

7. Mobile Application Packaging

Objectives

- Explain the following:
 - Checklist to plan your app launch
 - Prepare for release
 - Single vs Multiple APKs
 - App Bundles
 - Android Go
 - Instant App
 - Support Chrome OS
 - Monetize your app

Check List

1. Developer Program Policies
2. Developer Account
3. Localization
4. Device Compatibility (Chapter 3)
5. Quality Test; Alpha & Beta
6. Store Listing

Developer Program Policies



Restricted Content



Intellectual Property



Privacy and Security



Monetization
and Ads



Store Listing
And Promotion

Developer Account



USD 25
(one time)



USD 99
(per year)

KaiOS

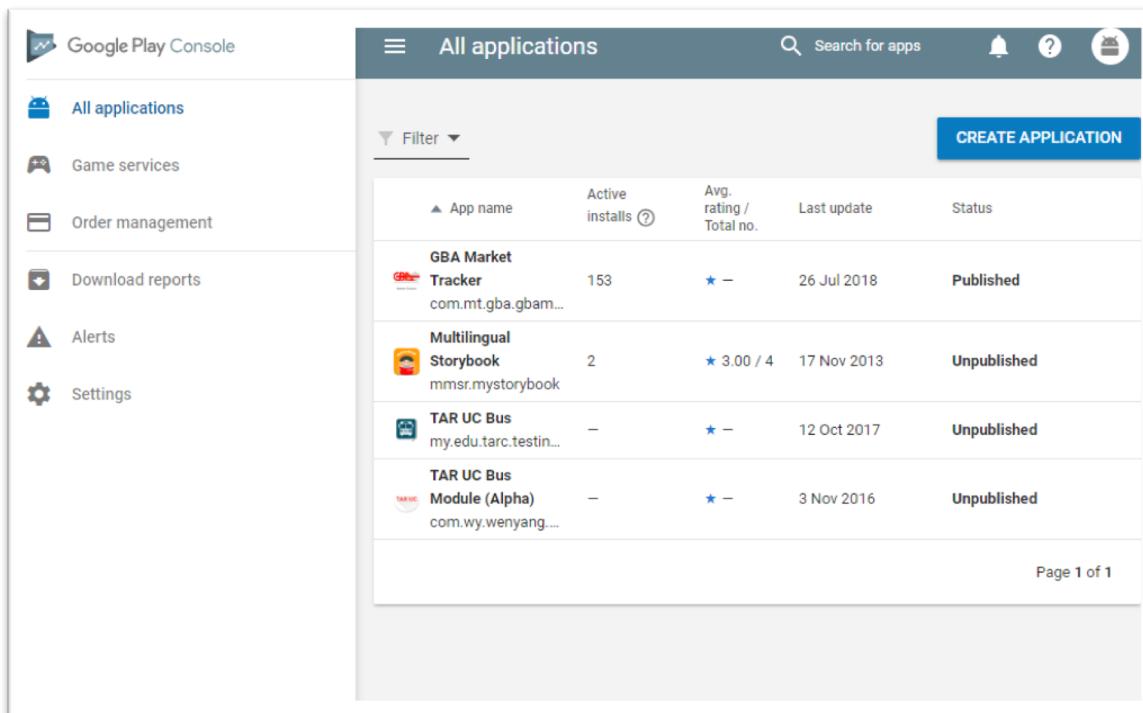
FOC



FOC

Developer Account

- Google Play Console – a place to publish your apps



Developer Account

- Google Play Console - Features

The screenshot shows the Google Play Console interface with a sidebar on the left containing icons and links. The main area displays a list of features with corresponding descriptions.

