



October 22, 2019

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

RE: **Ex Parte Presentation**: ET No. 18-295, *Unlicensed Use of the 6 GHz Band*; GN No. 17-183, *Expanding Flexible Use of Mid-Band Spectrum Between 3.7 GHz and 24 GHz*

Dear Ms. Dortch:

On October 18, 2019, the undersigned, Monica Desai, and Thomas Navin of Facebook, Inc.'s Global Connectivity and Access Policy group, in addition to the following members of Facebook's AR/VR Hardware group Rafael Camargo, Vice President, and Bruno Cendón Martín, Head of Wireless, held four meetings to discuss the attached presentation of Facebook's vision for an augmented and virtual reality (AR/VR) technology and hardware. The Facebook representatives met with (1) Chairman Ajit Pai and Aaron Goldberger (Legal Advisor to Chairman Pai); (2) Commissioner Brendan Carr and Will Adams (Legal Advisor to Commissioner Carr); (3) Commissioner Michael O'Rielly; and (4) Umair Javed (Legal Advisor to Commissioner Jessica Rosenworcel).

In addition, in these meetings, Facebook representatives reiterated points made in its comments filed in the above-referenced proceedings.¹ Specifically, access to unlicensed spectrum within the 6 GHz band will be critically important to Facebook's future innovations in AR/VR. The Commission should permit very low power devices (14 dBm) including portable devices throughout the 6 GHz band both indoors and outdoors. This very low power level is sufficiently low, combined with factors such as attenuation loss and propagation conditions, to negate any real-world risk of harmful interference to incumbents.

Respectfully submitted by:

/s/ Alan Norman

¹ See Comments of Facebook, Inc. ET Docket No. 18-295, GN Docket No. 17-183 (filed February 15, 2019).



Alan Norman
Facebook, Inc.
1 Hacker Way
Menlo Park, CA 94025

cc: Chairman Ajit Pai
Aaron Goldberger
Umair Javed
Commissioner Michael O'Rielly
Commissioner Brendan Carr
Will Adams



