

***Good
afternoon!***





JUSTIN HENDRIX

EXECUTIVE DIRECTOR
NYC MEDIA LAB

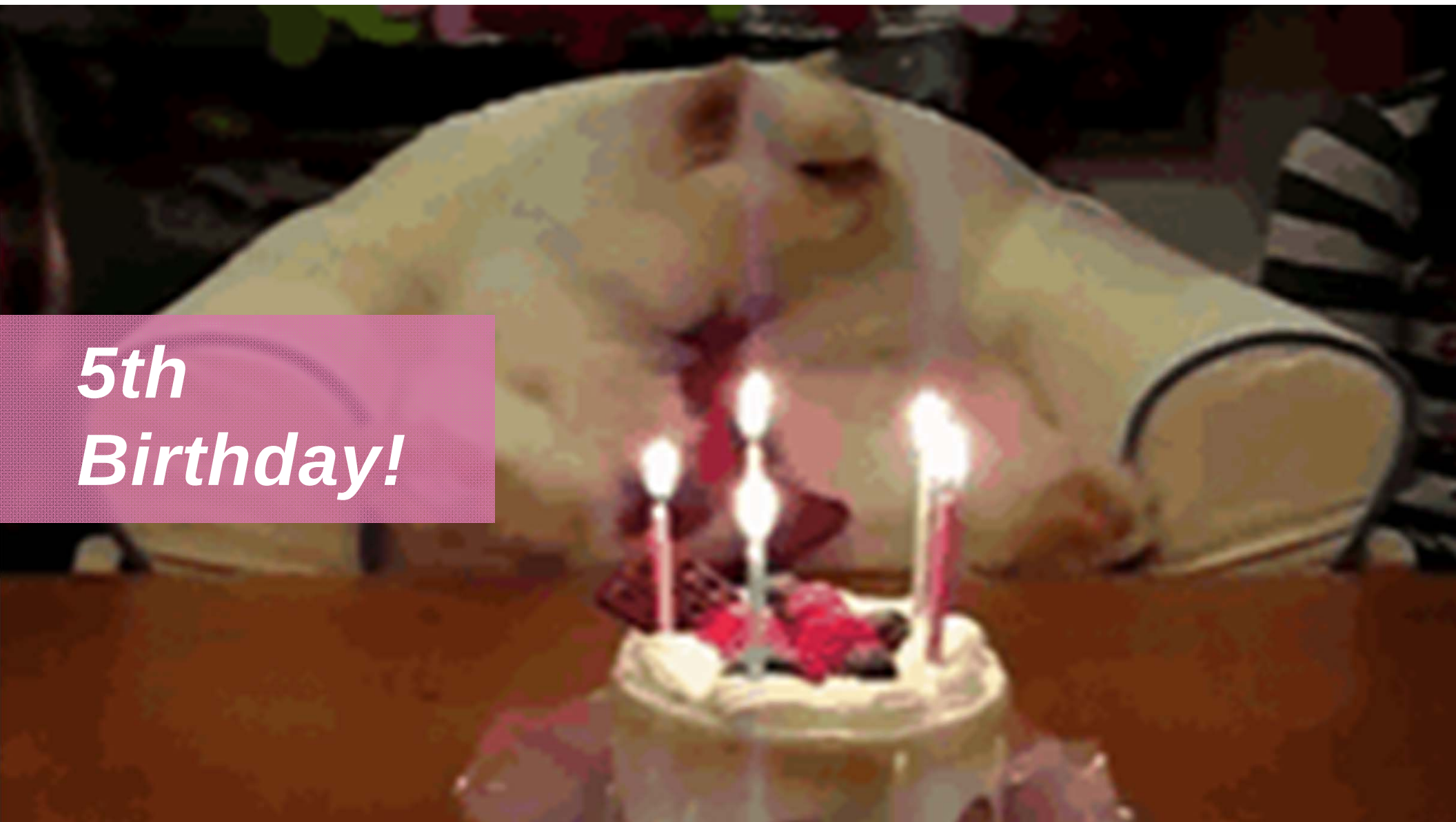
NYC MEDIA LAB/





WHAT IS NYC MEDIA LAB?

***5th
Birthday!***



Closed Innovation Principles	Open Innovation Principles
Most of the smart people in our field work for us	Not all the smart people work for us, so we must find and tap into knowledge outside our company
To profit from R&D we must discover, develop and ship ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value
If we discover it, we will get it to market first	We don't have to originate research in order to profit from it
If we are the first to commercialize we will win	Building a better business model is better than getting to market first
If we create the most and best ideas in the industry, we will win	If we make the best use of internal and external ideas, we will win
We should control our intellectual property so that our competitors don't profit from our ideas	We should profit from other's use of our IP and buy other's IP when it advances our business

“Another vital source for accessing external ideas is to cultivate deep and ongoing relationships with universities.”

Henry Chesbrough, Open Innovation



A+E NETWORKS.

