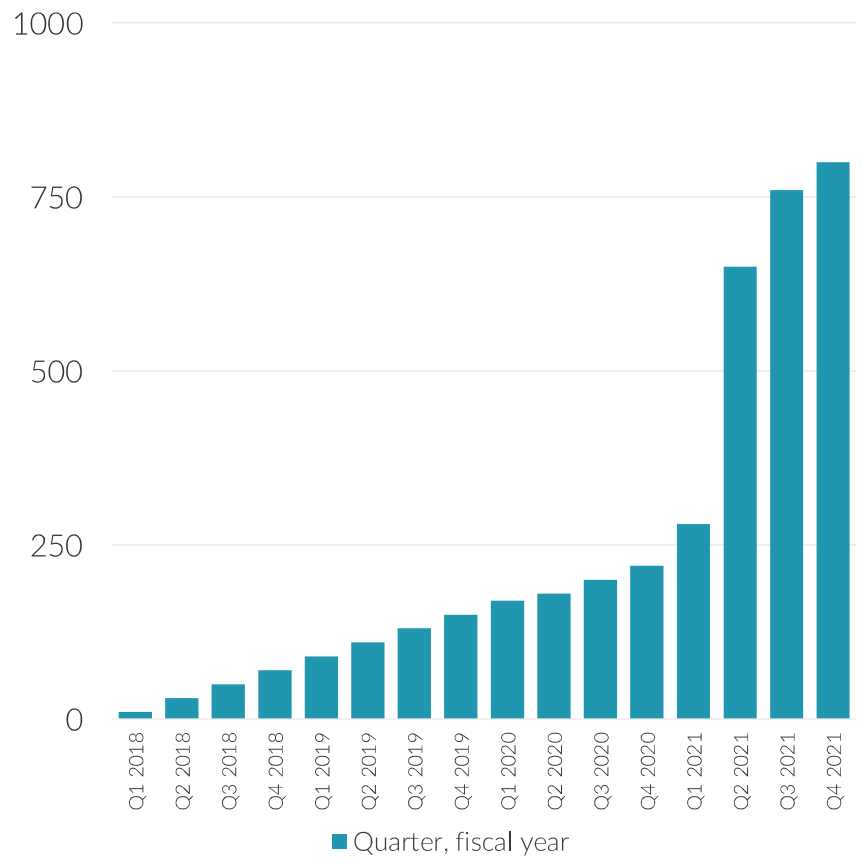
https://www.gminsights.com/industry-analysis/video-conferencing-market



MARKET

Turnover - Zoom

- Number of Zoom users in June 2020 exceeds 300 million/day
- Zoom Q2 2021 revenue exceeds $660M, with licensing costs of $9/yr.



MARKET

Gartner Magic Quadrant for Meeting Solutions – 2019-2020

MARKET

Traditional

- Zoom
- Skype/Teams
- Google Meet
- Cisco WebEx
- GoToMeeting

Hardware-enhanced

- Highfive
- OWL Labs
- Lifesize
- Cisco
- Spatial

Software-enhanced

- **Copresence**
- Around
- Spatial
- Airmeet
- Blue-Jeans

SIDE MARKETS AND REVENUE STREAMS

Gaming Industry

CHARACTER DESIGN

- Realistic looking avatars of the players as the main character in the game

Hollywood

VIRTUAL ACTORS

- Our technology makes it easy to virtualize actors. Filmmakers have full control over their virtual bodies.

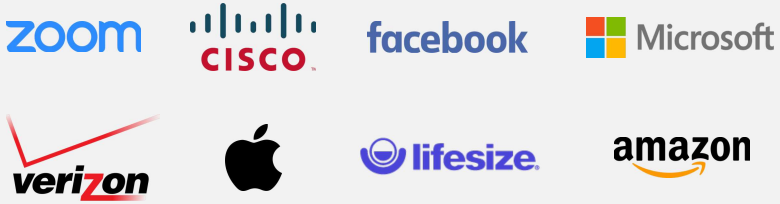
Social Media

INFLUENCER MARKET

- Panel discussions / Realistic looking talk shows instead of split screen.
- Closer connection with users (Instagram recently announced it will allow 4 participants in video streams)

POTENTIAL BUYERS

Video conferencing company



Hollywood

Gaming Industry

Social Media

WHY US?

Team of world-leading experts and researchers in computer vision, machine learning and user experience, and engineers

Several paths to commercialization of the technology

High exit potential

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