Facebook Augmented & Virtual Reality

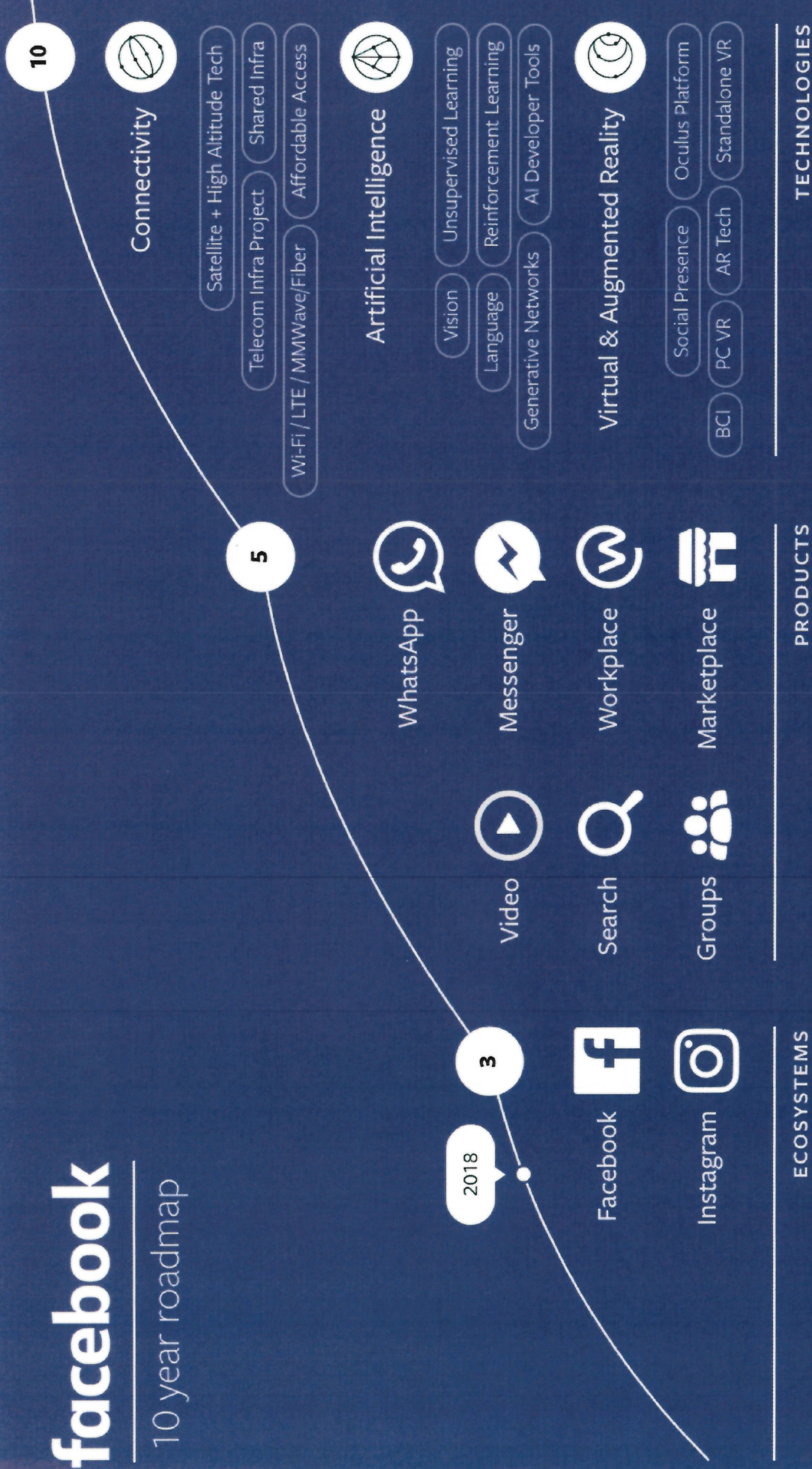
AR/VR Vision

Facebook AR/VR Vision

Confidential

facebook

10 year roadmap



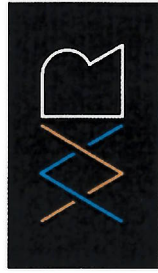
THIS JOURNEY
1% FINISHED

1 Billion

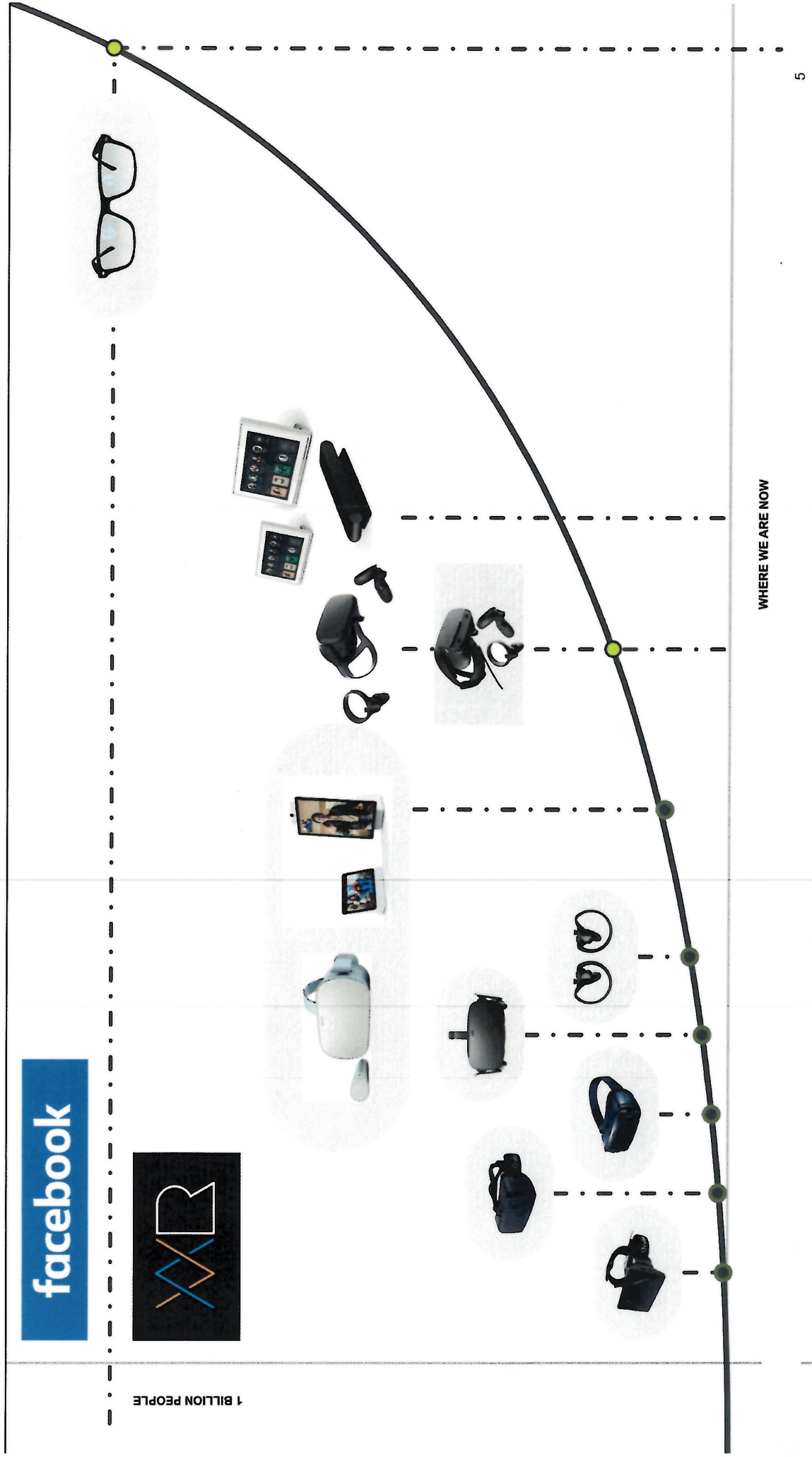
People in AR/VR

WHERE WE ARE NOW

1 BILLION PEOPLE



facebook



Portal

Confidential

Social Presence

The sense of being with others anytime anywhere



Portal & Portal+

4 Mic Array

12MP Camera
140 Field of view

15.6" 1080p IPS display
(1920 x 1080) for portrait
& landscape.

20w 1x 4" Woofer
2 Tweeters

The image shows the Facebook Portal+ device, a white tablet-like device with a large screen. The screen displays a woman in a green shirt sitting at a table with various items. The device has a small camera lens at the top and a speaker grille at the bottom.

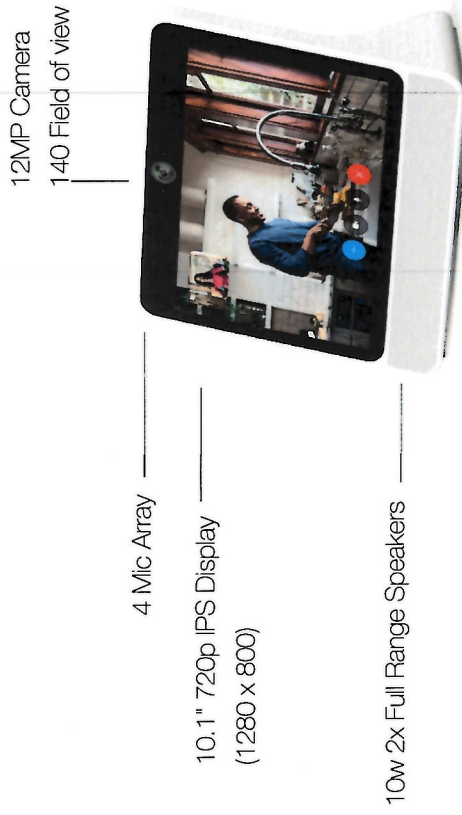
portal+
from facebook

12MP Camera
140 Field of view

4 Mic Array

10.1" 720p IPS Display
(1280 x 800)

10w 2x Full Range Speakers

The image shows the Facebook Portal device, a white tablet-like device with a large screen. The screen displays a man in a blue shirt sitting at a table with various items. The device has a small camera lens at the top and a speaker grille at the bottom.

portal
from facebook



Quest

Confidential

Oculus Quest



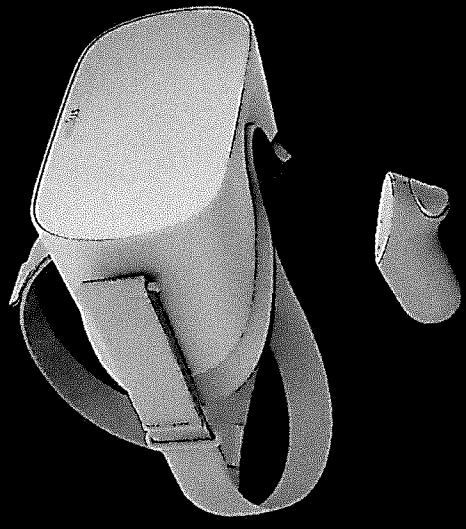




