

Multi-Device Compatibility

Because one is never enough

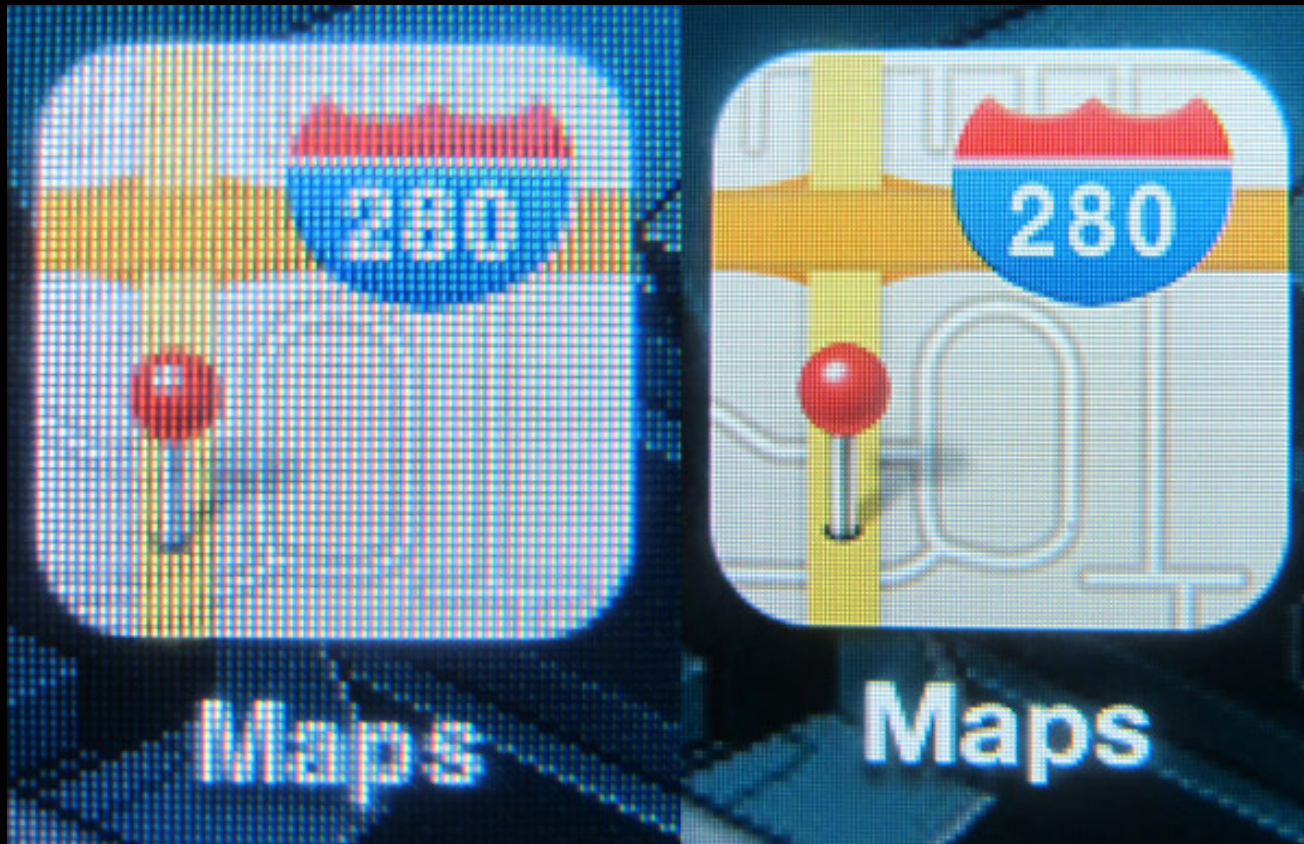
Many devices – One app



Considerations

1. Pixel density
2. Physical screen size
3. Android versions
4. Hardware availability (camera, GPS, etc.)

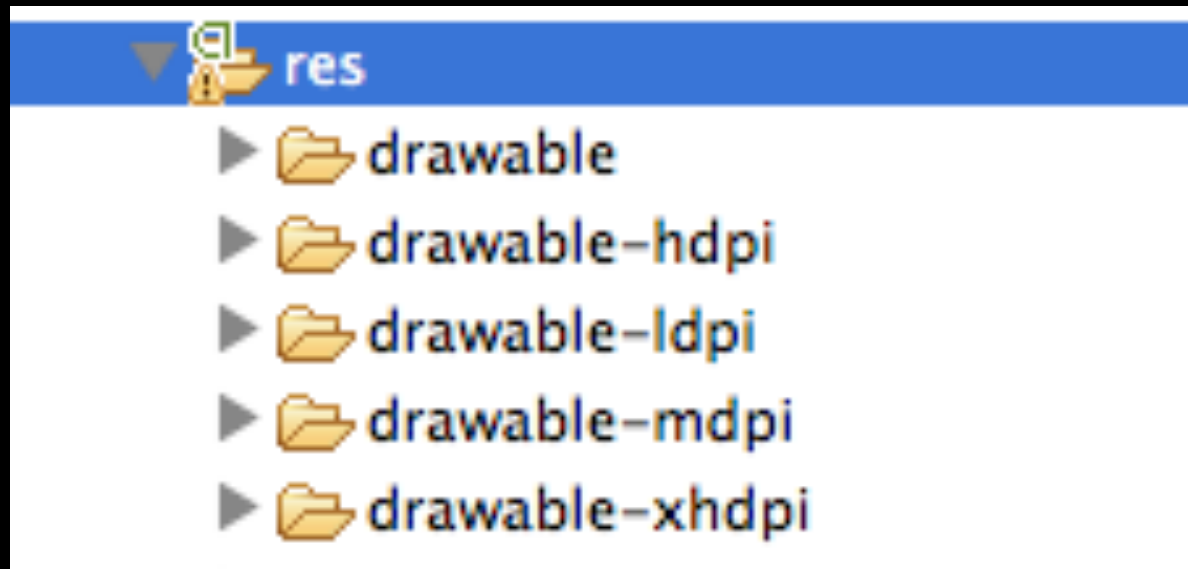
Pixel Density



Pixel Density

- Layout: use device independent pixels (DP)
- Text: use scale independent pixels (SP)
- Define alternative bitmaps for different density categories
- Goal: achieve same physical size on all screens

