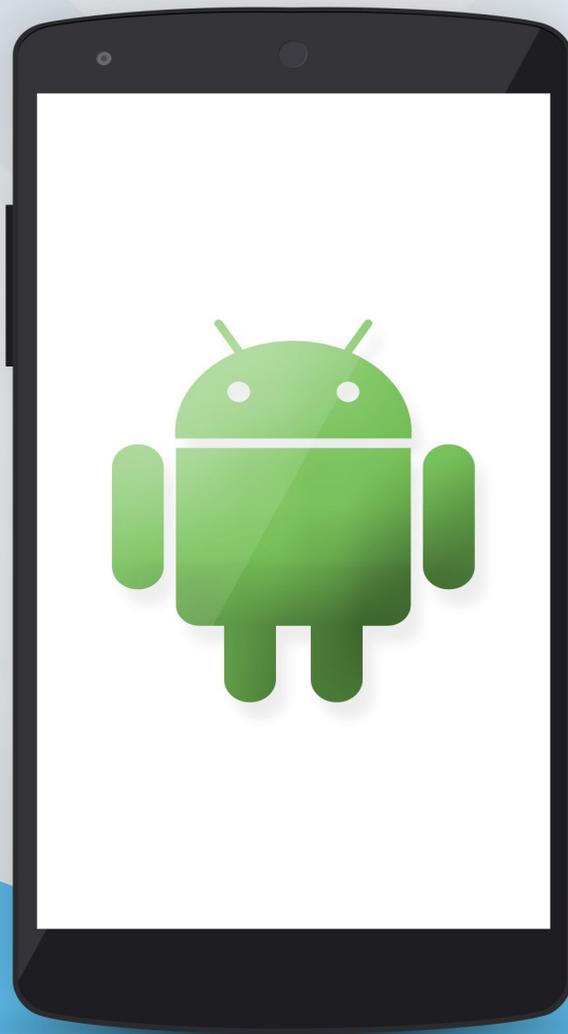


# A PRACTICAL GUIDE TO DESIGNING & DEVELOPING ANDROID APPS



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## Introduction

Once upon a time, Apple reigned supreme in the mobile device world. After all, Cupertino was responsible for pioneering the smartphone. The original iPhone stood the industry on its ear, and Apple led the market for a very long time. However, it no longer does.

While Windows and Blackberry might both have a declining market share, that's not true for Android. In fact, more and more consumers are choosing Google's platform for any number of reasons, from device affordability to the wide range of apps available for those devices. This offers a golden opportunity for companies interested in getting their apps in front of those customers who will never use an iOS device.

Of course, it also means that you need to know a great deal about designing and developing apps for the Android operating system(s). Within this book, we'll touch on some of the most important elements that go into Android app design and development.



## Branding

Let's start at the very beginning with one of the single most important considerations when it comes to app design – your brand. The app you develop must tie into your brand, and it must do so in a way that your customers and potential customers recognize.

Imagine if Nike's Nike+ running app was named something else – “The Running App” for instance. Would that change the fact that Nike was behind the app? No, it wouldn't, but it would diminish visibility and downloads simply because it wasn't obvious to consumers that the app belonged to Nike.

Google offers powerful tools to ensure that you're able to integrate your brand throughout the app in a number of different ways, including:

- ❖ Color
- ❖ Dimensionality
- ❖ Motion
- ❖ Graphic hierarchy

Material design allows you to focus on a very wide range of elements to ensure that your brand comes through loud and clear.

**Color:** Use colors that tie into your brand’s logo or frequently used colors. Create a custom color palette that blends with your typography, logo and content. This is particularly important for those creating a strong “color story” that ties in with your brand. Think of Facebook’s overall blue with a dash of white color scheme, or the rainbow hue of the Google logo.

**Typography:** The font, font color and font size used throughout your app are vital for branding purposes, and you can use a very wide range when building your app. You’ll find a wealth of different fonts available for designing an Android app, from Quantum Mechanics to Roboto, Entangled and Stationery to name just a few.

**Imagery:** Pay close attention to the images used in your app, how they tie into your brand’s persona, and how they display on different Android devices. You also need to pay attention to how the images, illustrations and other graphic elements in your app tie together to create the user experience.

**Logo:** Put your logo front and center, as this is the most important choice you’ll make when it comes to graphics. It immediately identifies who is behind the app, and creates a more intimate connection with your audience.



