Taming the Monorepo Beast

How We Made AndroidX Library Releases At Scale More Bearable

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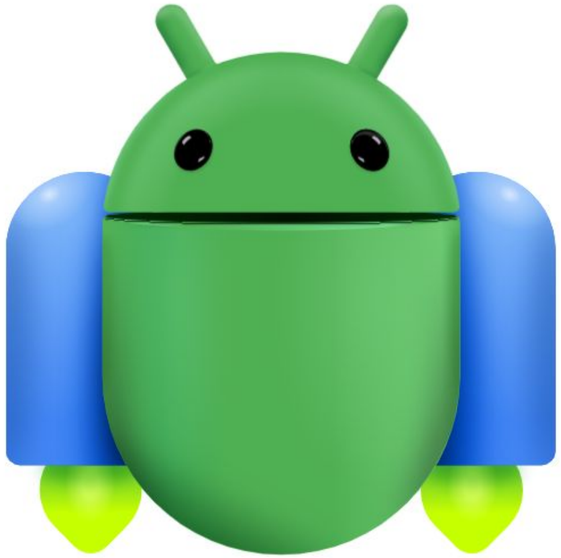
What is androidx?

Collection of widely used open-source libraries

Main Android API surface

Broad range of functionality

Developed by dozens of separate teams



Early Days Releases
(com.android.support)

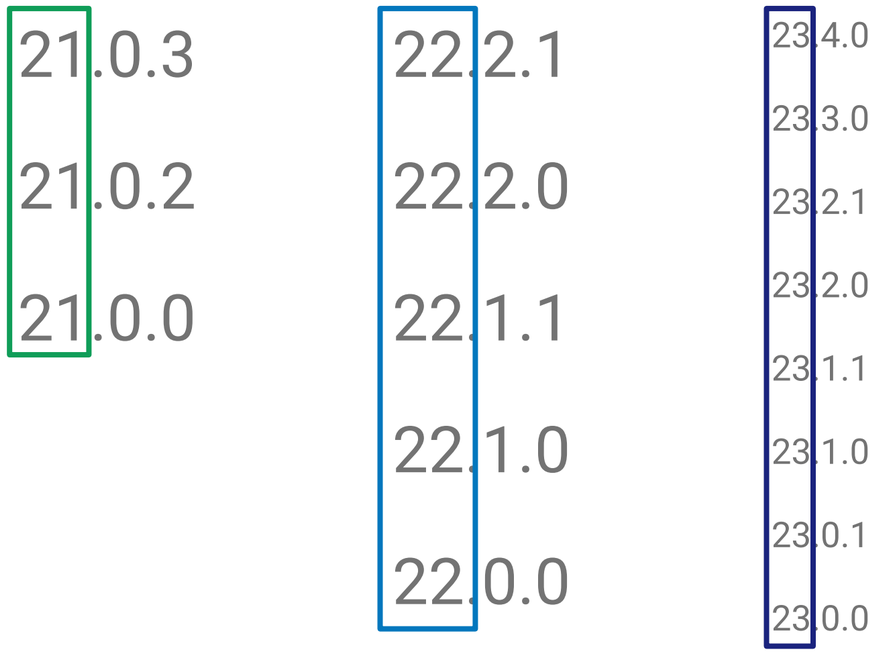
Early Days Releases

Monolith releases a few times a year

- 21.0.3
- 21.0.2
- 21.0.0

Early Days Releases

Uniform version with major based on Android API level



Early Days Releases

Eventually added alpha/beta

21.0.3
21.0.2
21.0.0

22.2.1
22.2.0
22.1.1
22.1.0
22.0.0

23.4.0
23.3.0
23.2.1
23.2.0
23.1.1
23.1.0
23.0.1
23.0.0

24.2.1
24.2.0
24.1.1
24.1.0
24.0.0
24.0.0-beta1
24.0.0-alpha2
24.0.0-alpha1

25.4.0
25.3.1
25.3.0
25.2.0
25.1.1
25.1.0
25.0.1
25.0.0

26.1.0
26.0.2
26.0.1
26.0.0
26.0.0-beta2
26.0.0-beta1
26.0.0-alpha1

No Longer Scaling (circa 2018)