Feature	Description
All applications	View your apps, active installs, rating, last update and status
Game services	Add social gaming features to your games on Android, iOS and the web
Order management	Earn money with paid apps or in-app products
Download reports	Know your app's performance
Alerts	
Settings	

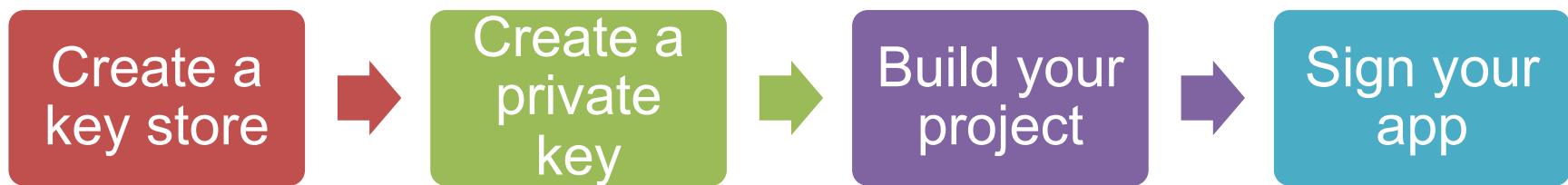
Preparing for Release

- To prepare your app so that users can install and run the app on their Android-powered devices
- Release-ready .apk file is signed with your own certificate