audible
an amazon company

Bloomberg

ESPN

HEARST corporation

mlbam

NBCUniversal

News Corp


PUBLICIS
GROUPE

SHOWTIME

 Time
Warner
Cable®


verizon

AP

viacom

Vonage™

 ROGERS™

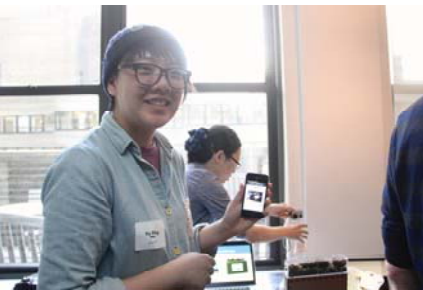
Singtel
innov8

TENFORE
HOLDINGS
OPERATIONAL VALUE-ADDED INVESTING™

NYC MEDIA LAB/

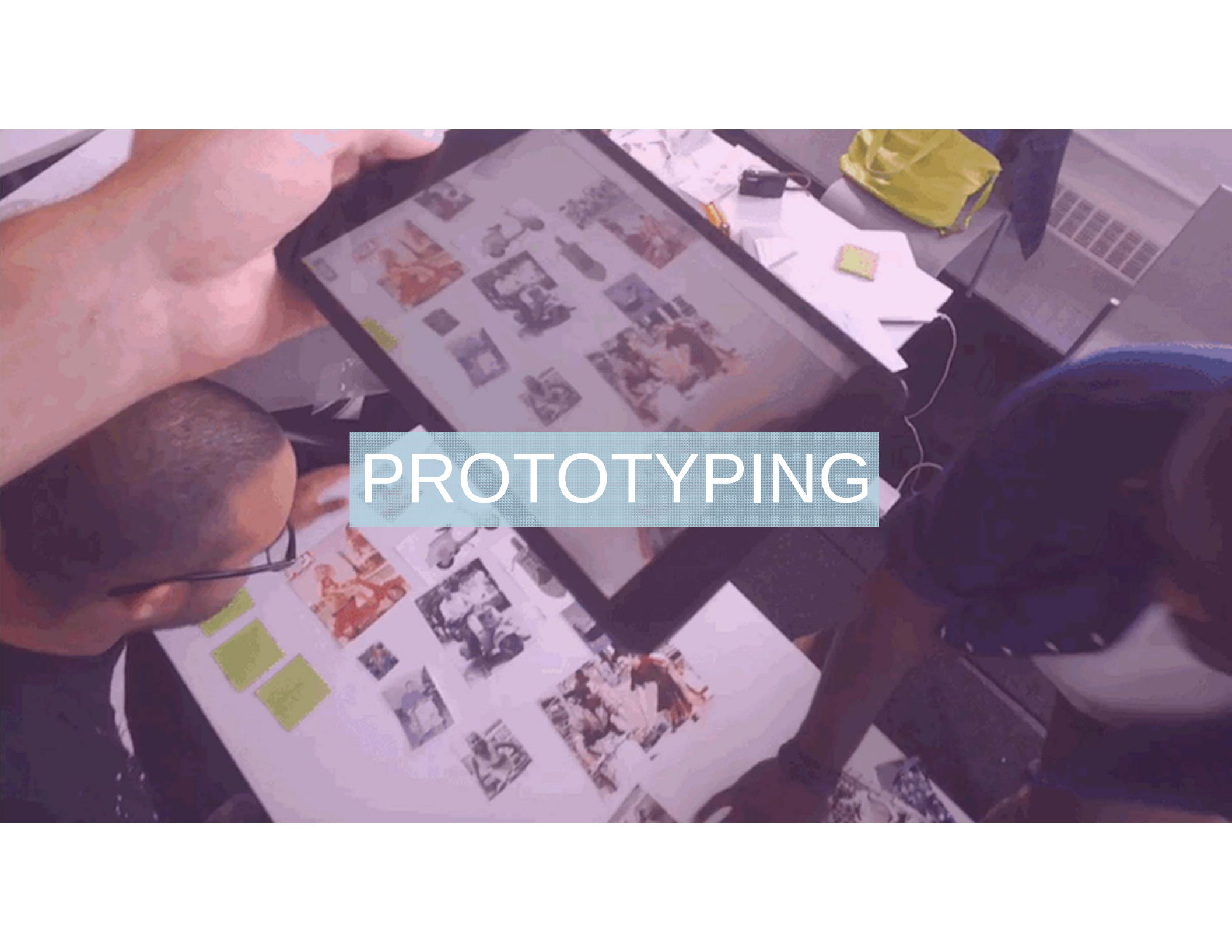
A photograph of a train in a tunnel. The train is moving towards the camera, with its headlights on. The tunnel walls are made of concrete and have several circular openings. The text "What do we do?" is overlaid in white.

What do we do?

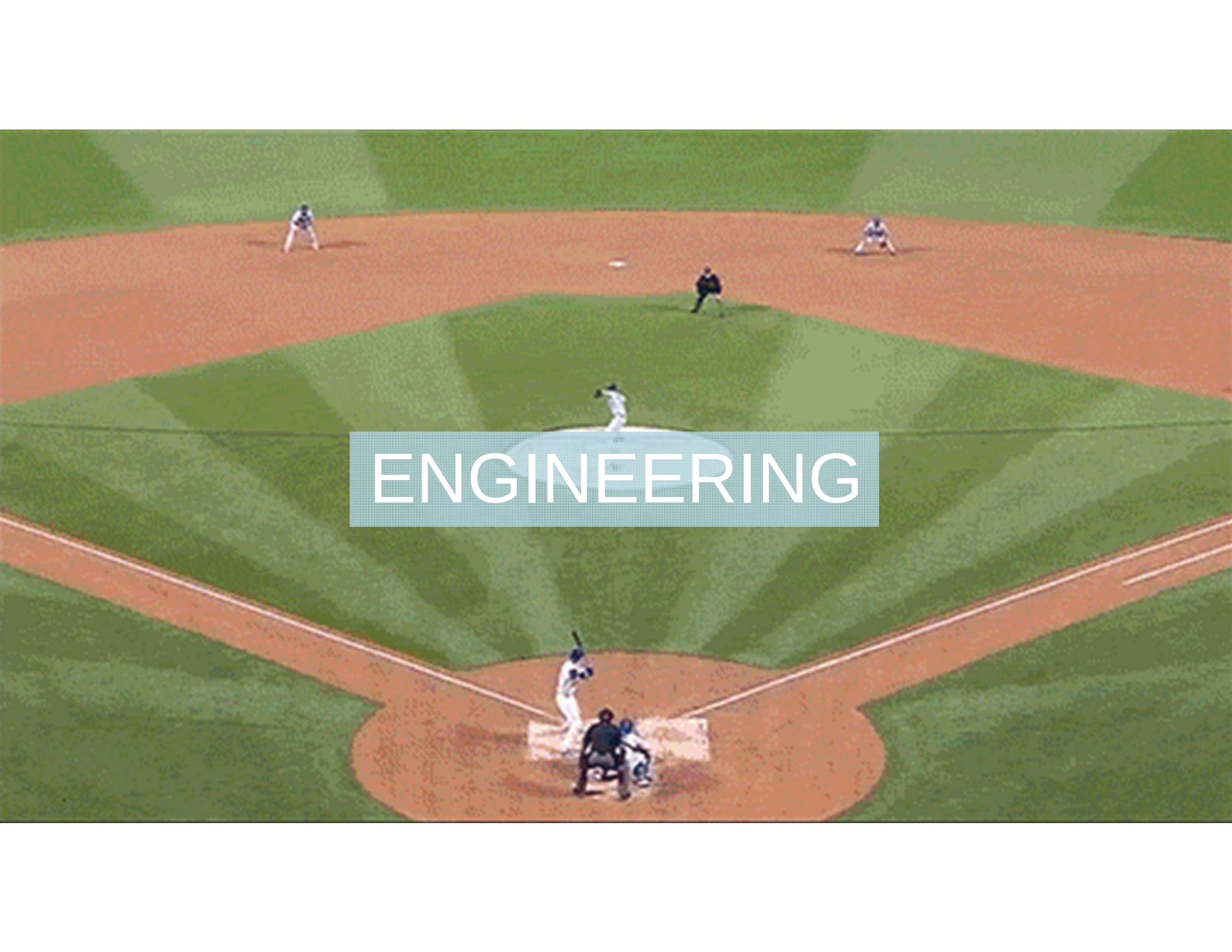


A person wearing a VR headset is shown in the background, looking towards the right. In the foreground, a custom-built robotic hand is visible, constructed from black plastic and metal components. The hand has yellow wires attached to its fingers and a blue wire at the wrist. The background is blurred, showing other people in a workshop or lab setting.

SEED PROJECTS

A person with glasses is looking at a tablet that displays a grid of various images, including landscapes and abstract patterns. The tablet is resting on a desk. In the background, there are some papers, a yellow bag, and a laptop. The word "PROTOTYPING" is overlaid in a teal box with white text.

PROTOTYPING

A high-angle, wide shot of a baseball field during a game. The pitcher is on the mound, and the batter is at home plate. The field is green with brown dirt base paths. The word "ENGINEERING" is overlaid in a blue box in the center.

ENGINEERING

USER EXPERIENCE

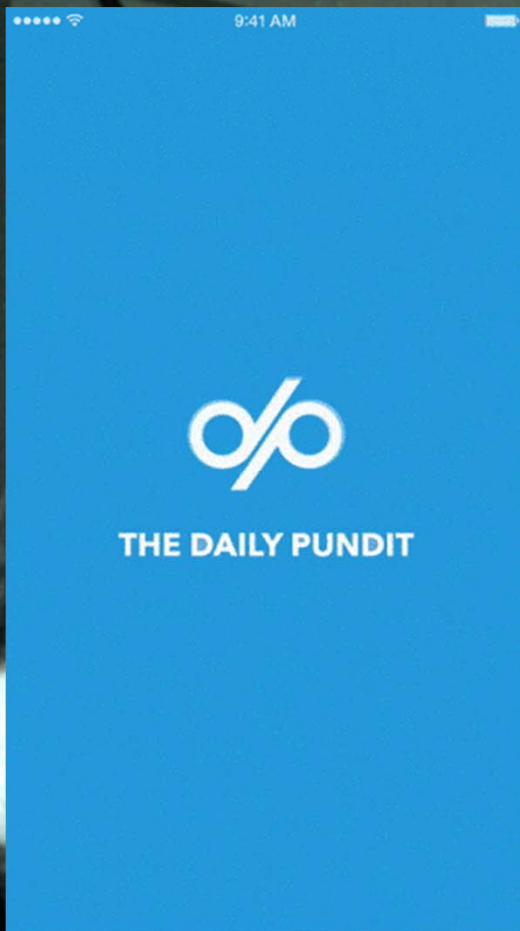


A group of people are working in a modern office environment. They are seated at a long wooden table, using various devices including laptops and tablets. The office has large windows in the background, and an 'EXIT' sign is visible on the wall. The overall atmosphere is professional and collaborative.