60 libraries from ~13 teams

9 pages of release instructions

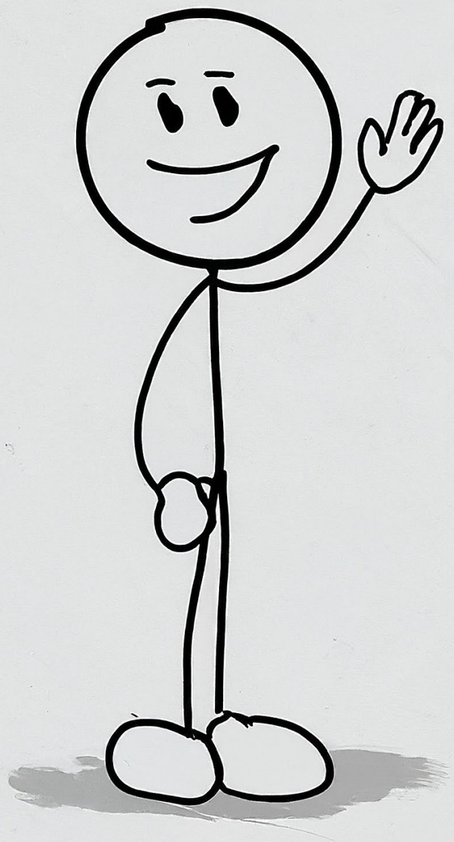
Some libraries were monoliths of their own

Bug fix in one library → 59 released with no changes

Forced releases to align with Android OS releases

08 May 2018

Hello World, `androidx`

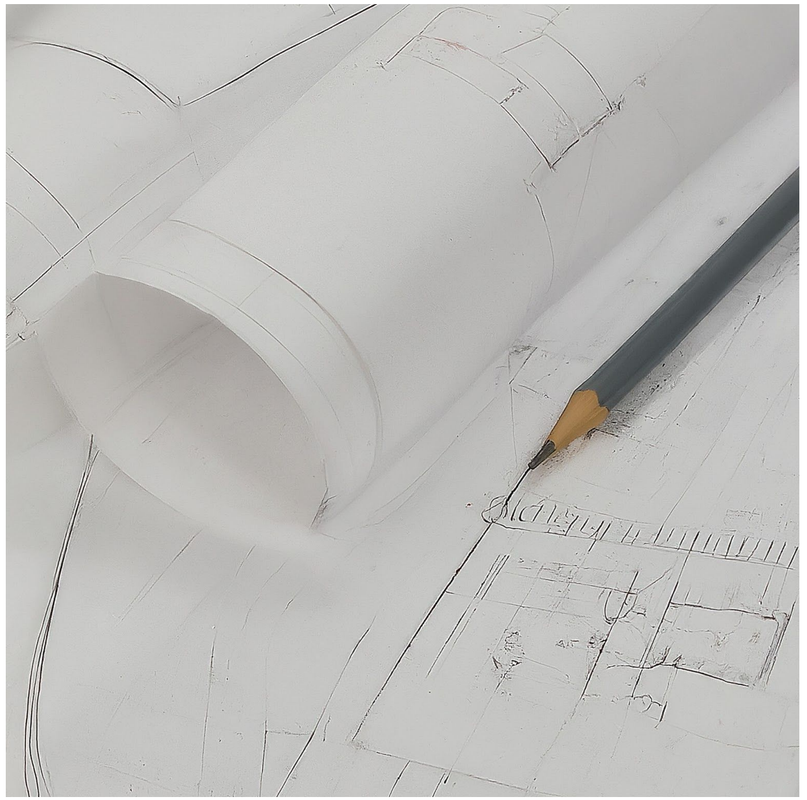


Generated by Google AI Image Generator

The New Plan

Split and restructure libraries

- À la carte library adoption
- Clear maven coordinate to package mapping
  - `androidx.foo:foo-bar` → `androidx.foo.bar`



