



# Releasing Android Apps

Building, optimizing and deploying release APKs

Akademy 2021

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## KDE Applications on Android

- Interesting target platform
  - LineageOS: Google-free/full FOSS
  - Proprietary variants: huge user base
- We have more of our software working on Android than we officially release
- We are the distributor!



## Releasing

- Size and speed-optimized builds from release tarballs
- License compliance
- Translations included
- Availability in app stores (F-Droid, Google Play, ...)
- Metadata for app store presence
- Automation of all of the above



## Current Setup

- KDE Connect, Krita, GCompris use custom automation
- Nightly builds for about 25 apps and dedicated F-Droid repo
  - Low maintenance automation
  - Latest version of everything, no translations, limited control over package content
  - Docker-based SDK
- Craft based release packages for several other platforms



## Craft

- Already in use for Windows, macOS, AppImage
- Much more packaging system than build system
- Cross-platform, but no support for cross-compilation
- Packaging on Android is done by the app build system



## Craft for Android

- Bypass the cross-compilation problem by using KDE's Android Docker image
- Build system support for CMake and Autotools
- Changes required for applications are usually limited to differences in dependencies
- Dependencies can be more challenging (hello OpenSSL)



## Craft on Binary Factory

- `kde:binary-factory-tooling:craft/enabled-projects.yml`
  - add/configure your app there
- Takes care of signing, metadata generation and F-Droid delivery
- Nightly and release builds supported
- Open question: should we also use this for nightly builds?



# Inspecting Package Content

itinerary-app-armeabi-v7a.apk × itinerary-app-arm64-v8a.apk × **itinerary-app-x86.apk ×**

**org.kde.itinerary** (Version Name: 21.3.90, Version Code: 1618314628)

**i** APK size: **22.3 MB**, Download Size: **21.7 MB** Compare with previous APK...

| File                  | Raw File Size | Download Size | % of Total Download Size |
|-----------------------|---------------|---------------|--------------------------|
| ▶ lib                 | 17.8 MB       | 17.8 MB       | 81.5%                    |
| ▶ assets              | 2.4 MB        | 2.4 MB        | 10.8%                    |
| ▶ classes.dex         | 1.1 MB        | 1.1 MB        | 5%                       |
| ▶ zoneinfo-global     | 204.8 KB      | 204 KB        | 0.9%                     |
| ▶ zoneinfo            | 201.9 KB      | 201.1 KB      | 0.9%                     |
| ▶ org                 | 135.8 KB      | 135.4 KB      | 0.6%                     |
| ▶ res                 | 54.3 KB       | 53.1 KB       | 0.2%                     |
| ▶ net                 | 9.8 KB        | 9.7 KB        | 0%                       |
| ▶ resources.arsc      | 33.7 KB       | 8.3 KB        | 0%                       |
| ▶ AndroidManifest.xml | 3.1 KB        | 3.1 KB        | 0%                       |
| ▶ META-INF            | 1.1 KB        | 1.1 KB        | 0%                       |





# Optimizing Package Content

- CMake:
  - Don't install things that are not needed
  - Don't link against libraries that are not needed
- Gradle:
  - Plugins: `packagingOptions.exclude`
  - Assets: `aaptOption.ignoreAssetPattern`



## Application Metadata

- Descriptions, screenshots, logos and other graphics
- AppStream has most of that
- ECM converts AppStream to Fastlane format
- Can be customized/overridden by also having Fastlane data



# Store Presence



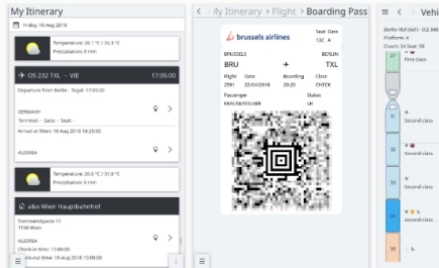
**KDE Itinerary**  
Updated today

[UNINSTALL](#) [OPEN](#)

**Digital travel assistant**

KDE Itinerary is a digital travel assistant with a priority on protecting your privacy.  
Features:

[MORE](#)



Buy the developers of KDE Itinerary a coffee!

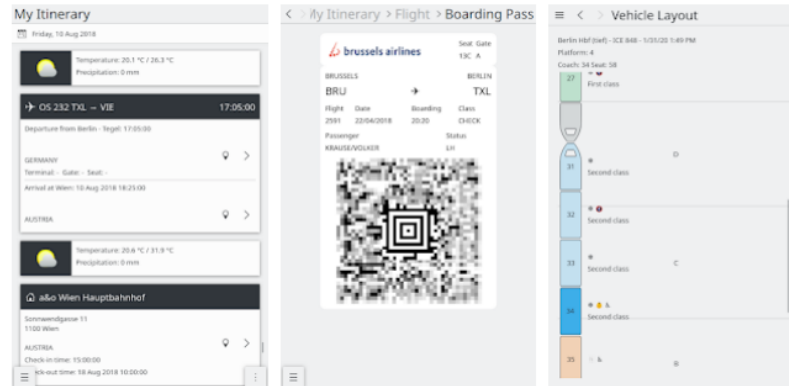


## KDE Itinerary

KDE Community Travel & Local

USK: All ages

Add to Wishlist



KDE Itinerary is a digital travel assistant with a priority on protecting your privacy.

Features:

- Timeline view of a unified travel itinerary with automatic trip grouping.
- Supports train, bus and flight bookings as well as hotel, restaurant, event and rental car reservations.
- Boarding pass management.
- Supports ticket management for multi-traveler and multi-ticket bookings.



## App Stores: F-Droid

- Content of official repository must be built on F-Droid's systems
  - Not really prepared for C++/Qt apps
  - Attempted for KTrip
  - Can we generate those build scripts from Craft maybe?
- External repository need to explicitly added by the user
  - Could our repository be added in the default set (even if disabled)?



## App Stores: Google Play

- Get access to KDE e.V. store account
- Needs manual setup before automation can help
- Automation is work in progress:
  - Metadata syncing via fastlane supply
  - APK upload
- Upcoming changes mandating AAB packages



## Outlook

- Get more apps (and maintainers) to participate
- Full static builds
- QA process
- License compliance
- Can we use the Play Store crash reporting?
- Should this cost money in the Play Store?



# Questions?

BoF: Tue 17:00 UTC  
#kde-android / kde-android@kde.org



# References

- Craft: <https://community.kde.org/Craft>
- Binary factory
  - Results: <https://binary-factory.kde.org/>
  - Configuration: <https://commits.kde.org/sysadmin/binary-factory-tooling>
- Fastlane metadata generation: [generate-fastlane-metadata.py](#)
- Blogs:
  - <https://volkerkrause.eu/2021/04/17/kde-android-building-release-apks.html>
  - <https://volkerkrause.eu/2021/04/24/kde-android-optimizing-release-apks.html>