

# Android



**Me**

- Vladimir Ivanov
- EPAM Systems
- Head of PC of MobiusConf



**YOU**

**First release on**

September 23, 2008

# Android naming

**First**

**Last**

No name

KitKat

No name

Lollipop

Cupcake

Marshmallow

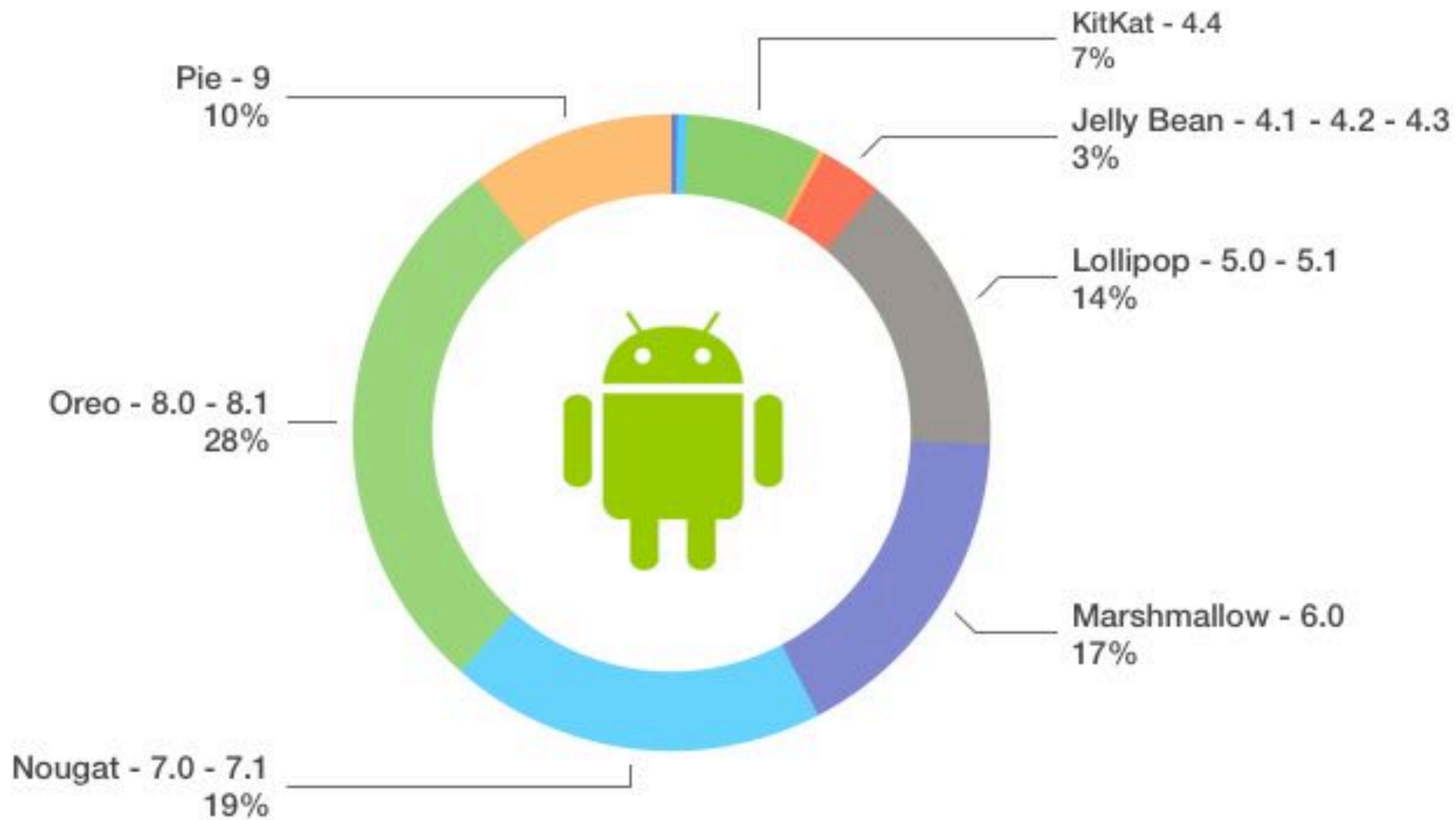
Donut

Oreo

Eclair

Android 10





# First devices





September 2008						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

1! 2@ 3# 4\$ 5% 6^ 7& 8\* 9( 0)  
Q W E R T Y U I O P  
A S D F G H J K L DEL  
MENU Z X C V B N M , ?  
ALT ALT

MENU

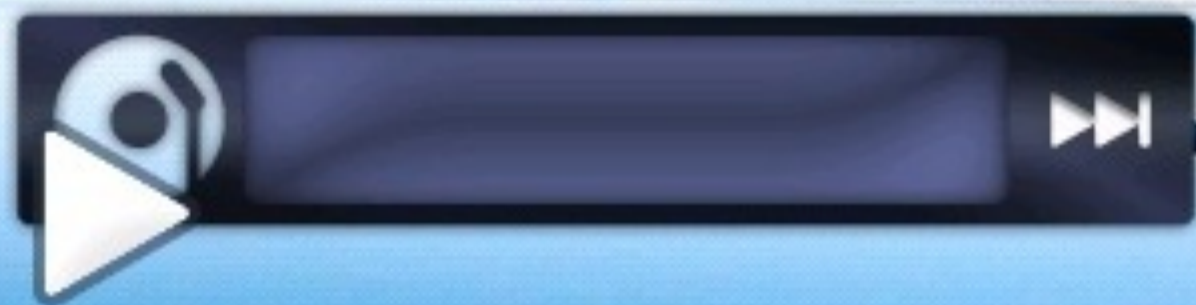




Google Search



No upcoming calendar events



All Contacts



Phones



Starred



# Latest devices



**There is one problem...**

**And another one...**



# Fragmentation



Acer

ARCHOS

ARCHOS

ASUS

ASUS

CASIO

Casio



Dell



Garmin-  
ASUS

htc

HTC



Huawei



Kyocera

lenovo

Lenovo



LG



Motorola

Panasonic

Panasonic

PHILIPS

Philips



Samsung

SONY

Sony



Sony  
Ericsson

TOSHIBA

Toshiba

ZTE中兴

ZTE

**Android is also not only the OS  
for smartphones...**

**Android Wear**

**Android TV**

**Android Things(deprecated)**

**Android Auto**

**Android Automotive**

**Android One**

**Android Go**

# Android Development





# Android Apps

# Language

- Java, Kotlin
- C++ for NDK

You can use js, lua and even php though

# Tools

- Android SDK
- Android Studio
- Emulators
- Gradle

**Works everywhere!**

# Android Studio

AndroidStudioProject > Application > src > main > res

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:layout_editor_absoluteY="81dp"
    tools:layout_editor_absoluteX="0dp">
