

Android Developer Fundamentals V2

Delightful User Experience

Lesson 5



5.2 Material Design

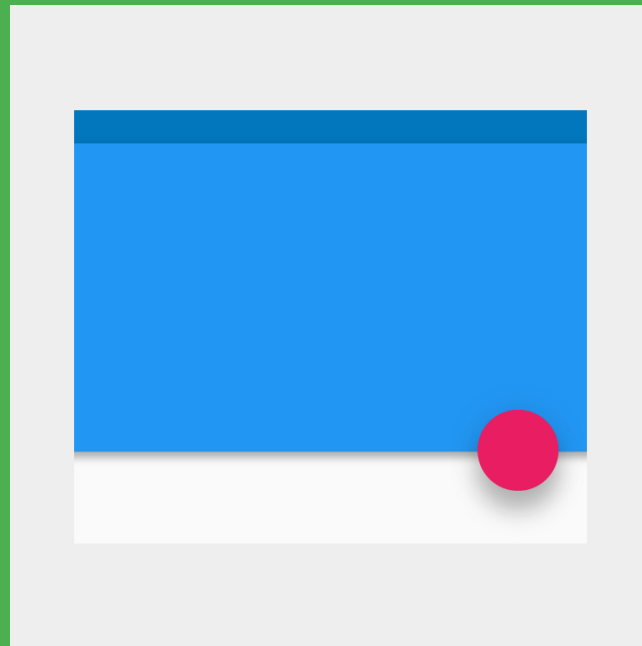


Contents

- The Material Metaphor
- Imagery
- Typography
- Color
- Motion
- Layout
- Components



The Material Metaphor



What is Material Design?

- Design guidelines
- Visual language
- Combine classic principles of good design with innovation and possibilities of technology and science
- [Material Design Spec](#)



Material metaphor



- Three-dimensional environment containing light, material, and shadows
- Surfaces and edges provide visual cues grounded in reality
- Fundamentals of light, surface, and movement convey how objects move, interact, and exist in space and in relation to each other



Material design in your app

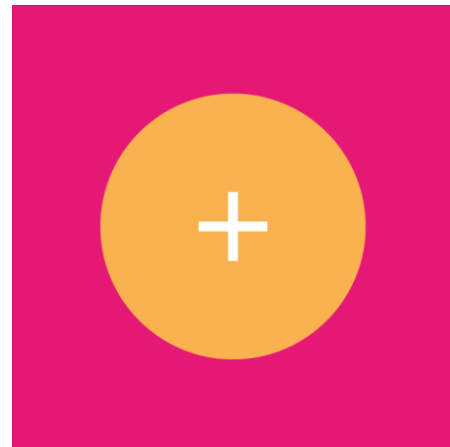
Elements in your Android app should behave similarly to real world materials

- Cast shadows
- Occupy space
- Interact with each other



Bold, graphic, intentional

- Choose colors deliberately
- Fill screen edge to edge
- Use large-scale typography
- Use white space intentionally
- Emphasize user action
- Make functionality obvious



Imagery



Imagery

Images help you communicate and differentiate your app

Should be

- Relevant
- Informative
- Delightful

Best practices

- Use together with text
- Original images
- Provide point of focus
- Build a narrative



Typography

Quantum Mechanics

REGULAR

6.626069×10^{-34}

THIN

One hundred percent cotton bond

BOLD ITALIC

Quasiparticles

BOLD

It became the non-relativistic limit of quantum field theory

CONDENSED

PAPERCRAFT

LIGHT ITALIC

Probabilistic wave - particle wavefunction orbital path

MEDIUM ITALIC

ENTANGLED

BLACK

Cardstock 80lb ultra-bright orange

MEDIUM

STATIONERY

THIN

POSITION, MOMENTUM & SPIN

CONDENSED LIGHT



Roboto typeface

Roboto is the standard typeface on Android

Roboto has 6 weights

- Thin
- Light
- Regular
- Medium
- Bold
- Black

Roboto Thin
Roboto Light
Roboto Regular
Roboto Medium
Roboto Bold
Roboto Black
Roboto Thin Italic
Roboto Light Italic
Roboto Italic
Roboto Medium Italic
Roboto Bold Italic
Roboto Black Italic



Font styles and scale

- Too many sizes is confusing and looks bad
- Limited set of sizes that work well together