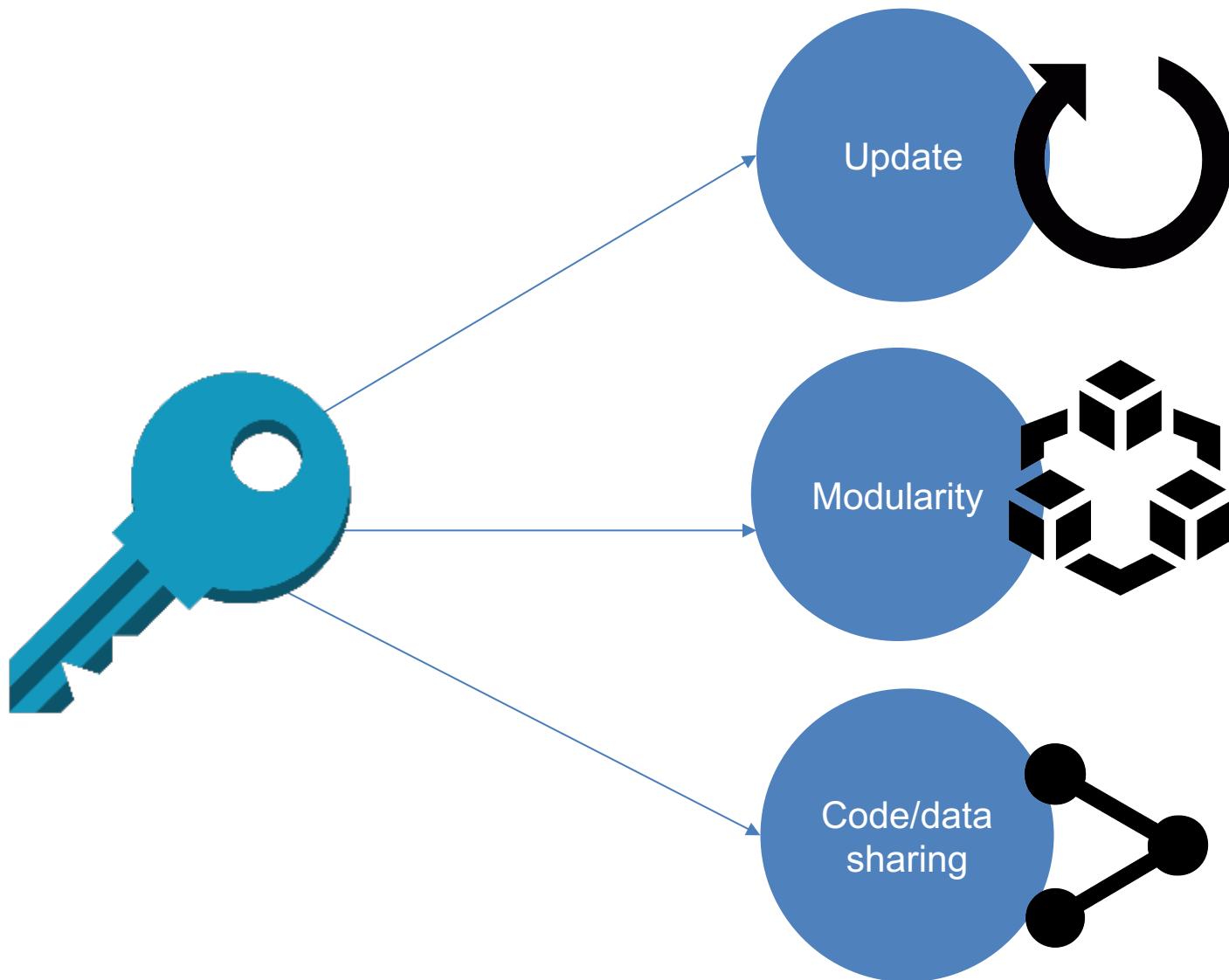
Preparing for Release

- Minimum requirements:
 - Cryptographic keys
 - Application icon
 - End-user License Agreement
 - Promotional and marketing materials
- Cryptographic key: digitally signature that is owned by the application's developer

Signing in Release Mode



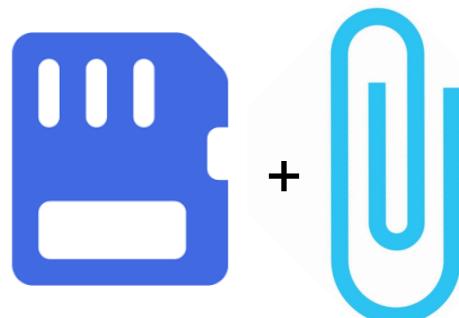
Signing Consideration



Store Listing



Distribution



App size
<100 MB

+



Expansion
up to 2GB



Platforms



Fee or Free

Distribution



Marketplace



Email



Website or server

Distribution Methods

1. Android Go
2. Single or Multiple APKs
3. App Bundles
4. Instant App
5. Support Chrome OS

Android Go

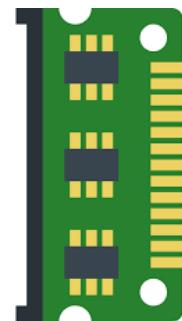
- Read the “[Going Global Playbook](#)” (FOC)



Target Oreo
(API 26)



App size less
than 40 MB



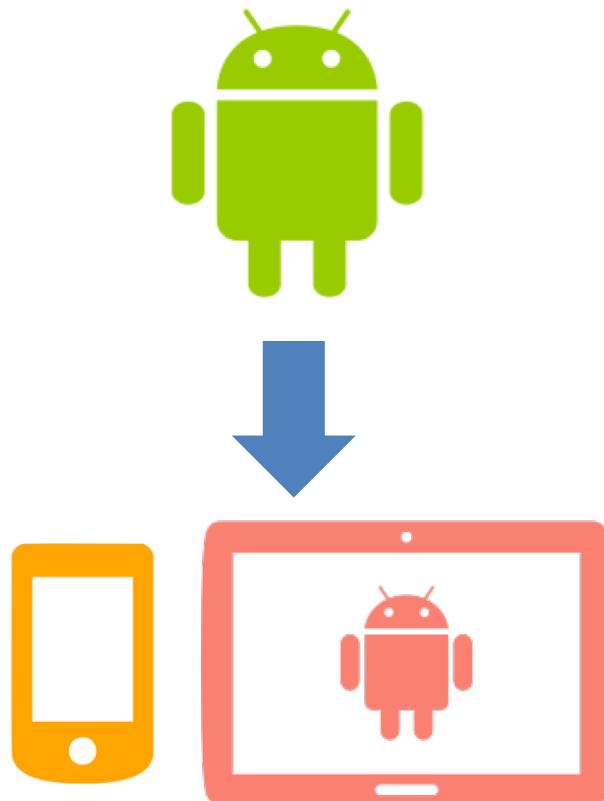
RAM usage
below 50 MB (apps)
150 MB (games)