SOFTWARE TOOLS

A woman with short brown hair and glasses, wearing a green scarf and a blue long-sleeved shirt, is standing in a grocery store. She is holding a smartphone that is mounted on the handle of a shopping cart. The cart is filled with various items, including a large cardboard box labeled 'ERO' and a blue ironing board. The background shows shelves stocked with various products, including boxes of tissues and other household items. The text 'INTERACTION DESIGN' is overlaid in white capital letters on a semi-transparent blue rectangular background.

INTERACTION DESIGN



NYC MEDIA LAB



HOME
ABOUT
PROGRAM
APPLY
EVENTS
NEWS
TERMS

COMBINE

EDIA MASH
ne 9th, 2016

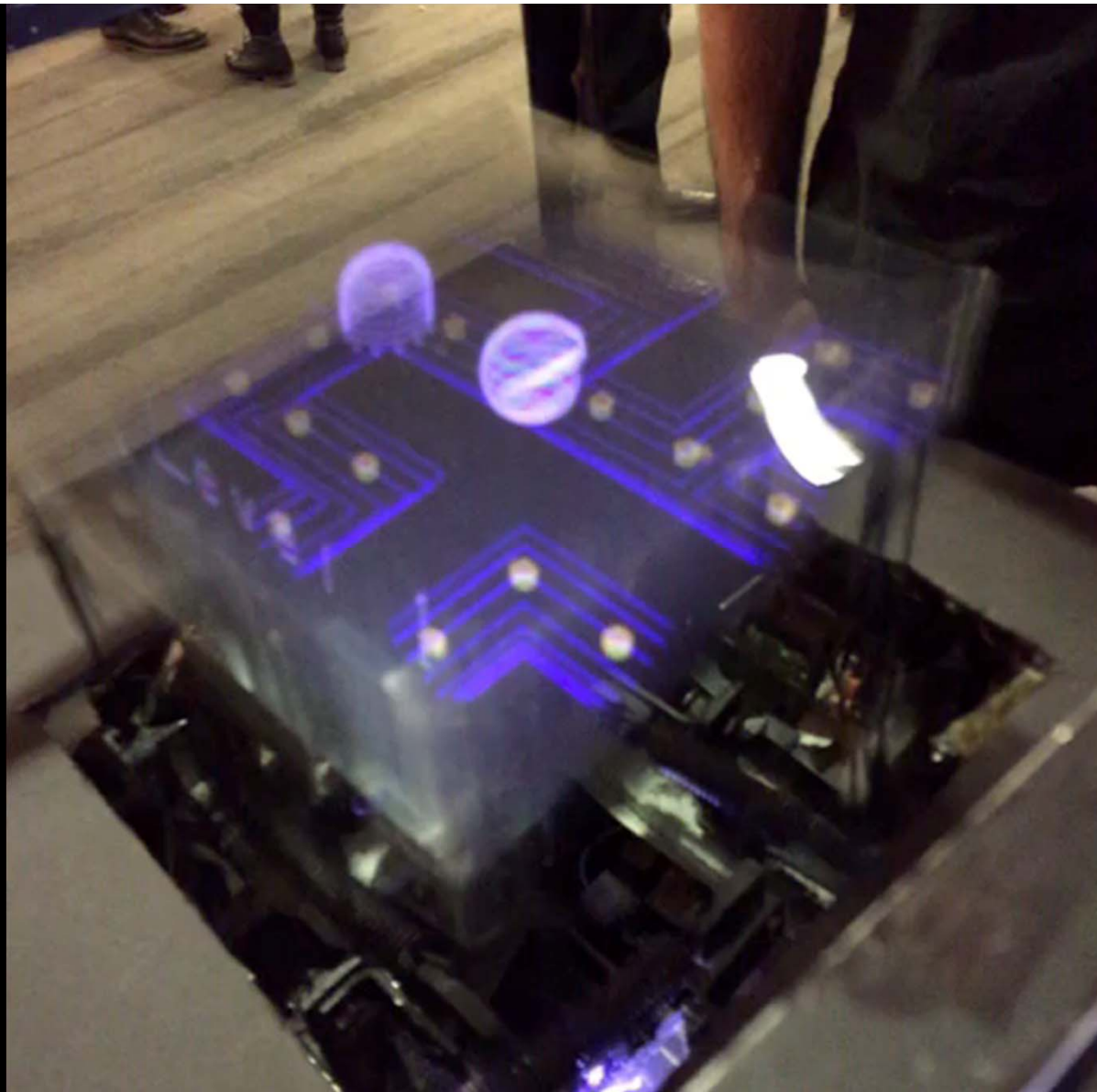


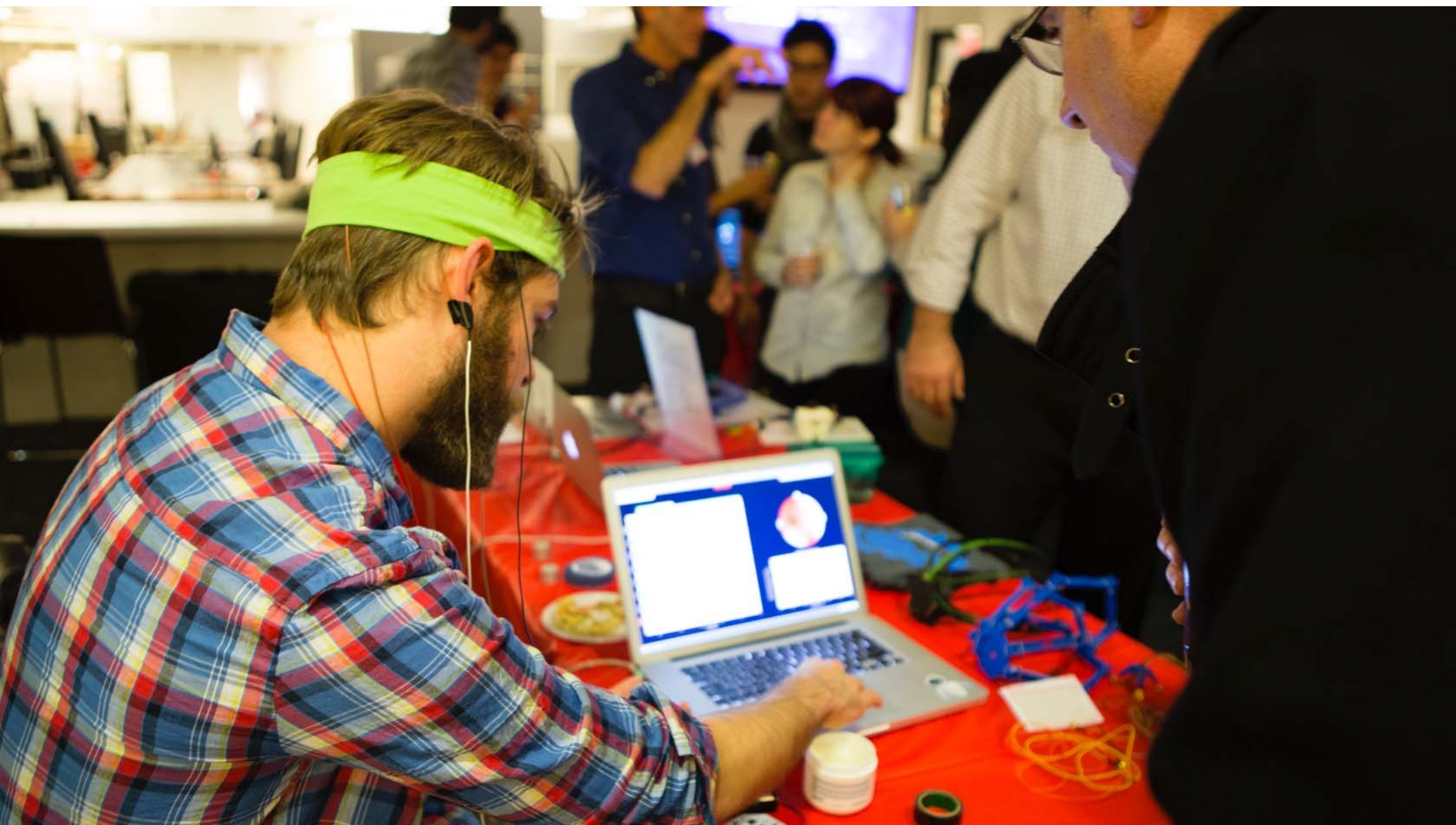
The background of the slide is a photograph of a person's hands using a laptop. The laptop screen displays a colorful, abstract image that resembles a circuit board or a digital art piece with various colors like green, blue, and red. The person's hands are visible on the left side of the frame, and the laptop keyboard is partially visible at the bottom. The overall image has a slightly blurred, artistic quality.

NYC MEDIA LAB 16

SEPTEMBER 22, 2016

COLUMBIA UNIVERSITY

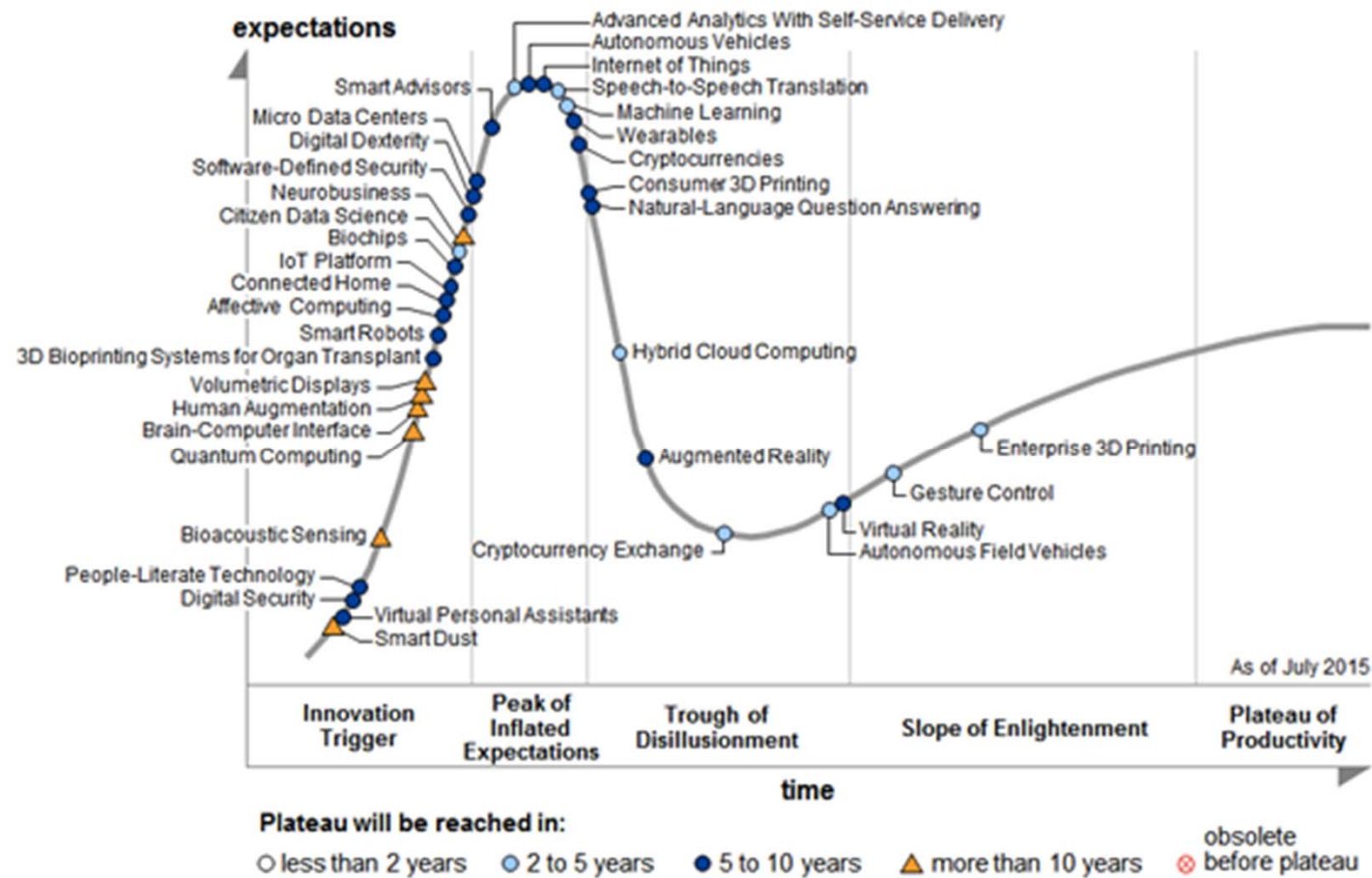








EXPLORING FUTURE REALITY



“Why would anyone ever want to use this or do that? That’s silly.”



THE OVERLAND FIFTY EXPRESS.—(Photographed at Santa Fe, New Mexico, from a Picture by George M. Goodwin.)

Thanks to Francesco Marconi, Associated Press

NYC MEDIA LAB





A head-mounted three dimensional display*

by IVAN E. SUTHERLAND**

*The University of Utah
Salt Lake City, Utah*

Fall Joint Computer Conference, 1968

INTRODUCTION

The fundamental idea behind the three-dimensional display is to present the user with a perspective image which changes as he moves. The retinal image of the real objects which we see is, after all, only two-dimensional. Thus if we can place suitable two-dimensional images on the observer's retinas, we can create the illusion that he is seeing a three-dimensional object. Although stereo presentation is important to the three-dimensional illusion, it is less important than the change that takes place in the image when the observer moves his head. The image presented by the three-dimensional display must change in exactly the way that the image of a real object would change for similar motions of the user's head. Psychologists have long known that moving perspective images appear strikingly three-dimensional even without stereo presentation; the three-dimensional display described in this paper depends heavily on this "kinetic depth effect."¹

In this project we are not making any effort to measure rotation of the eyeball. Because it is very difficult to measure eye rotation, we are fortunate that the perspective picture presented need not be changed as the user moves his eyes to concentrate on whatever part of the picture he chooses. The perspective picture presented need only be changed when he moves his head. In fact, we measure only the position and orientation of the optical system fastened to the user's head. Because the op-

the user's point of view, the position and orientation of the optical system define which perspective view is appropriate.