Pixel Density Qualifiers

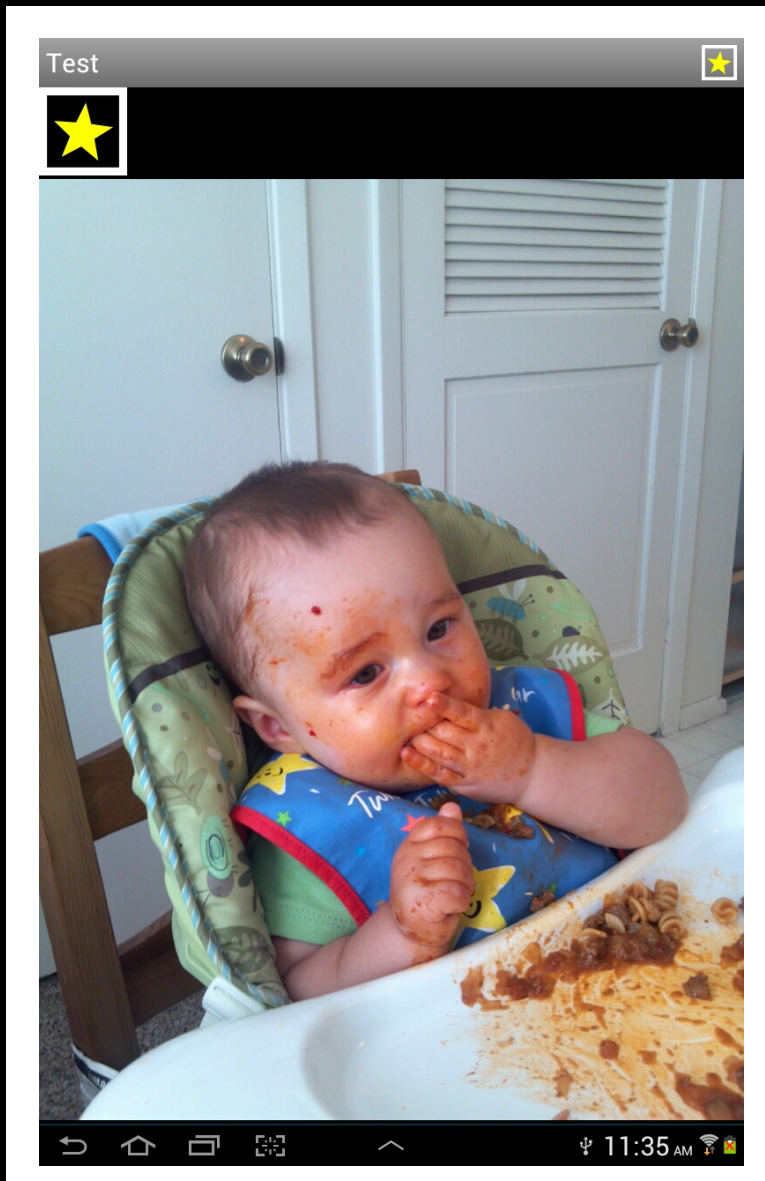


- ldpi, mdpi, hdpi, xhdpi
- Low, medium, high, extra-high
- Follow the 3:4:6:8 rule

Pixel Density



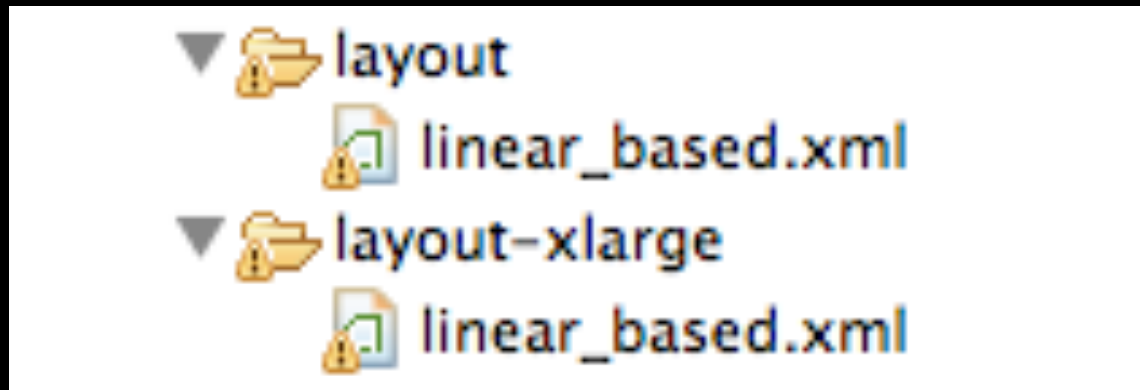
Physical Size



Physical Size

- Layouts should scale to full screen
- Use “wrap_content” and “match_parent” rather than explicit values
- Define alternative layouts as appropriate
- Test on many devices!!

Physical Size Qualifiers



- small, normal, large, xlarge
- sw600dp, w600dp, h600dp (preferred)

Physical Size

- Use space effectively, don't just scale
- Use Fragments wherever reasonable



Android Versions

- Test on all compatible versions
- Build for minimum version
- Use compatibility libraries
- Keep modern

Hardware

- If your app requires the camera, declare it in the manifest.
- Hidden in Google Play from incompatible devices.

```
<uses-permission android:name="android.permission.CAMERA" />  
<uses-feature android:name="android.hardware.camera" />  
<uses-feature android:name="android.hardware.camera.autofocus" />
```

Hardware

- If feature is not critical to your app, check at runtime
- App should hide feature if not available

```
PackageManager pm = context.getPackageManager();  
  
if (pm.hasSystemFeature(PackageManager.FEATURE_CAMERA)) {  
}
```

Hardware

- This also applies to screen size.
- Can make app “Phone only” or “Tablet only”

```
<supports-screens android:resizeable=["true" | "false"]  
    android:smallScreens=["true" | "false"]  
    android:normalScreens=["true" | "false"]  
    android:largeScreens=["true" | "false"]  
    android:xlargeScreens=["true" | "false"]  
    android:anyDensity=["true" | "false"]  
    android:requiresSmallestWidthDp="integer"  
    android:compatibleWidthLimitDp="integer"  
    android:largestWidthLimitDp="integer"/>
```

Where do I draw the line?

- Minimum version?
- Phones, tablets, or both?
- Support older devices?
- What features are optional/required?
- **MAKE SURE YOUR MANIFEST IS CORRECT!**
- Don't allow app to run on incompatible devices.

Questions?