Display 4

Light 112sp

Display 3

Regular 56sp

Display 2

Regular 45sp

Display 1

Regular 34sp

Headline

Regular 24sp

Title

Medium 20sp

Subheading

Regular 16sp (Device), Regular 15sp (Desktop)

Body 2

Medium 14sp (Device), Medium 13sp (Desktop)

Body 1

Regular 14sp (Device), Regular 13sp (Desktop)

Caption

Regular 12sp

Button

MEDIUM (ALL CAPS) 14sp



Setting text appearance

```
android:textAppearance=  
    "@style/TextAppearance.AppCompat.Display3"
```



Fonts as resources

- Bundle fonts as resources in app package (APK)
- Create font folder within res, add font XML file to font
- To access font resource:
 - `@font/myfont`
 - `R.font.myfont`
- Android 8.0 (API level 26) – Android 4.1 (API level 16) and higher, use the Support Library 26
- See [Fonts in XML](#)

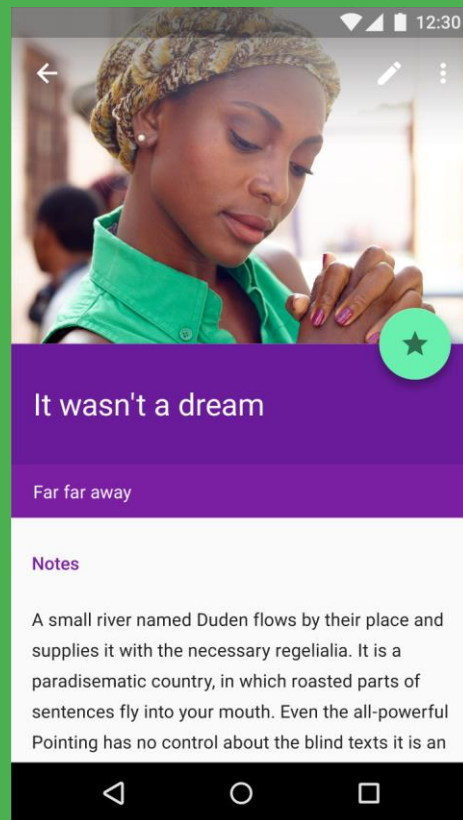


Downloadable fonts

- Download fonts from provider app
 - Reduces APK size
 - Increases the app installation success rate
 - Improves the overall system health, saves cellular data, phone memory, and disk space
- Android 8.0 (API level 26) — API level 14 and higher, use Support Library 26
- See [Downloadable Fonts](#)

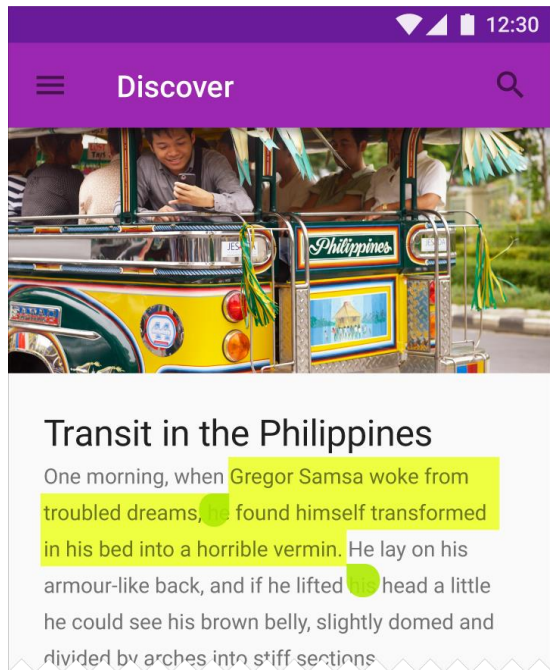


Color



Color

- Bold hues
- Muted environments
- Deep shadows
- Bright highlights



Color palette

Material Design recommends using

- a primary color
- along with some shades
- and an accent color



Create a bold user experience for your app

- [Material Design Color Palette](#)



Color palette for your project

- Android Studio creates a color palette for you
- AppTheme definition in styles.xml
 - colorPrimary—AppBar, branding
 - colorPrimaryDark—status bar, contrast
 - colorAccent—draw user attention, switches, FAB
- Colors defined in colors.xml
- [Color selection tool](#)