Our objective in this project has been to surround the user with displayed three-dimensional information. Because we use a homogeneous coordinate representation,^{2,3} we can display objects which appear to be close to the user or which appear to be infinitely far away. We can display objects beside the user or behind him which will become visible to him if he turns around. The user is able to move his head three feet off axis in any direction to get a better view of nearby objects. He can turn completely around and can tilt his head up or down thirty or forty degrees. The objects displayed appear to hang in the space all around the user.

The desire to surround a user with information has forced us to solve the "windowing" problem. The "clipping divider" hardware we have built eliminates those portions of lines behind the observer or outside of his field of view. It also performs the division necessary to obtain a true perspective view. The clipping divider can perform the clipping computations for any line in about 10 microseconds, or about as fast as a modern high-performance display can paint lines on a CRT. The clipping divider is described in detail in a separate paper⁴ in this issue. Because the clipping divider permits dynamic perspective display of three-dimensional drawings and arbitrary magnification of two-dimensional drawings, we feel that it is the most significant



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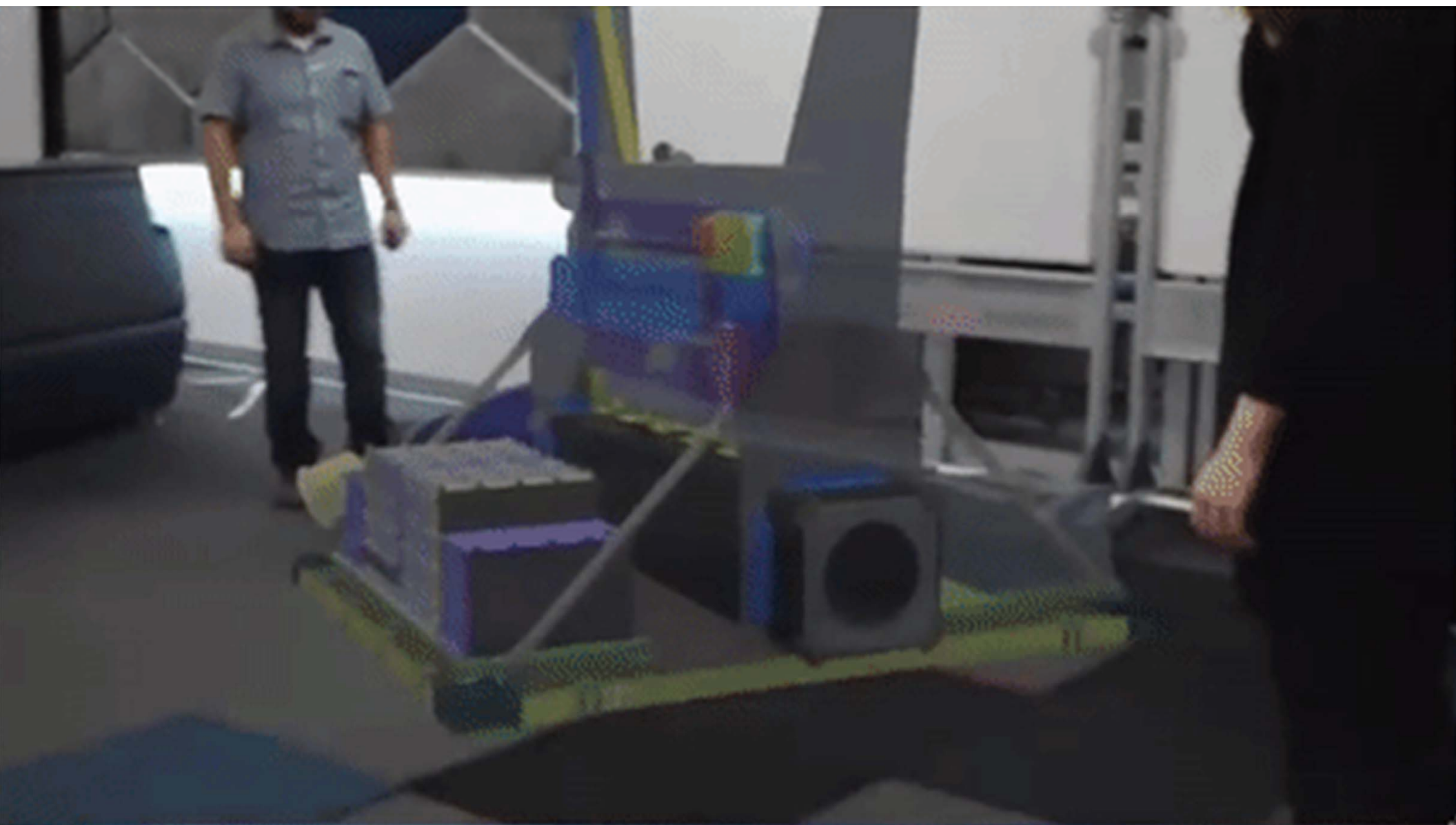
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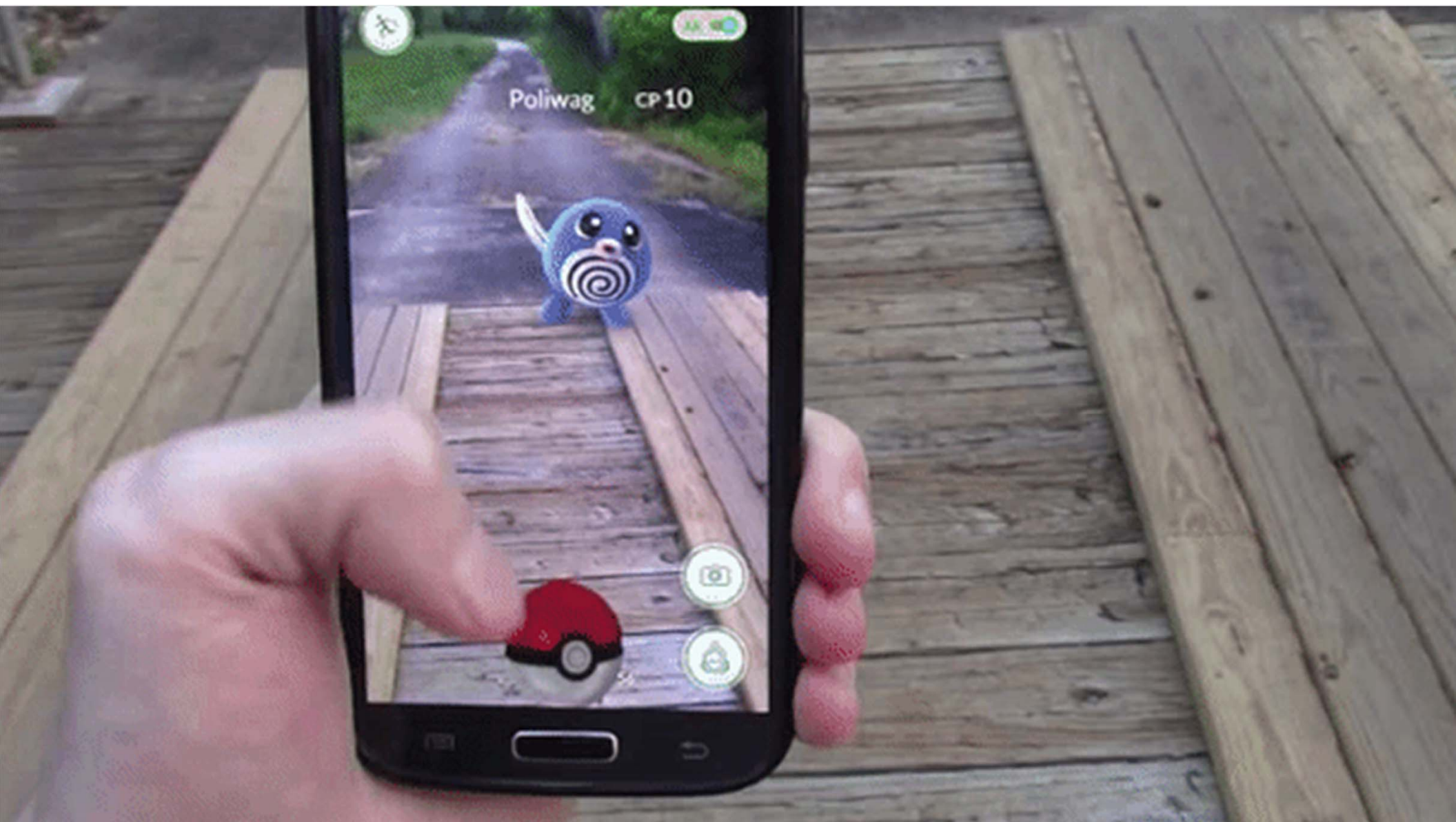