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The New Plan

Adopt per library semantic versioning

The New Plan

Adopt per library semantic versioning

MAJOR.MINOR.PATCH

The New Plan

Adopt per library semantic versioning

MAJOR.MINOR.PATCH

The New Plan

Adopt per library semantic versioning

MAJOR.MINOR.PATCH

The New Plan

Adopt per library semantic versioning

MAJOR.MINOR.PATCH-(alpha|beta|rc)

The New Plan

Depend on the lowest possible versions of other libraries

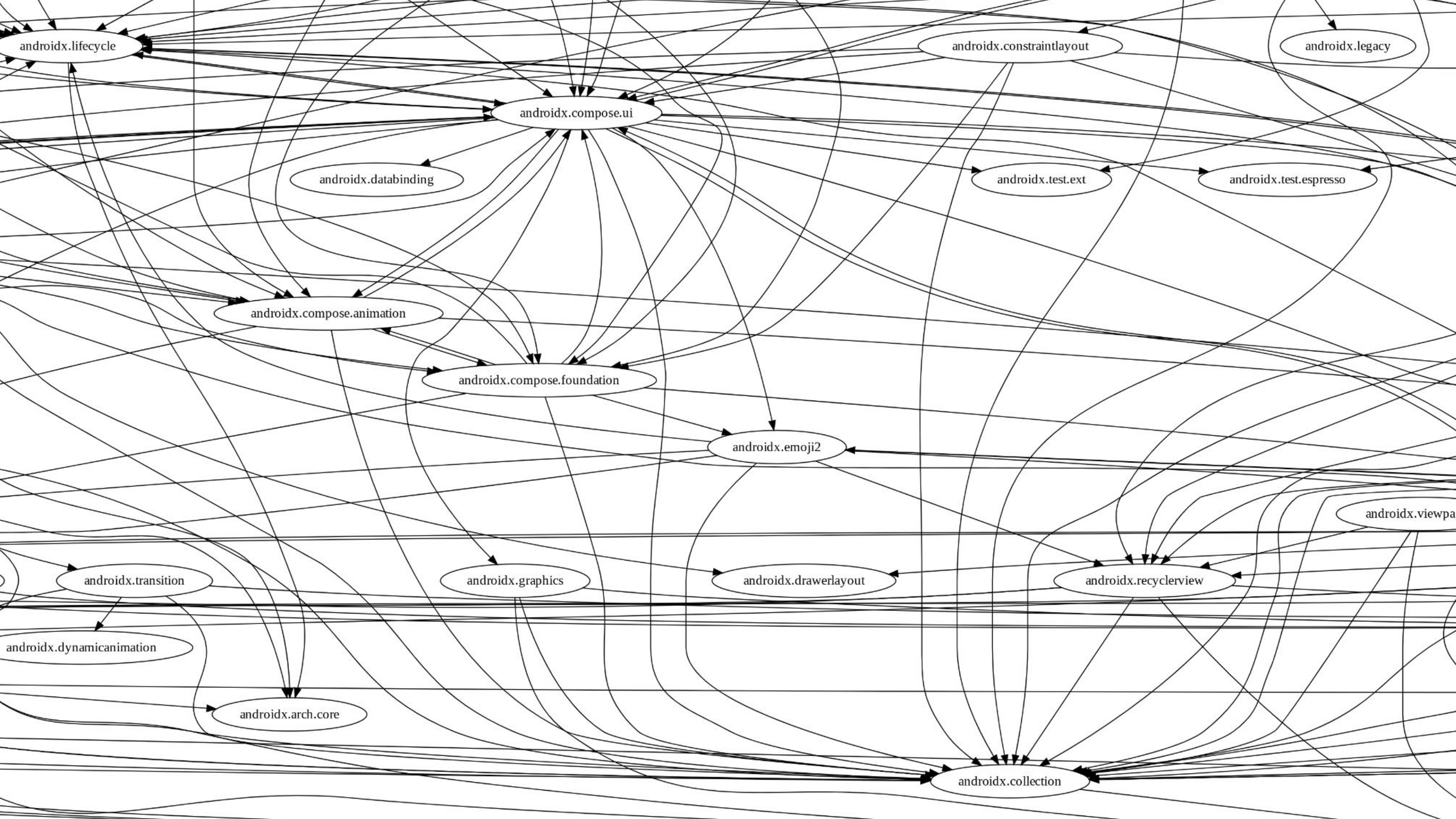
androidx.foo:foo:1.0.0
androidx.foo:foo:1.0.1
androidx.foo:foo:1.1.0
androidx.foo:foo:1.2.0
androidx.foo:foo:1.3.0

