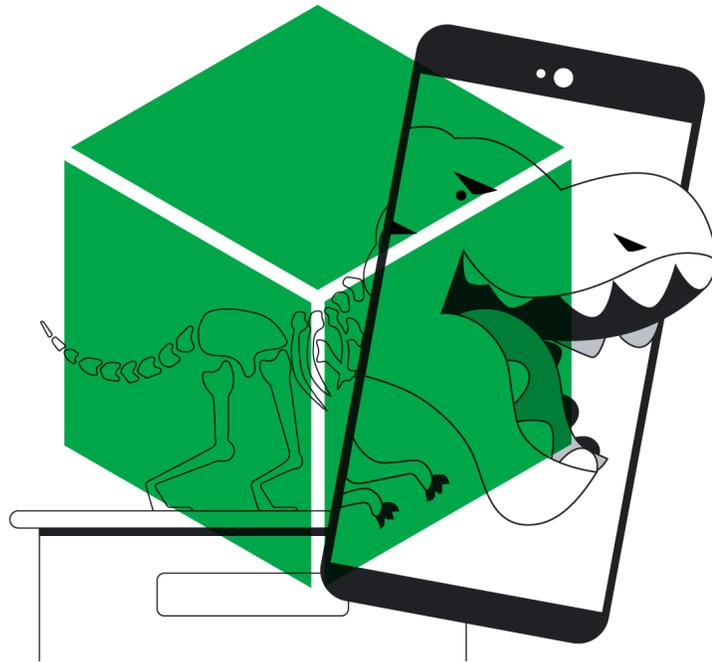# ARCore

The next big shift in mobile

Of all the amazing capabilities mobile technology has brought us, Augmented Reality (AR) has to be the most fun, changing the way people shop, learn, and chase animated critters. Momentum for this technology is quickly gaining traction with Google's platform, ARCore, supported on a wide variety of Android devices – a number that's growing significantly. And thanks to ARCore, creating these types of experiences is easier than ever. Consider the boundaries between real life and the digital world officially blurred.

But first, how ARCore works

ARCore is Google's platform for building and bettering Augmented Reality (AR) experiences, bringing information and content to life at the exact moment it's useful. It can trigger experiences from real-world images (like bringing a movie poster to life), or allow multiple users to interact with the same AR experience (great for education, gaming, creative expression, and more).

AR can be useful

- Reveal information about surroundings as you move.
- Measure surfaces or rooms with your phone's camera.
- Share how furniture might look with housemates.
- Instruct users with step-by-step overlays.
- Visualize renovations before you commit.

AR can be fun

- Create interactive games or experiences.
- Breathe life into textbooks or tours.
- Enable customization, changing colors or parts.
- Hide content in product packaging or posters.
- Bring dinosaurs back from extinction.

Creating for ARCore

While it's easy to see the benefits of ARCore, creating for it requires a whole new approach. The more technical knowledge you have, the better placed you'll be to make your project succeed. Here's some background to get you started:

ARCore uses three key capabilities to integrate content into the real world:

1. Motion tracking: Identify and track 'feature' points, determining position and orientation of the phone. This allows users to move around and view objects from all angles.
2. Environmental understanding: Detect the size and location of surfaces, enabling objects or other information to be positioned accurately.
3. Light estimation: Detect lighting conditions to ensure virtual objects are rendered accordingly, increasing the sense of realism.

ARCore has three key creative uses to bring content to life:

1. Provide more context. Add a layer to products, images, or environments, making information more accessible and relevant.
2. Deliver better utility. Make a brand or product more practical in how it relates to the real world.
3. Enhance user experience. Elevate everyday moments to make an impact, transforming ordinary interactions into something memorable and engaging.

The key to all of this is ensuring AR has a meaningful role, adding value for the user, not just tech for the sake of tech.

The five pillars when building for ARCore:

As a 3D medium, it's significantly different to traditional production. Here are a few things you'll need to work out in advance:

Understand the environment
Think about what the app is doing and how it will make use of the area it is intended to work in, understanding the user's environment and the surfaces available. For example, will they be experiencing ARCore in a kitchen, in store, or on a work site? The more your app integrates, the more magical it will feel. It's worth sketching out the surrounding environment, AR objects, and the user for scale.

Plan for movement
There is a big difference between building for table scale, room scale, or world scale. When creating ARCore experiences, the amount of movement required will need to be communicated upfront, setting users' expectations about the physical scale of the experience.
That said, it's completely okay to design beyond the bounds of the screen. Having objects that exist both on screen and beyond the phone's viewport can be delightful and feel more immersive. Plus, it encourages users to move their devices to get the full experience.

Onboard smoothly
Firstly, if your app has flows from 2D to AR, use the standard "View in AR" material icon. Understanding depth requires movement, so you will need to consider how you communicate and encourage a user to move their phone in an AR environment. Also, plan for how a user will interact with objects, deciding if users will be able to easily move AR objects after placement, or if they are a persistent part of the experience.

Natural object interactions
Often when users collide with an object it will disappear, making the AR experience feel broken. Instead, try a camera filter or some sort of special effect to help users understand when object collision is not an intended interaction. In addition, think about placement when handling objects. It's important to consider each step of the user journey, and that begins with surface feedback. Surface feedback reinforces to the user how ARCore understands their environment so they know what to expect.

Balance interface design
The phone is the user viewport, so don't obscure the view with interfaces. Only use screen-surface for controls with a high frequency, or controls that require fast access. For example, a camera shutter button meets both requirements.

Transitions from AR back to 2D should be initiated by the user only, otherwise they can be jarring. In fact, when possible, place your app's UI out in the world.

Finally, try to maintain finger sized touch targets on objects. It seems simple but think about what happens when an object moves away from you (like a ball or an animal). Being able to reconnect is important to keep the experience moving smoothly.

Creative Juice

Some thought starters to get you going:

- Could AR be used to better understand what the user is seeing?
- Can you add a layer of relevant information to products or environments?
- Can AR make a brand or product more practical in the real world?
- Could AR enhance the experience to make it more engaging or memorable?
- Can you use product packaging to kick-start the AR experience?
- What type of scale is your experience? Table size? Room size?
- How will you encourage users to move without instruction?
- Where will you place the interface?

Useful facts to support your creative idea

Google ARCore is available on over 250 devices.
Source: Google Internal data.

Augmented Reality is expected to acquire 1 billion users by 2020.
Source: Tractica 2018.

60% to 70% of consumers see clear benefits in using AR in their daily life and at work.
Source: 2016 ISACA survey.

Analysts at Research and Markets forecast the global use of Augmented Reality Marketing to grow at a CAGR of 30.79% during the period of 2017-2021.
Source: Research and Markets, Augmented Reality for Advertising, Sept 2017.