Primary – Purple	
500	#9B26AF
700	#7A1EA1
800	#691A99
Accent – Green	
A200	#68EFAD



Text color and contrast

- Contrast for visual separation
- Contrast for readability
- Contrast for accessibility
- Not all people see colors the same
- Theme handles text by default
 - Theme.AppCompat.Light—text will be near black
 - Theme.AppCompat.Light.DarkActionBar—text near white

Good choice

Good choice

Bad choice

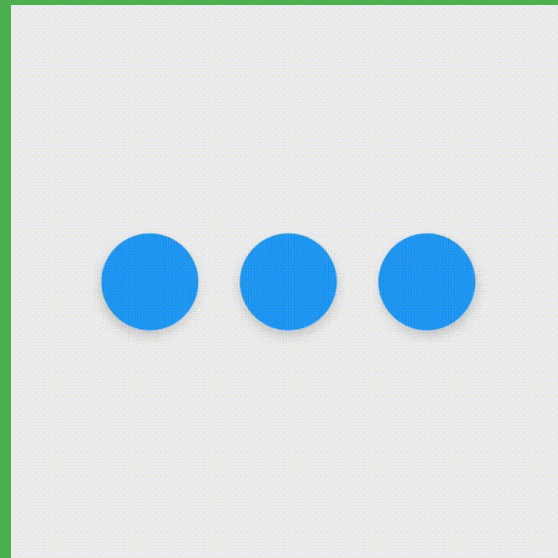
Bad choice

Bad choice

Good choice



Motion



Motion

Motion in Material Design describes

- Spatial relationships
- Functionality
- Intention

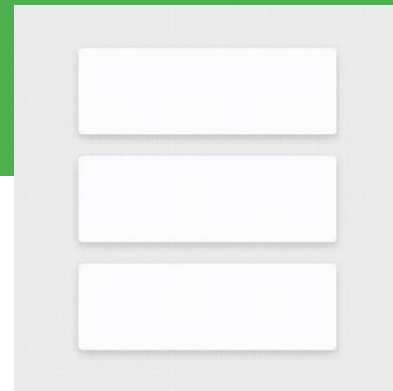
Motion is

- Responsive
- Natural
- Aware
- Intentional



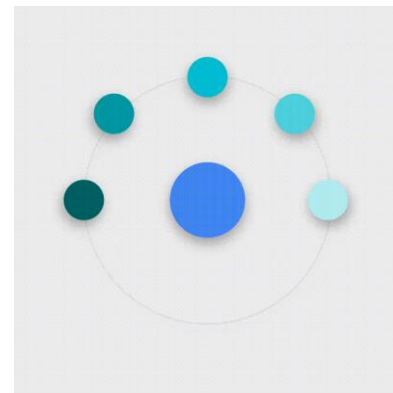
Motion in your app

- Maintain continuity
- Highlight elements or actions
- Transition naturally between actions or states
- Draw focus
- Organize transitions
- Responsive feedback