## Understanding Material Design

Google’s new material design is very interesting, and very powerful. It’s also different from what came before with previous design solutions for Android apps. Google’s stated goal with material design is to “Create a visual language that synthesizes classic principles of good design with the innovation and possibility of technology and science”.

Another goal was to “Develop a single, underlying system that allows for a unified experience across platforms and device sizes.

Mobile precepts are fundamental, but touch, voice, mouse and keyboard are all first-class input methods.”

From that, you can draw a number of different conclusions. First, material design is definitely centered on touch first, but it’s also more than capable of playing well with mouse inputs, or even voice inputs. Keyboards aren’t left out in the cold, either.

Material design focuses on three separate considerations – environment, material properties and elevation and shadows.

**Environment:** Google’s material design allows for app design in a three-dimensional environment, and they actually recommend that designers plan apps with x, y and z dimensions. The z axis runs from the user up, away from the device’s screen and is vital for creating layers in an app (up and down in the physical world). The y axis runs from the user toward the top of the device (forward and back in the physical world). The x axis runs from the left side of the device’s screen to the right (left and right in the physical world).

**Lights and Shadows:** Lights and shadows play a prominent role in material design. There are ambient lights that create soft

shadows, as well as key lights that create directional shadows. They can also be combined to create greater depth around an element in an app.

**Material Properties:** Material design features some specific behaviors and characteristics that cannot be changed. For instance, no element can be more than 1 dp thick. However, objects can have varying widths and heights. Another example is that all materials cast shadows, the only difference is where the light source is located and the type of light chosen.

Input cannot pass beyond the foreground material, and content behavior can be tied to the material, or it can be independent of the material. Finally, different material elements cannot pass through one another, and only one element can occupy a particular space at any one time, although overlaying elements is possible.

**Elevation and Shadows:** Google tried hard to give objects in material design similar characteristics to what they’d have in the real world. For instance, an object can have elevation and cast a shadow on the material behind, or around it. Elevation is measured by the z axis, and has a maximum of 1 dp in

thickness, and parent/child object pairs have elevations relative to each other. Objects can also have a resting elevation and a responsive elevation (when the user interacts with the object).

## Pixate, Form 1.3 and the Need for Prototyping Tools

You have a vision for your app. There are specific design elements that you want to include, as well as unique functionality. You envision users interacting with the design in different ways and want to provide the best possible experience. It's a long road, fraught with any number of potential pitfalls.

Imagine that your design team spends weeks building the concept for your app, fleshing it out in different ways. After a lot of time and effort, they're "done", and send the file on to your engineering team. However, things aren't all hunky-dory.

The engineering team goes through the file with a fine-toothed comb and find any number of troubles. They re-design and re-engineer the app, and then, another few weeks later, the app is sent on to the designers, but there are problems. Maybe the fonts are wrong, or are displayed incorrectly.

Maybe the images have reduced quality, or your logo and design elements are missing. Maybe the screen transitions are glitchy and slow. That means another round of changes and revisions. In some instances, this can go on and on, costing you time and money, and slowing app deployment.

Thankfully, there are plenty of prototyping tools available to help you create the ideal experience, the right design, and reliable functionality. Two of the most important ones for you to know are Form 1.3 (or just Form, if you're not counting versions), and Pixate.



### *Pixate*

When it comes to prototyping tools, one that should be in your toolbox is Pixate. It lets designers create fluid, high-end mobile app prototypes that work on either iOS or on Android. However, it's best for creating a complete prototype or for creating interaction choreography that feels real. It also allows

sharing among team members so that everyone involved can experience the app.

There have been some key changes with Pixate recently, so if it's been some time since you used it, there may be some pleasant surprises. First, Pixate is now free and is a part of Google. It also connects to Pixate cloud accounts for simpler, easier sharing across teams, departments or entire organizations.

You'll also find that all prototype creation is now carried out in Studio. Collaboration between team members is made possible using the cloud, as well. Studio also offers several new features, including animation duplication across layers, video support, canvas zoom and more.

### *Form*

Form is another prototyping tool, but it's designed to make it possible to create with material design on iOS devices. It's especially useful for creating prototypes right on an iOS device, allowing you to transform an Android only app into a cross-platform option for wider user acceptance.

Form has several key features, but it's best used by advanced designers hoping to create

new gestures and animations on devices. Like Pixate, there are some important new features being introduced here. For instance, material design patches allow designers to prototype with material design components, as well as touch ripples and other Android-specific elements.