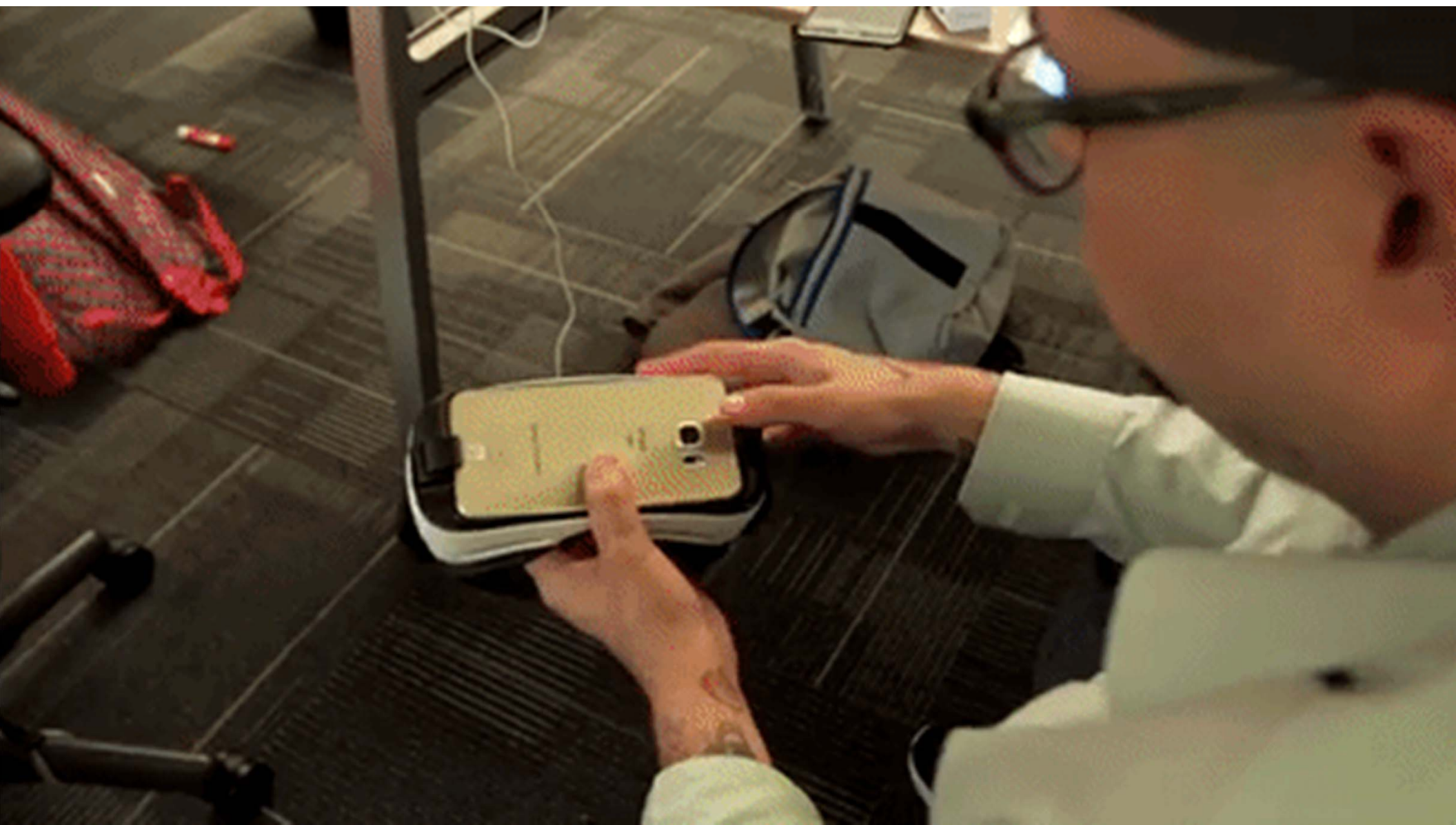
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THE DISPLACED



What will really drive the consumer VR explosion?



Today's phones:

- Inertial measurement unit
- Graphics processing unit
- Small weight/form factor
- High pixel resolution

By 2018:

- Low latency IMU integration
- Inside-out ground truth tracking
- 120 frames per second
- Higher pixel density
- Faster GPU

EQUITY RESEARCH | January 13, 2016

Goldman Sachs

Virtual and augmented reality have the potential to become the next big computing platform. All around us are examples of where VR (which immerses the user in a virtual world) and AR (which overlays digital information onto the physical world) can reshape existing ways of doing things – from buying a new home to interacting with a doctor or watching a concert. In the first of a new *Profiles in Innovation* series, we examine what VR/AR could become, the evolving use cases and the markets that could be created and disrupted.

Heather Bellini, CFA
(212) 357-7710
heather.bellini@gs.com
Goldman Sachs & Co.

Wei Chen
+886(2)2730-4185
wei.chen@gs.com
Goldman Sachs (Asia) LLC, Taipei Branch

Masaru Sugiyama
+81(3)6437-4891
masaru.sugiyama@gs.com
Goldman Sachs Japan Co., Ltd.

Marcus Shin
+82(2)3788-1154
marcus.shin@gs.com
Goldman Sachs (Asia) LLC, Seoul Branch

Shateel Alam
(212) 902-6785
shateel.alam@gs.com
Goldman Sachs & Co.