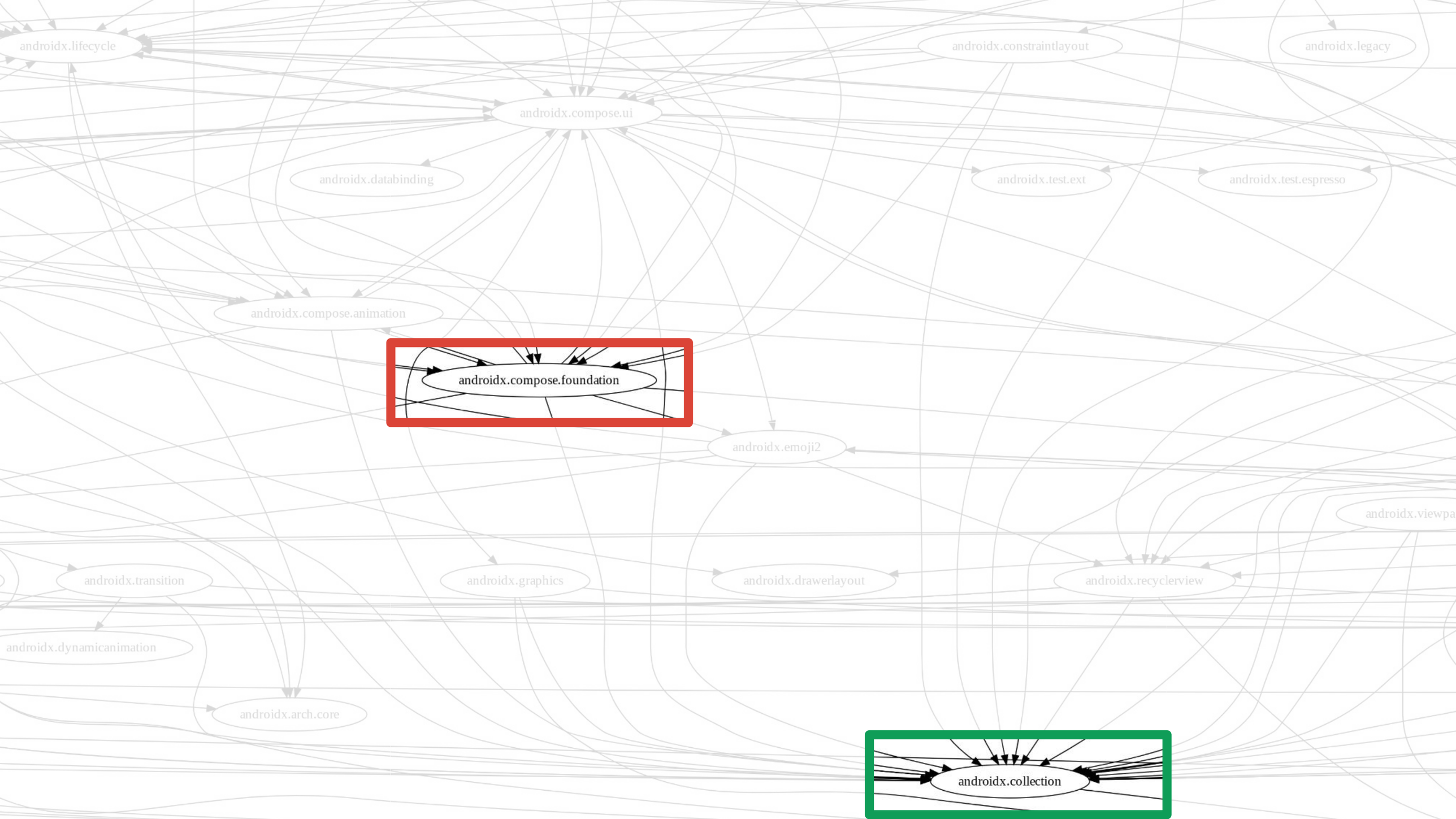
vs

androidx.foo:foo:1.0.0
androidx.foo:foo:1.0.1
androidx.foo:foo:1.1.0
androidx.foo:foo:1.2.0
androidx.foo:foo:1.3.0

Let’s execute the new plan!

Welp, this is a lot of manual work


androidx.lifecycle
androidx.constraintlayout
androidx.legacy
androidx.compose.ui
androidx.databinding
androidx.test.ext
androidx.test.espresso
androidx.compose.animation
androidx.compose.foundation
androidx.emoji2
androidx.viewpa
androidx.transition
androidx.graphics
androidx.drawerlayout
androidx.recyclerview
androidx.dynamicanimation
androidx.arch.core
androidx.collection


androidx.lifecycle
androidx.constraintlayout
androidx.legacy
androidx.compose.ui
androidx.databinding
androidx.test.ext
androidx.test.espresso
androidx.compose.animation
androidx.compose.foundation
androidx.emoji2
androidx.viewpa
androidx.transition
androidx.graphics
androidx.drawerlayout
androidx.recyclerview
androidx.dynamicanimation
androidx.arch.core
androidx.collection

Pinned vs Unpinned

```
api(project(“:foo:foo-bar”))
```

vs

```
api(“androidx.foo:foo-bar:1.1.0”)
```

Can we move to self-service?

Optional Release Trains
(controlled chaos)

Welcome to the Jetpack Release Service!