Oculus Rift and
Rift S



Oculus Quest



Oculus Go

Facebook's new VR headset is the best thing I've tried this year.

But the dream of VR being a magic set of goggles you can use anywhere has become real. The Oculus Quest is just about as good as most VR, but it's now wireless and self-contained, and costs \$400. -Scott Stein, CNET

The Oculus Quest is virtual reality's next big leap forward.

The Oculus Quest is the most innovative virtual reality headset since the arrival of the original Oculus Rift and HTC Vive.

-Ben Kuchera, Polygon

Polygon

Mashable

Oculus Quest is the real deal.

Oculus Quest review: A new milestone for VR

Oculus Quest shattered all my previous feelings about VR. With no cables and enough power to run games at Rift-like fidelity, Facebook's third VR headset really delivers on a virtual reality experience like no other headset before it. -Raymond Wong, Mashable

Oculus Quest Review: The Ultimate VR Headset Is Here

tom's guide

Oculus Quest Review: Finally, Easy, Fun VR For The Masses.

I can safely say that the Quest is the first virtual reality headset that feels genuinely like a pick-up-and-play experience while still offering enough fidelity to not make me feel like I'm playing smartphone games. -Brian Crecente, Variety

The new stand-alone virtual-reality headset lets you roam without wires. This is the VR you've been waiting for.