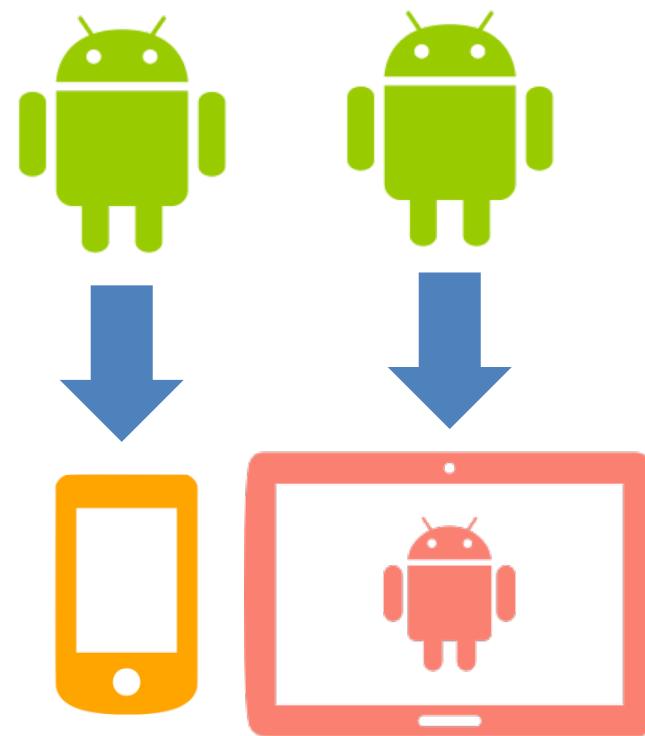
Start your app
under 5
seconds

Single vs Multiple APKs

Single APK



Multiple APKs



Single APK

Advantages

- Maintain one codebase
- App adapts to device configuration changes

Disadvantages

- Large APK
- Poor app optimization
 - Graphic format
 - Screen size
 - Device feature
 - Platform
 - CPU