Library Group Release Details

Group Id: **androidx.annotation**
Release Branch

aosp-androidx-main

Release Date

October 2, 2024 (batch)

October 2, 2024 (batch)
October 16, 2024 (batch)
October 30, 2024 (batch)
November 13, 2024 (batch)
December 11, 2024 (batch) (not schedulable)

Group Id	Artifact Id	Release Version	Release Branch	Release Status	Release Build Id	Pending Api Reviews	Release Info	Release Dependencies	Release Dependency Constraints
androidx.annotation - Ready									
androidx.camera - Ready									
androidx.camera.viewfinder - Not Ready									
androidx.core - Requires Attention									
androidx.core	core	1.15.0-beta01	aosp-androidx-main	PENDING API REVIEW	12389853 🔗	🔗	🔗	NONE	androidx.core:core-ktx:1.15.0-beta01 androidx.core:core-testing:1.15.0-beta01
	core-ktx	1.15.0-beta01	aosp-androidx-main	DEPENDENCY PENDING API REVIEW	12389853 🔗	NONE	🔗	androidx.core:core:1.15.0-beta01	androidx.core:core:1.15.0-beta01
	core-testing	1.15.0-beta01	aosp-androidx-main	DEPENDENCY PENDING API REVIEW	12389853 🔗	NONE	🔗	androidx.core:core:1.15.0-beta01	androidx.core:core:1.15.0-beta01
androidx.fragment - Not Ready									
androidx.heifwriter - Not Ready									
androidx.lifecycle - Not Ready									