    <ImageView
        android:id="@+id/imageView2"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:contentDescription="@string/app_name"
        app:layout_constraintBottom_toTopOf="@+id/imageView6"
        app:layout_constraintEnd_toStartOf="@+id/imageView3"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:srcCompat="@drawable/grid_1" />
    <ImageView
        android:id="@+id/imageView3"
        />
</android.support.constraint.ConstraintLayout>
```

Design Text

Preview

Pixel 27 AppTheme 50%

Android Studio

Google Pixel\_XL (emulator-5554) com.example.android.displayingbitmaps (4166)

End Session Live

ui.ImageDetailActivity - stopped - destroyed

ui.ImageGridActivity - saved - stopped - destroyed

ui.Image...

ui.ImageDetailActivity - destroyed

CPU

100 %

MEMORY

128 MB

NETWORK

1 MB/s

CPU at 2.32m

34 %

Sending Receiving

2.25m 2.33m 2.42m 2.50m 2.58m 2.67m

11:5 LF UTF-8 Context: <no context>



# Android Studio

- Canary
- Beta
- Prod



Твитнуть



Vladimir Ivanov

@vvsevolodovich



- Why an Android Developer moved to Mother Russia?  
- Only Winter there can cool the fuck down a MacBook  
with Android Studio running

[Перевести твит](#)

5:12 ПП · 28 сент. 2019 г. · [Twitter Web App](#)

||| [Посмотреть активность с твитом](#)

**4** ретвита    **29** отметок «Нравится»



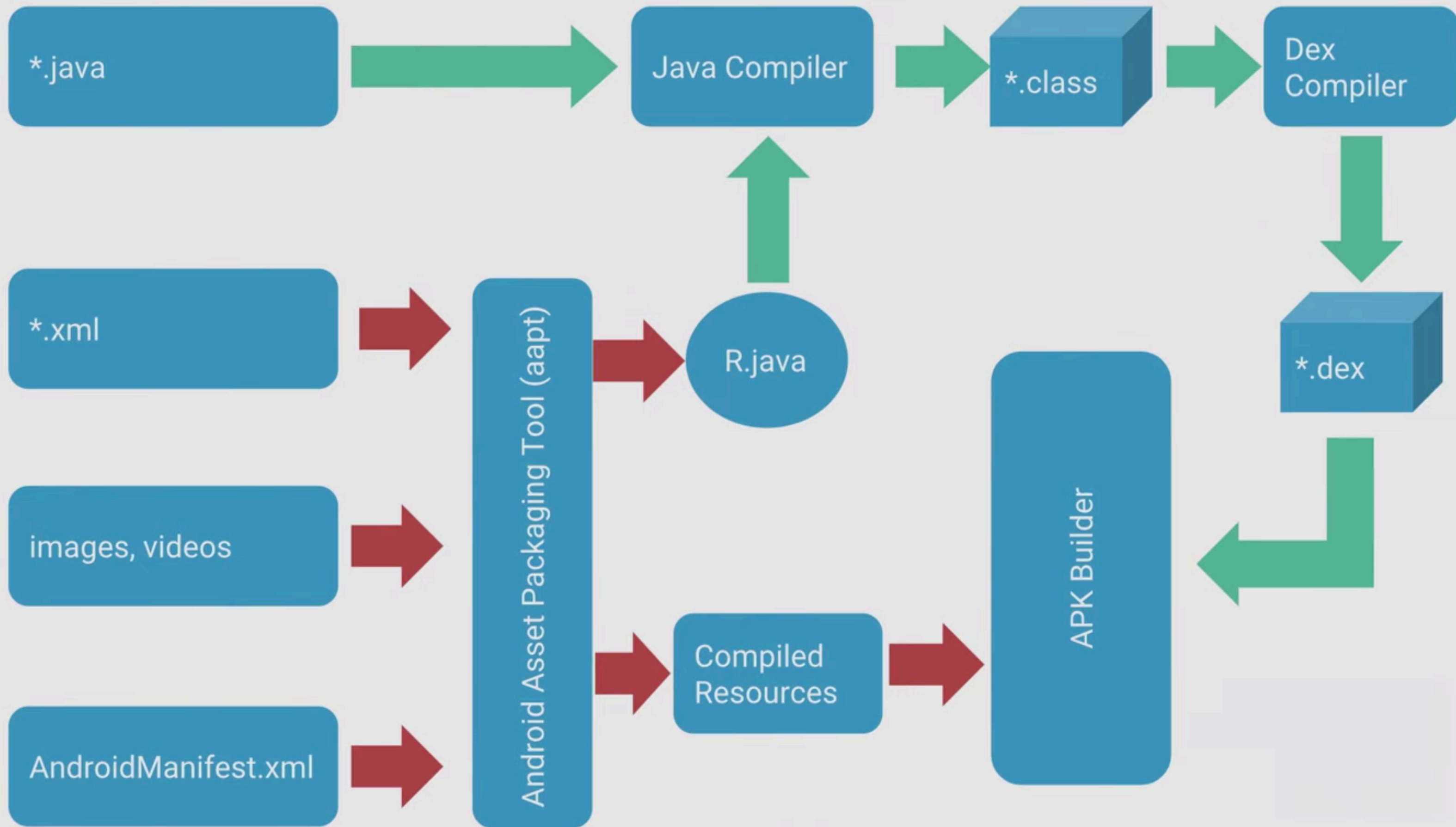
# **Android SDK**

- Platform
- Emulators
- Build Tools
- ADB

# **The build product**

- APK or app bundle
- mapping.txt

# Pipeline





APPS

Launcher

Contacts

Phone

Browser

...

Framework

Activity Manager

Window Manager