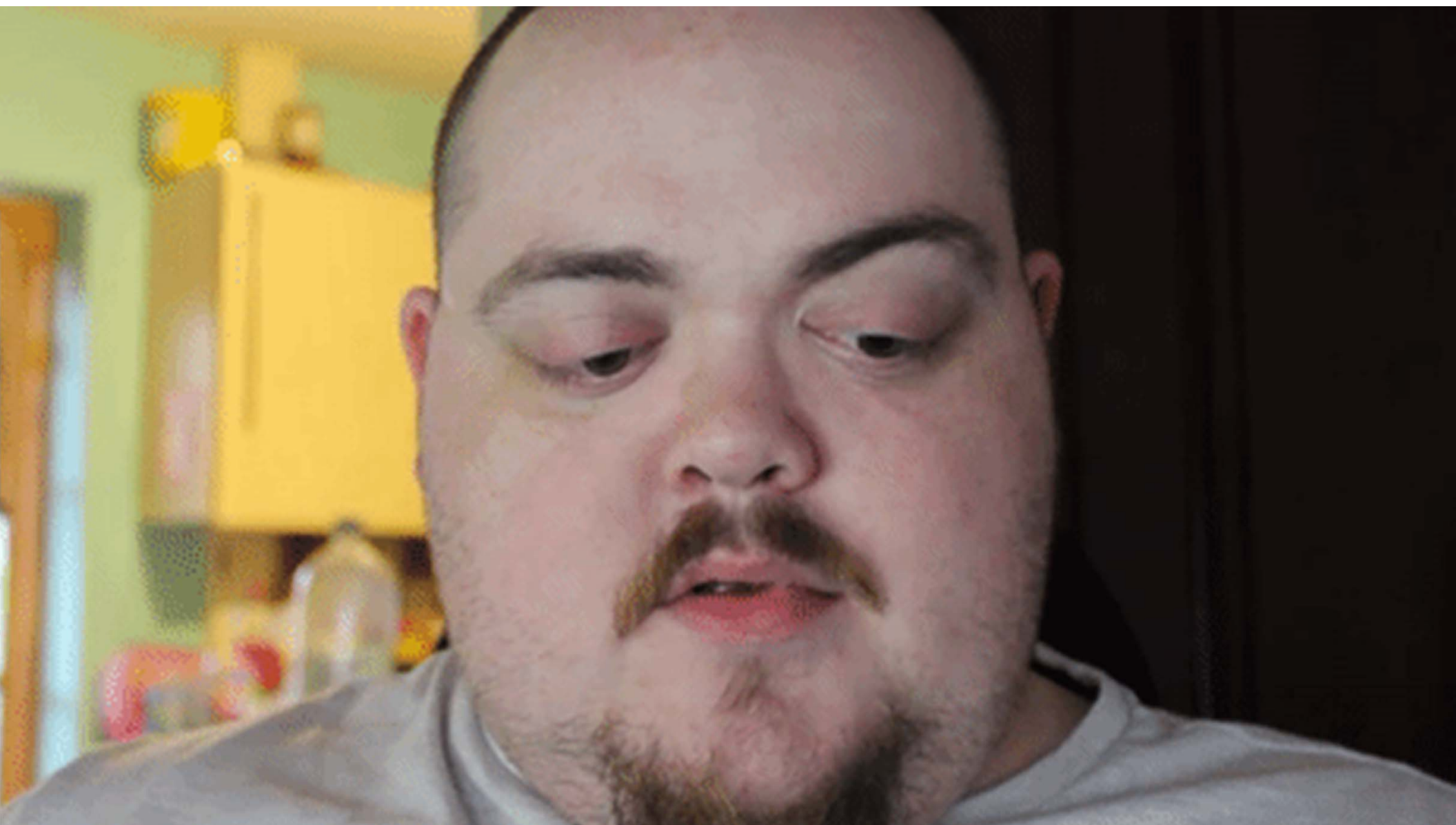
Daiki Takayama
+81(3)6437-9870
daiki.takayama@gs.com
Goldman Sachs Japan Co., Ltd.

PROFILES IN INNOVATION
Virtual & Augmented Reality
Understanding the race for the next computing platform

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The Goldman Sachs Group, Inc.

- \$3.5 billion in venture capital
- \$35 billion software market
- Numerous markets disrupted



Videogames	\$11.6 Billion
Live events	\$4.1 Billion
Video entertainment	\$3.2 Billion
Real Estate	\$2.6 Billion
Retail	\$1.6 Billion
Education	\$0.7 Billion
Healthcare	\$5.1 Billion
Engineering	\$4.7 Billion
Military	\$1.4 Billion

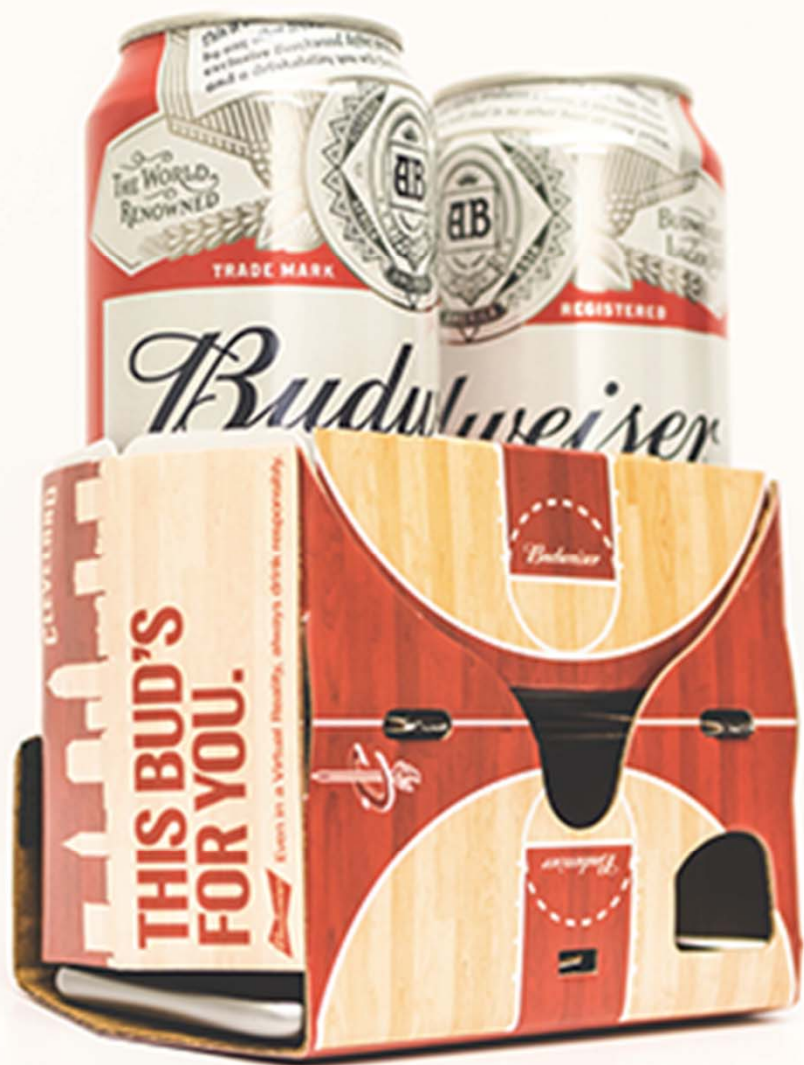
What should media companies do?

Don't miss out.

Feed the geek	Work with Universities	Partner with device makers	Invest in the ecosystem	Build dedicated units
\$	\$\$	\$\$	\$\$\$	\$\$\$
WSJ, Bloomberg, The Economist	Viacom, Verizon	Associated Press, Vice, New York Times	Comcast, Verizon, Time Warner, Disney	Discovery
Cultivate internal curiosity	Harness the enthusiasm on campuses	Help create demonstrations for Vive, Oculus, Cardboard	Invest in studios, middleware, hardware startups	Take a 'strategic leap' and start a business

Different levels of commitment.

Advertising!