It also lets you run designs natively at 60 FPS, without the need for web views. Documents can be opened and shared within the app, and there's no need to connect to a PC or laptop, and designers can pull in live data and prototype in new ways using the new Objective-C SDK.

## **Layout Principles**

Material design ushers in a lot of new features and capabilities for app designers. Many of those are found in the design elements. However, there's a great deal to know about material design layout principles, how they work, and how they should be used within an app.

First, Google decided that material design would be guided by print-based design elements. The search engine giant said the decision was made, "to create hierarchy, meaning, and focus that immerse the user in

the experience”. That means you’ll find things like grids, print-based space and layouts, print-based imagery uses, and a great deal more.

One of the most important takeaways here though is that material design layouts scale to fit the screen on any mobile device, from the smallest Android phone to the largest Android tablet.



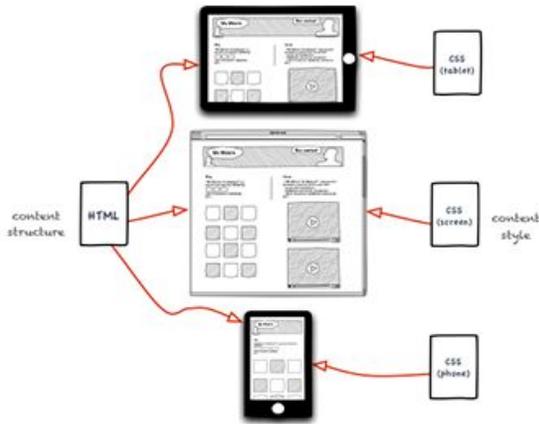
### *The Paper Effect*

Google took the physical characteristics of actual paper, and put them onto the screen of your mobile device. That should be obvious from a quick glance at the background, which is flat, opaque and slightly textured. They took the analogy farther, though, and made the apps behave like paper – they can be shuffled, reordered and tied into more than one sheet. Thus, the surface is called a sheet, or a sheet of material.

Anything not part of the actual application, such as a system bar, is not treated as part of the material. You can even join two sheets of material together. When this happens, Google calls the common edge a “seam”, further reinforcing the physical material analogy. Any two pieces of material joined by a seam move in tandem.

Google allows you to overlap materials, rather than joining them with a seam. When this happens, the juncture point (where one sheet overlies another) is called a step. Stepped materials do not move together – they can move independently of one another.

Another interesting capability introduced with material design is the ability to create a floating action button. This button is technically a completely separate sheet of material, and can be used over a step (if it relates to action within one of the steps), and it can also be placed over a seam, as long as the action step relates to both sheets’ content.



### *Mobile and Tablet Structures*

Material design offers both mobile structure and tablet structure. These ensure that the app displays properly when scaling to fit different screen sizes, but it is important for designers to understand the specifics of each option.

**Mobile Structure:** In mobile structure, the app features a permanent app bar, as well as a floating action button. Designers can also opt to have a bottom bar for additional functionality if needed. In mobile structure, side navigation menus expand to overlay all other components.

**Tablet Structure:** In tablet structure, the app features a permanent upper app bar, as well as a floating action button (note that action buttons do not need to be present if the app does not require them). The upper bar will include features previously included in the upper and lower bars in mobile structure. Users are also able to access a temporary right

hand navigation menu, and the left-navigation menu will expand to cover everything.

### *UI Regions*

It's important for app designers to ensure they're following best practices when it comes to UI regions. Google urges developers to define a primary horizontal or vertical division to separate UI regions, but to avoid creating too many specific regions.

Rather than multiple UI regions, designers should focus on using whitespace to define areas, and use cards or action buttons to break the edges of material. Cards can and should be used to help organize content in groupings, or to help guide user interaction within the app.

At Openxcell, we're proud to be on the leading edge of modern app design.

## About OpenXcell

We've been part of the industry since its inception, and we've helped to lead the way into the future by pioneering techniques and technologies, and setting benchmarks in app quality and performance.

Our award-winning team has helped to bring any number of highly-ranked, cutting-edge applications to market, building our clients' brands and fostering success and growth.

We can offer native, web and hybrid app development to suit virtually any needs, from in-organization use to consumer-facing apps that ensure your brand is front and center, and that your users enjoy the reliable, seamless operation they deserve.

We invite you today to know more about us how we can use Google's material design to ensure the best possible Android app, complete with relevant branding, robust functionality, and the best possible user experience.

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