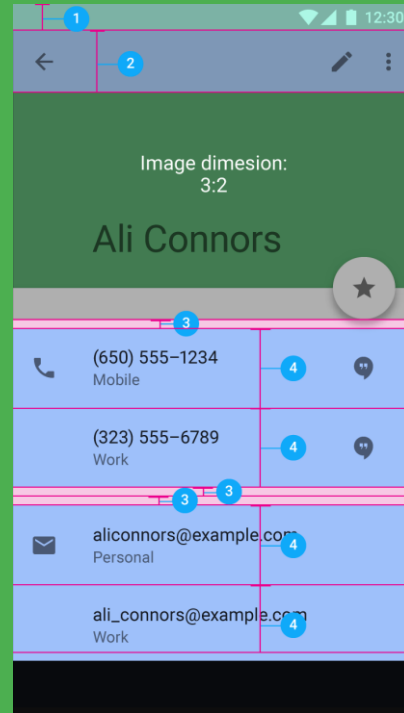


Touch feedback

Responsive interaction



Layout

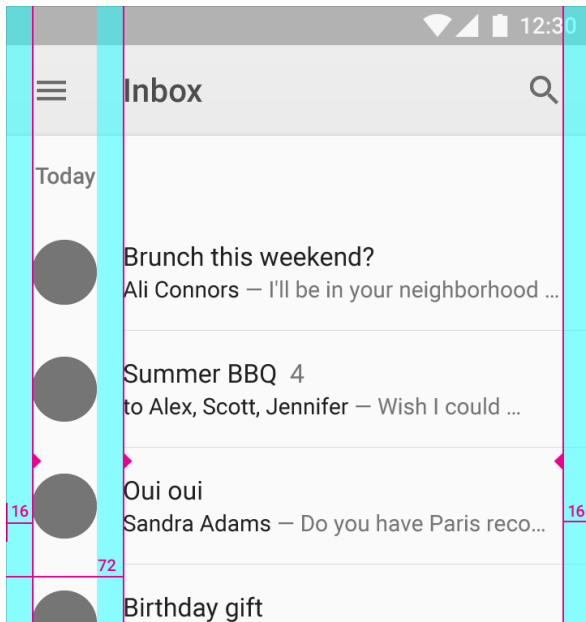


Layout for Material Design

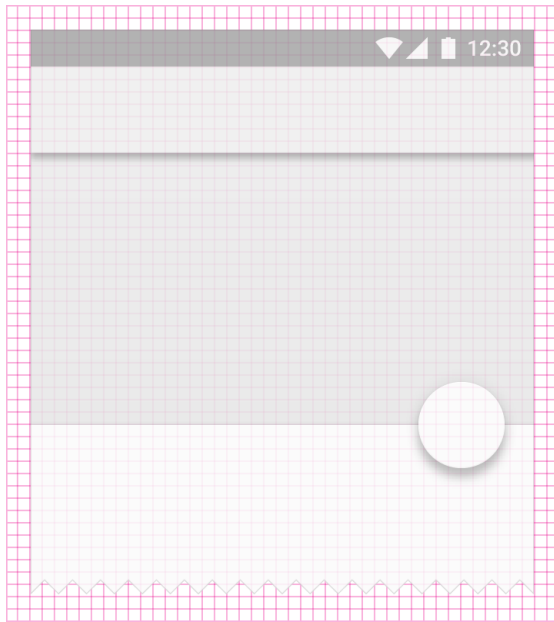
- Density independent pixels for views—dp
- Scalable pixels for text—sp
- Elements align to a [grid with consistent spacing](#)
- Plan your layout
- Use [templates](#) for common layout patterns