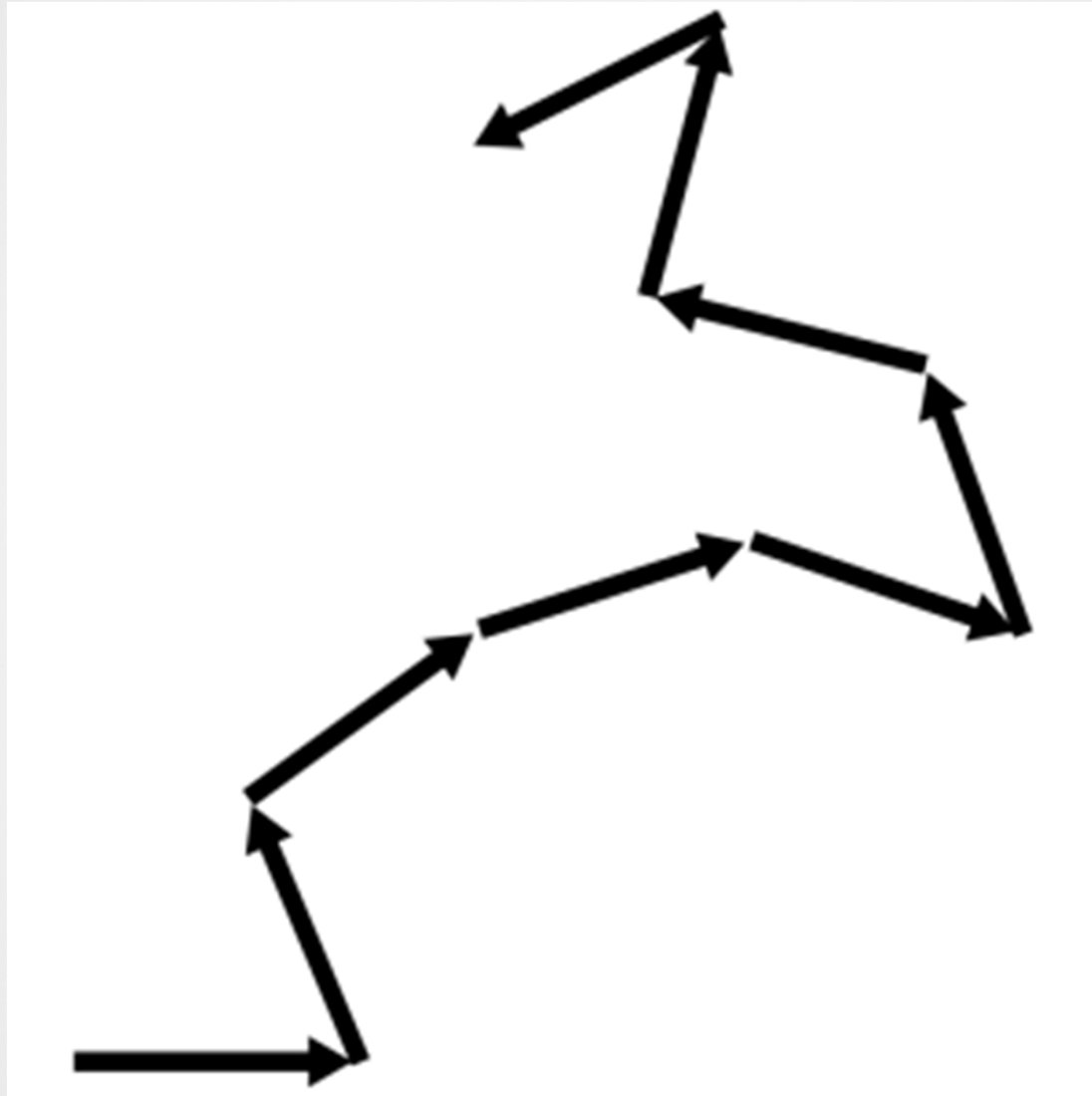




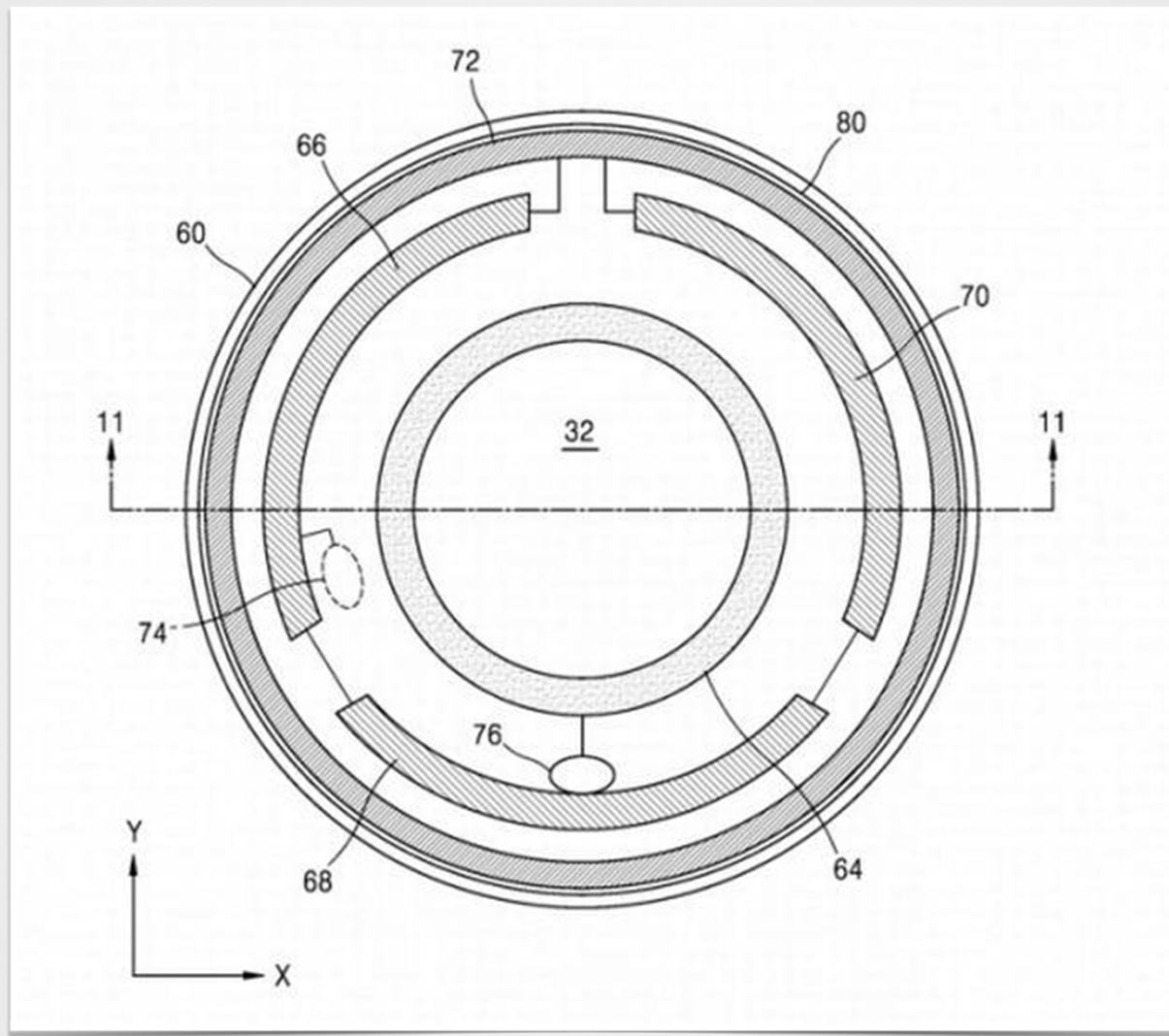


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Hope or hype?





Thank you!

JUSTIN.HENDRIX@NYCMEDIALAB.ORG
@JUSTINHENDRIX

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