

*This is an excerpt from an event on February 23, 2021. Please refer to the forward looking statements disclaimer provided at the beginning of the event read by Betsy Frank.*

## **BOBBY MURPHY, CO-FOUNDER AND CHIEF TECHNOLOGY OFFICER**

Thanks Evan. It's great to be with you all today. I'm Bobby and I'm the co-founder and Chief Technology Officer at Snap. I'd like to expand on our vision for the camera and for augmented reality.

Let's start with the camera.

As powerful and portable as modern computing is, we are constrained in how we engage with it - hunched over, with our fingers tapping and swiping on small screens. Advances in technology will change this, overlaying digital experiences directly in our field of view and empowering us to engage with computing the same way we do as humans, with our heads up, looking out at the world in front of us. Over time, the gap will close between what we are able to see through a screen and what we are able to imagine ourselves and with others.

Our ability as humans to transmit ideas will improve dramatically, with information and entertainment directly in our line of sight.

Our goal as a company is to accelerate the path to this future, by building on what is possible today.

This requires that we reimagine the role of the camera. Historically, cameras were used for documenting moments - capturing a scene exactly as it is, for the purpose of viewing it later in time. Now, through developments in hardware and software, we can do a lot more than just capture a scene - we can understand, interpret, edit, and augment a scene - and not just for later, we are increasingly able to do all of this in real time.

This is the camera that will enable the next generation of computing, and that's why we are a camera company.

So how do we get to this future?

Well it starts with the Snapchat camera. It is the first thing you see when you open Snapchat and it is used by 265 million people every day to create an average of 5 billion Snaps.

This engagement, which is rooted in visual communication, is the perfect foundation from which we can explore new experiences in the camera. This began with post-capture features like captions-on-images and geofilters, but quickly led to bringing augmented reality into the live camera. We call

these lenses. And now more than 200 million people engage with lenses on Snapchat each day. Let's take a look at how our community is using it.

As you can see, the camera is transforming how we experience the world around us.

Our Augmented Reality platform is driven by three major efforts:

- 1) Innovating in technology to unlock new capabilities in the camera
- 2) Exploring creatively to design exciting and informative experiences
- 3) Supporting a growing community of AR consumers and creators

We're investing heavily in each of these, with incredibly talented technical and creative teams in which scientists, engineers, designers, and product and community thinkers are working together to invent the future.

When combined with the frequency of engagement we see from Snapchatters with our camera, we have a unique ability to very rapidly develop, design, and deploy AR experiences at tremendous scale. We are able to learn what resonates in AR at what I believe is an unprecedented rate.

Many of the lenses we might consider silly or playful - a vomiting rainbow, a dancing hot dog, or a whale flying through the sky - are really a chance for us to deploy cutting edge tracking or segmentation technology to hundreds of millions of people from which we can immediately learn how to refine our strategy to advance the field of AR.

So, let's walk through some of the ways we are developing augmented reality together with our community.

Some of our most recognizable lenses have been what we call face lenses. These are lenses based on facial tracking technology that understands the contours of a face and movements like opening the mouth or raising eyebrows. Over the years we have improved the accuracy and robustness of facial tracking to allow AR to stick on the face from wider angles and through faster facial movement.

More recently, we've deployed state of the art neural rendering, using generative machine learning, to completely transform faces. This is the technology behind our popular gender and age transformation lenses, our anime lens, our cartoon lens and others. These have become incredible viral hits, driving significant engagement around the world.

Landmarkers, which we released a couple years ago, use public snaps and other images and videos captured in a location to reconstruct physical spaces in 3D - allowing Snapchatters to instantly see

augmented reality experiences that are attached to the world with pinpoint precision, like this dragon from Game of Thrones landing on the Flatiron building in New York.

We took this further with Local Lenses, expanding the scale of Landmarkers and combining them with the same infrastructure that powers Snap Games to enable real-time, shared AR. We showcase this in City Painter - a lens in which Snapchatters and their friends can virtually paint the buildings on London's Carnaby Street.

With Scan, Snapchatters can search lenses based on what is recognized in the camera's field of view. This work started years ago with Snapcodes - a convenient way to use our camera to add a friend or find content - and is quickly growing into the ability to search any visual input to find the best, most relevant AR experiences. Through integrations with Photomath, PlantSnap, and Vivino, the Snapchat camera can solve math equations, identify plants, and look up wine reviews.

