advanced telepresence program strawman

telecommunications with realistic avatars

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digital presence technical space

- **Fidelity**
  - High resolution human
  - Cartoon or caricature

- **Dimensionality**
  - Immersive 3D
  - Small 2D window

N.B. presence = audiovisual
the uncanny valley
the problem is making avatars move.
Light Stage-Scanning

Video Performance Capture

FACS Poses

Digital Ira SIGGRAPH 2013 Real-Time Live

Oleg Alexander
Graham Fyffe
Jay Busch
Xueming Yu
Ryosuke Ichikari
Paul Graham
Koki Nagano
Andrew Jones
Paul Debevec

Jorge Jimenez
Etienne Darvome
Bernardo Antionazzi
Mike Ehler
Zbynek Kysela
Xian-Chun Wu
Javier von der Pahlen

USC Institute for Creative Technologies
Joe Alter - Joe Alter, Inc.

ACTIVISION

E-Tech: Holographic Ira
Talk in "Face The Facts"
Thursday 9AM Ballroom E
it’s hard because we’re incredibly good at noticing something is wrong
digital presence technical space

- immersive 3D
- dimensionality
- small 2D window
- high resolution
- human
- fidelity
- cartoon or caricature

N.B. presence = audiovisual

digital ira + mocap + virtual world + display

real life
program category #1: telecommunication with credible avatars

mission: create a real time, uncanny valley-free immersive telepresence system that users would prefer over travel.

expectations
- digital IRA level fidelity for avatar
- real-time capture and actuation
- ability to run on commercial hardware
- full body mocap and IK
- vertically integrated system

program metrics
- latency: < 250 ms across the US
- bandwidth: < 100 kB/s
- comfort: very good
- cost of system: mocap+display < $1000

investment
- 10 teams
- $20MM

teams
- computer graphics
- computer science
- graphics hardware
- motion capture

potential outcome: completely alter the course of telepresence. solve gaze, microexpressions, lighting, body gestures, immersion, multi person meeting, 3D audio and video, all at once.
digital presence technical space

immersive 3D

dimensionality

cartoon or caricature

fidelity

small 2D window

high resolution human

N.B. presence = audiovisual
program category #2: trick a human into believing an avatar is real

mission: advance real time mocap and rendering of digital human to perfection

expectations
human guesses wrong > half the time
live 4k 3D video vs.
real time mocap + digital reconstruction

investment, PRIZE COMPETITION
5-10 funded teams @ $10MM
$1MM in prize, open competition

program metrics
latency < 250 ms
bandwidth < 100 kB/s
4k resolution

teams
computer graphics
computer science
graphics hardware
motion capture

potential outcome: completely alter the course of telepresence. solve gaze, microexpressions, lighting, body gestures, immersion, multi person meeting, 3D audio and video, all at once.