Content Providers

...

Package Managers

Location Manager

Fragment Manager

...

Library

Media Framework

Surface Manager

...

SQLite

OpenGL ES

...

SSL

Webkit

...

Runtime

Core Libraries

Dalvik

HAL

Graphics HAL

Camera HAL

Audio HAL

Bluetooth HAL

...

Kernel

Display Driver

Camera Driver

Audio Drivers

GPS

# Google Play Services

Ads

Analytics

AppIndexing

AppInvite

AppState

Auth

Base

Basement

Cast

Drive

Fitness

Games

GCM

Identity

Location

Maps

Measurement

Nearby

Panorama

Plus

SafetyNet

Support Wearable

Vision

Wallet

## **Why it is f\*cking important?**

- Provides almost all necessary platform integration points
- Shipped only with Licensed by Google Devices
- That's why Huawei is screwed



HUAWEI



# Distribution

- Google Play
- Virtually any hosting

# Prerequisites

- Google Account
- \$25 once



# **Publishing an app**

- APK or app bundle
- Screenshots
- Description
- Rating
- Promobanner
- Supported countries
- Price(if any)

## **Caveats**

- Fast releases, frequent deployments, tons of manual work
- Fastlane and CI/CD services for the rescue



**HOW I  
WORK**

# Security

- Apps are separated on paper, but...
- SDCard is shared
- Proper keystore support started from Lollipop
- Vulnerabilities (like DownloadManager)
- Untrusted sources
- No moderation is Google Play

# Android vs iOS

	Android	iOS
IDE	Android Studio	XCode
Build system	Gradle	Xcode build
Devices #	10000+ devices	~100
Language	Java, Kotlin	Swift
Signing	Easy	Hell
Shit	Yes	Yes

# News

- Google I/O
- Blogs of Android GDE
- Official Google Accounts