WIRED

RATE 9/10

Haselton



At \$399, it's still expensive for most people, who don't yet know much about VR. But it's proof that Facebook is on the way to making a mainstream product that can appeal to millions of people in a way most companies can't. -Todd

9.5

IGN

The Oculus Quest Is The Most Impressive Consumer Gadget In Years.

Forbes

AR

Confidential

“

We're making the camera the first
augmented reality platform

MARK ZUCKERBERG, F8 2017



An end-to-end platform for
creating, distributing and
experiencing
augmented reality

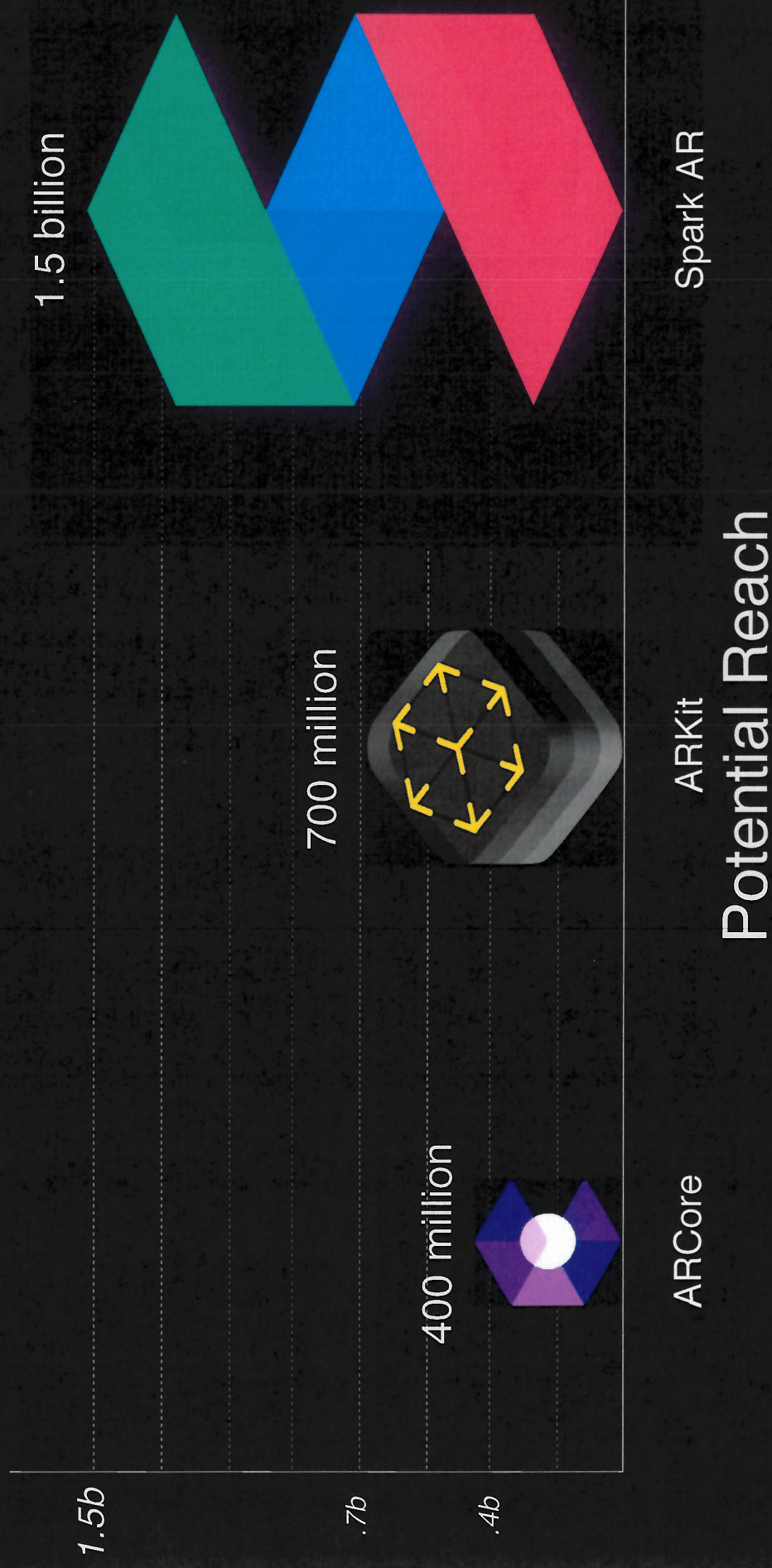
Spark Platform Growth

400 MILLION

PEOPLE USING SPARK AR EXPERIENCES
EVERY MONTH

Over 1 Billion people have tried Spark AR in the last year

Spark AR vs. ARKit and ARCore



Higher Fidelity Rendering



Advanced Tracking

