

# USE YOUR ILLUSION

All-singing, all-dancing – 3D telepresence is becoming real

## WHY WE TESTED

As will.i.am often finds himself with meetings in two different time zones at once – and a long-haul flight isn't always logistically possible – holography is his next best option.

## HOW WE TESTED

WIRED tried five immersive display systems, from 2D projections to 360° near-holographic models. We judged on realism, immersiveness and elaborateness of staging. Many suffer from lags and motion blur, and eye contact can be an issue, with skewed gaze ruining the illusion. We judged against these concerns, ranking from rudimentary to convincing, and on their "uncanny valley" factor.



## MUSION EYELINER

A world leader, recognised for digitally resurrecting Tupac Shakur at Coachella 2012, Musion doesn't create true holograms but adapts the Pepper's Ghost effect. An HD projector illuminates a thin, effectively invisible foil in front of the stage, from a 45-degree angle. The image hits a reflective surface below the foil, and also passes through it, on to the stage behind. The 3D effect is extraordinary; WIRED was genuinely hesitant to differentiate humans and projections. The subject appears to look directly at you, offering a disturbing intensity of intimacy. Unfortunately, only the audience can see it – those on stage rely on monitors.

Live telepresence needs a fast, direct connection of 10-20 Mbps (recordings are higher quality), but Musion uses its own codec that reduces lag and eliminates most of the signs of motion blur.

**WIRED Convincing to the point of creepy**  
**TIRED Elaborate staging; visible by audience only**  
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**Rentals from £40,000**  
[musion.co.uk](http://musion.co.uk)

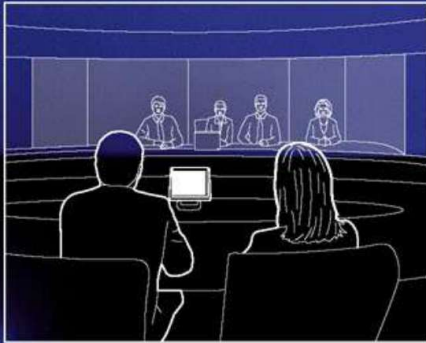
**SPEC**  
**Projection effect:** Pepper's Ghost  
**Telepresence:** One way (one to thousands)  
**Display area:** 6m x 4m stage (varies)  
**Line of sight:** Direct

PHOTOGRAPHY: SUN LEE. ILLUSTRATION: ACUTE GRAPHICS. WORDS: JEREMY KINGSLEY

Being dead is no longer an excuse for not putting on a show: will.i.am tells us he'd like to perform on-stage with holograms of Michael Jackson, Jimi Hendrix and Miles Davis







### POLYCOM REALPRESENCE EXPERIENCE (RTX)

Polycom's RTX is a virtual conference room. A single widescreen with rear projection gives the sense of a continuous oval table, beaming in rooms elsewhere built to the same spec. WIRED hooked up with various rooms around the world, from Stockholm to Hong Kong, all relatively fuss-free. After a few minutes adjusting, the effect is natural, full-size and absent of cues suggesting anything other than real life. Rooms with symmetrical distances from cameras (held within the screen) make for natural line of sight and a comfortable

conversational distance. Ease of set-up and a rock-solid back end makes the RTX convenient enough for the first-class-flying financier to think twice before travelling.

**WIRED** Ease of use; natural feel  
**TIRED** The image is only in 2D

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*Installations from \$300,000*  
[polycom.co.uk](http://polycom.co.uk)

**SPEC**  
**Projection effect:** Rear projection  
**Telepresence:** Two way  
**Display area:** 96" x 42" (24:9) screen  
**Line of sight:** Direct (EyeConnect)

### DVE IMMERSION ROOM

A mix of Musion and Polycom's methods, DVE's Immersion Room uses the same Pepper's Ghost effect as Musion, but has engineered it to work convincingly in a close-up environment. For 3D telepresence, it's the better of both. The setup we tried was to the same spec as that used by the US Department of Energy. A beam-splitting angled foil projects a 120" image across from the table, and produces an intensely bright, lifelike image. The screen is apparently edgeless, making the staging of an illusion unnoticeable, and the camera sits invisibly

behind the screen, so line of sight is direct and communication feels very natural. Any codec can be used, so performance quality varies – but clients can pick and choose to adapt it to their specific needs.

**WIRED** Close-up hologram

**TIRED** The very expensive option

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*Installations from around \$1.2 million*  
[dvetelepresence.com](http://dvetelepresence.com)

**SPEC**  
**Projection effect:** Pepper's Ghost  
**Telepresence:** Two way (up to nine per room)  
**Display area:** 120" (16:9) screen  
**Line of sight:** Direct



### IMMERSAVU

The immersaVu consists of a widescreen dome engulfing the viewer with a 160-degree field of view. A projector beams on to a convex mirror above the viewer's head, reflected onto the 80"-wide screen. Intermediating software processes the image to correct and de-warp the projection. The unit is light and easy to set

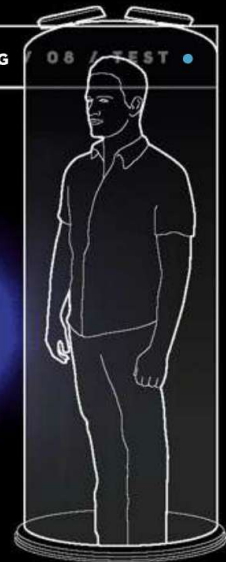
up – a single unit that can be mounted on a wall or table. Quality depends largely on the HD projector, with options for 3D and 4K upgrades. With a stereoscopic 3D camera for capture and glasses for the viewer, a fully immersive one-on-one conversation can be had – but the enclosure is better suited to 3D viewing and gaming, both of which impress.

**WIRED** Immersive enclosure

**TIRED** Rudimentary telepresence options

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*From £8,000*  
[initio.co.uk](http://initio.co.uk)

**SPEC**  
**Projection effect:** Dome projection  
**Telepresence:** One way (one-to-one)  
**Display area:** 80" screen  
**Line of sight:** Varies



### TELEHUMAN

Of the systems reviewed here, researchers at Queen's University in Canada have produced the closest to 3D telepresence – and they used everyday hardware: ten Microsoft Kinect sensors (which track a participant's movements), plus a projector and convex mirror in a 1.8m acrylic tube in which the projection appears. The cylindrical projection allows the viewer to move around with a 360° parallax effect. The setup is light and mobile, and the life-size 3D impresses, but it's a little rough round the edges.

**WIRED** True 3D  
**TIRED** Heath

Robinson construction

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*Custom orders, price TBC*  
[hml.queensu.ca](http://hml.queensu.ca)  
[TeleHuman are commercially developing the system with Edinburgh-based company Pufferfish]

**SPEC**  
**Projection effect:** Cylindrical

**Telepresence:** One way (one-to-one)  
**Display area:** 1.8m x 0.76m tube  
**Line of sight:** Head tracking