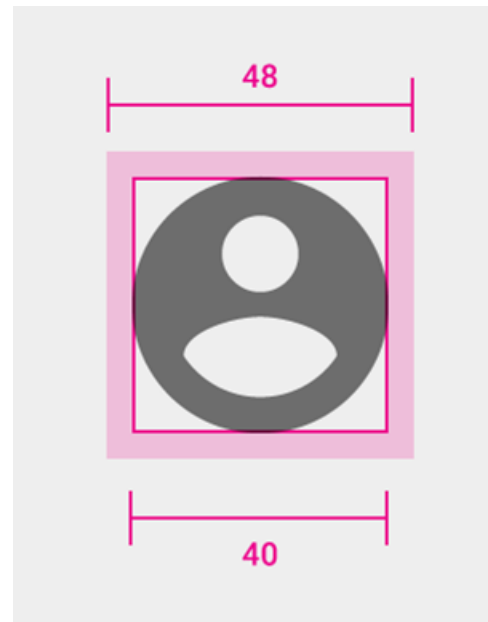
Layout planning



Spacing



Grid alignment



Sizing

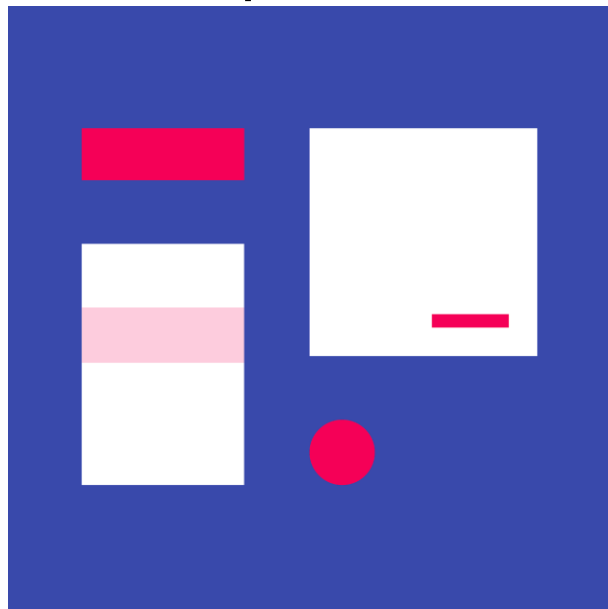
Components



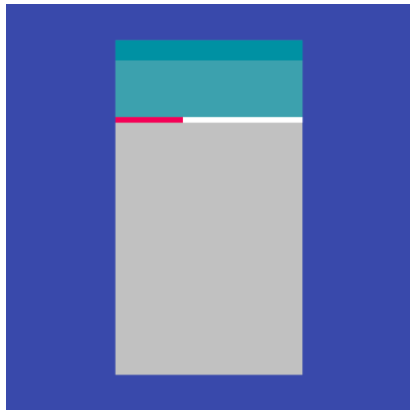
Components

Material Design has guidelines on the use and implementation of Android components

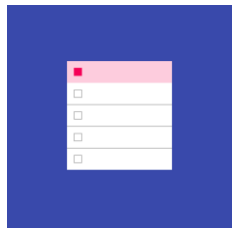
- Bottom Navigation
- Buttons
- Cards
- Chips
- Data Tables
- Dialogs
- Dividers
- Sliders
- Snackbar
- Toasts
- Steppers
- Subheaders
- Text Fields
- Toolbars



More components

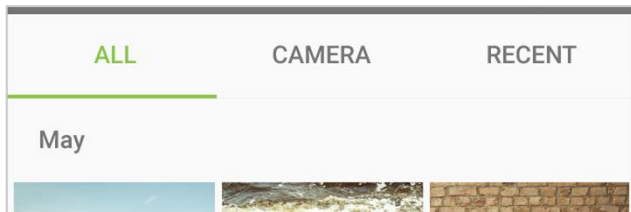
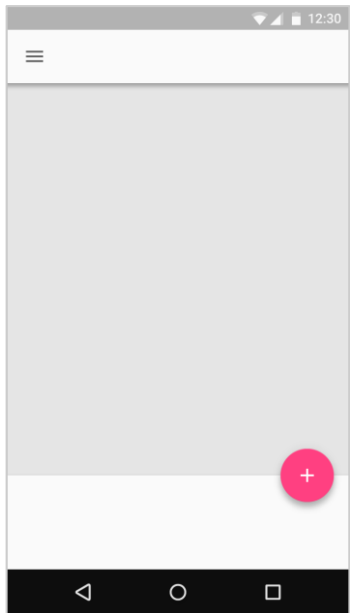


- Expansion Panels
- Grid Lists
- Lists
- Menus
- Pickers
- Progress Bars
- Selection Controls

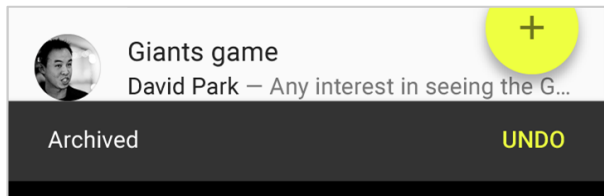


Consistency helps user intuition

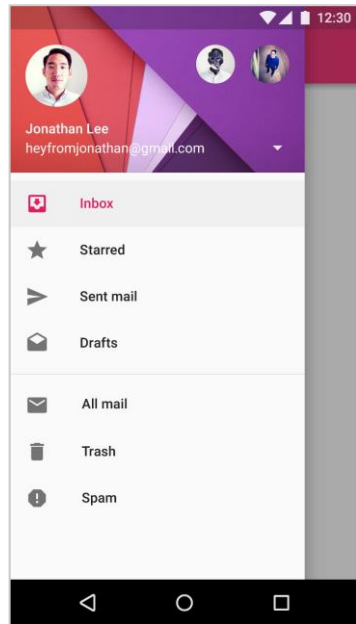
FAB



Tabs



Snackbar



Navigation Drawer



Learn more

- [Material Design Guidelines](#)
- [Material Design Guide](#)
- [Material Design for Android](#)
- [Material Design for Developers](#)
- [Material Palette Generator](#)
- [Cards and Lists Guide](#)
- [Floating Action Button Reference](#)
- [Defining Custom Animations](#)
- [View Animation](#)



What's Next?

- Concept Chapter: [5.2 Material Design](#)
- Practical: [5.2 Cards, and colors](#)



END