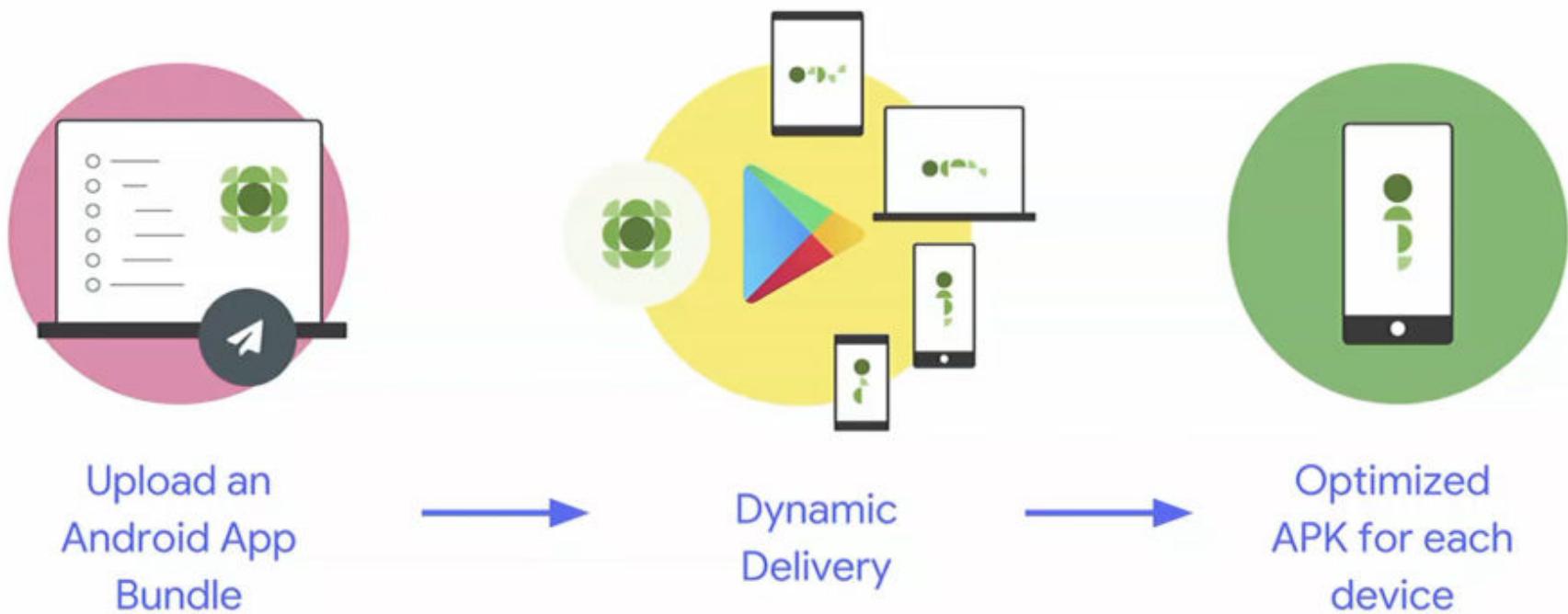
Multiple APKs

- Publish multiple APKs under the same listing
- To support different:
 - Graphic format
 - Screen sizes and densities
 - Device feature
 - Platforms
 - CPU

Multiple APKs - Rules

- All APKs use the same package name
- Each APK must have a different version code
- Higher API level = higher version code
- Each APK support at least one configuration difference

App Bundles



App Bundles

Base

xxxhdpi

xhdpi

mdpi

xxhdpi

hdpi

ldpi

x86_64

arm64

x86

arm

fr

de

pt

en

zh

ja

Android Instant Apps

- Native Android apps, without the installation
- App runs in response to launching a URL
- Upgrade to your existing Android app, not a new, separate app
- Android 6.0 (API level 23) to Android O
- Android Studio 3.0

Instant App APK

Feature 1 APK

Feature 2 APK

Base feature APK

<https://developer.android.com/topic/instant-apps/prepare.html>

Android Instant Apps

- Limitations
 - App size is <= 10 MB
 - App foreground service available only in Android 8.0 and higher
 - Read phone numbers available only in Android 8.0 and higher

Chrome OS

- It supports the Google Play Store and Android apps
- Preparation:
 - Manifest file

```
<uses-feature  
    android:name="android.hardware.touchscreen"  
    android:required="false" />
```

Monetize Your App

Premium Apps	Freemium Apps	Subscription	Ads
<ul style="list-style-type: none">• Paid• In-app Billing• Extensive Features• Narrow niche in the market	<ul style="list-style-type: none">• Free• Uses In-app Billing• Digital goods<ul style="list-style-type: none">• Durable• Consumable	<ul style="list-style-type: none">• Free trial• In-app billing• Subscription fee	<ul style="list-style-type: none">• Free• AdMob + Google Mobile Ads SDK• Shows income-generating ads

Alternative Monetization Options

- Rewarded products
- E-commerce
- System as a service
- Data collection

Monetize Your App

- What is the monetizing model suitable for each of the following app?



Review Questions

1. Why Google Play allows developers to publish their apps with multiple APKs?
2. What are the benefits of listing your app with a single APK?
3. What are the benefits of Instant App?
4. What is the main benefit of the Dynamic Delivery?

Review Questions

5. A junior developer has encountered a problem in distributing a mobile app. The app was developed to cater for both phones and high resolution tablets. As a result, the app contains both normal and high resolution art works that contributes to a large size app, which is currently more than 100 MB. Suggest a suitable solution to solve this problem and justify your answer. (5 marks)