Each of these efforts represent the early beginnings of much deeper, more powerful technology. Neural rendering will lead to even more realistic visual transformation, enabling real time high quality special effects. Landmarkers and Local Lenses are the precursor to large-scale, robust 3D mapping which will someday allow anyone, anywhere, to engage with AR connected to any physical space. And Scan is the starting point to bring our vast, growing library of AR experiences not to your fingertips, but immediately into your line of sight.

We are not alone in our excitement for the future of AR. And it has been especially motivating to see others - from individual hobbyists to many of the biggest brands - play an increasingly central role in developing this future.

Three years ago, we began the journey to expand AR on Snapchat into a platform.

This started with the public release of Lens Studio. Lens Studio is the same tool that our own internal teams use to create and distribute lenses to the entire Snapchat community and with it, anyone in the world can do the same.

It is remarkably easy to use, with simple templates to get started, yet incredibly powerful, enabling the development of rich, complex AR experiences. From this simple tool, AR can be deployed seamlessly to hundreds of millions of people around the world, across thousands of unique device types on Android and iOS.

The response to Lens Studio has been truly inspiring. There are now over 150,000 creators who have made over 1.5 million lenses. Best of all, we continue to be amazed by the creative ideas generated

by our community, which is a clear indication that long term success in AR requires a vibrant ecosystem.

I mentioned earlier that progress in AR depends also on technical advances – advances that enable cameras to understand and change visual input, like recognize a product, identify the edges of a building, or transform surfaces.

These technical advances are driven by machine learning, and as invested as we are in building the highest impact capabilities for AR, this is a huge field across the industry. Individual scientists and engineers, research labs, small and large companies are all every day inventing new ways for computers to interact with the world.

So this past year we released SnapML. This is a first of its kind feature for Lens Studio – empowering creators to bring new ML capabilities into their lenses. We’re tapping into the innovative horsepower of the entire field and already we’ve seen significant growth in the capabilities of our AR platform.

Through SnapML, we integrated partner capabilities like foot tracking, powering compelling virtual try-on experiences like this Gucci shoe lens.

And we’ve seen sophisticated new experiences from creators: James Hurlbut trained an ML model to detect surfboards, developing a lens to rate on key qualities like “shredability.”

And Atit Kharel trained a model to identify and translate 1,000 different objects to Hindi. He’s built several translation lenses now to help Snapchatters learn new languages.

Last year, we announced CameraKit. And with it, we’re expanding the footprint of our platform even further to allow Lens Studio to power AR in applications outside of Snapchat. We’re working with a handful of partners now, with general availability coming soon.

We’re extremely optimistic about all the growing momentum in AR for smartphones. It’s a starting point to imagine AR beyond the phone. To fully realize this idea of computing overlaid directly onto the world will require a new device: a completely new kind of camera that is capable of rendering digital content right in front of us, with the power to instantly and continuously understand the world as our own eyes do, and all in a light, wearable form factor.

Spectacles is our investment in this future. It’s an opportunity to design and develop a device specifically for Augmented Reality.

We're doing this incrementally, by building and releasing increasingly more capable devices that are connected to the Snap platform. Over time, the same lenses that we're starting to see on today's smartphones - lenses that can help you shop new outfits, see your favorite characters come to life, or learn new things about the world - will be able to be experienced in full, immersive 3D.

I hope this is a helpful glimpse into a few of the many things we are doing as a company to push towards this future of the camera. And, I hope this gives you a sense of how all our investments fit together.

Visual communication and the frequency of engagement with the Snapchat camera, allow us to rapidly explore new experiences in the camera. We have sustained fast, organic adoption of augmented reality through lenses, and we are innovating technically and creatively, leveraging the insights from this scale of adoption. From this we are supporting a growing ecosystem, with new and existing businesses finding more and more value in AR.

And through all of this, our pace of execution and our pace of learning continue to accelerate.

Augmented reality represents a shift in our ability as humans to transmit ideas. It allows us to render digital experiences directly into physical space and to use the camera as an input to access information and content far faster than keyboards can ever allow.

We have already seen remarkable momentum across the Snap ecosystem. In the coming years we will further develop our platform, growing in our capacity to provide tools, services, and distribution to accelerate broad adoption of AR, on and off Snapchat.

Most importantly, our team is incredible. It is made up of some of the most brilliant and imaginative minds in the world, who are passionate about augmented reality and together with our community, inspire us to keep inventing.

Now I want to turn it over to Jacob to speak about the other services we offer in Snapchat, and how they connect to the camera. It was great to speak with you all. Thank you.