`androidx-main` vs release branches

alpha & beta from `androidx-main`

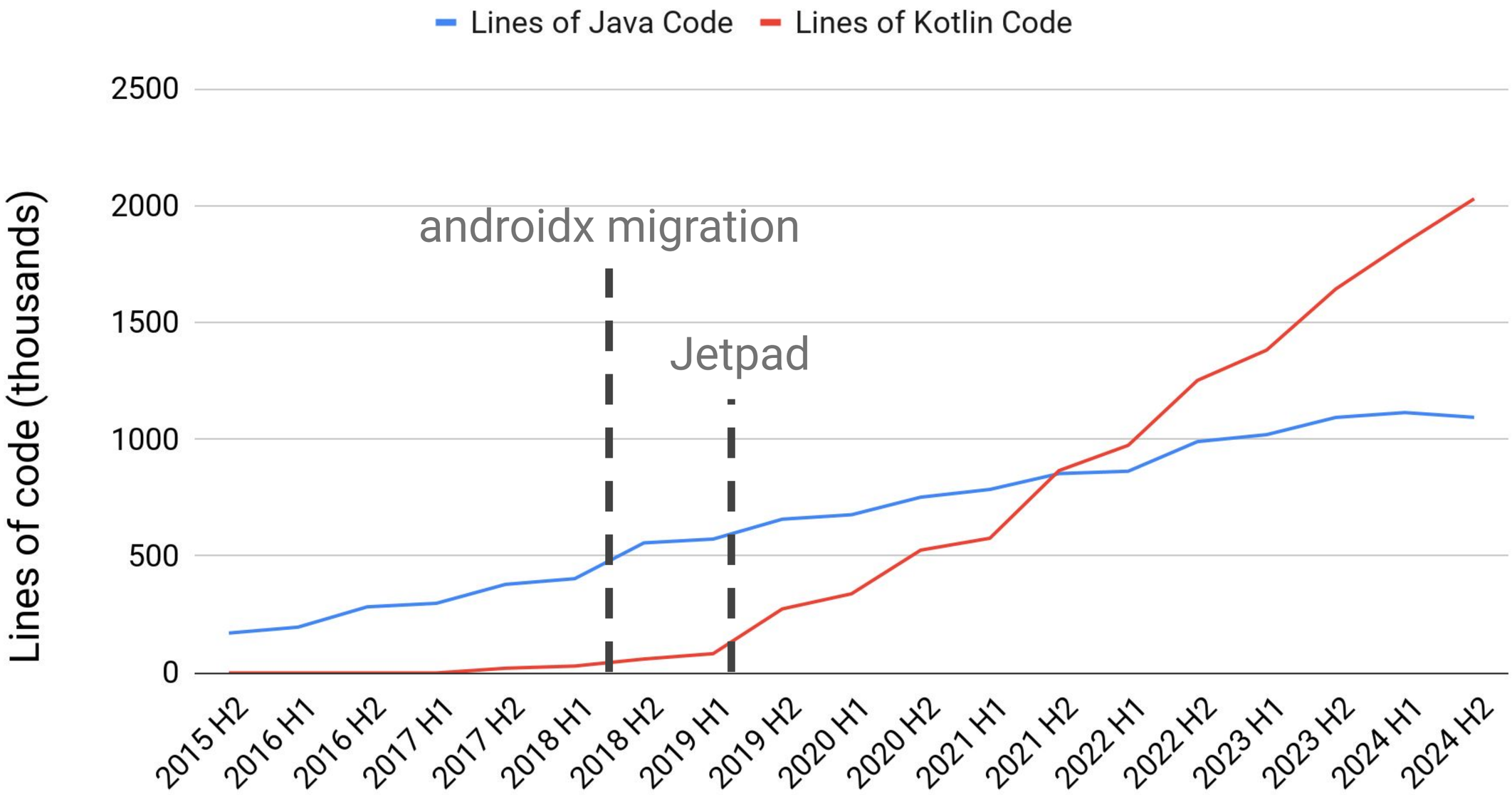
- regular development

rc & stable from `androidx-foo-release`

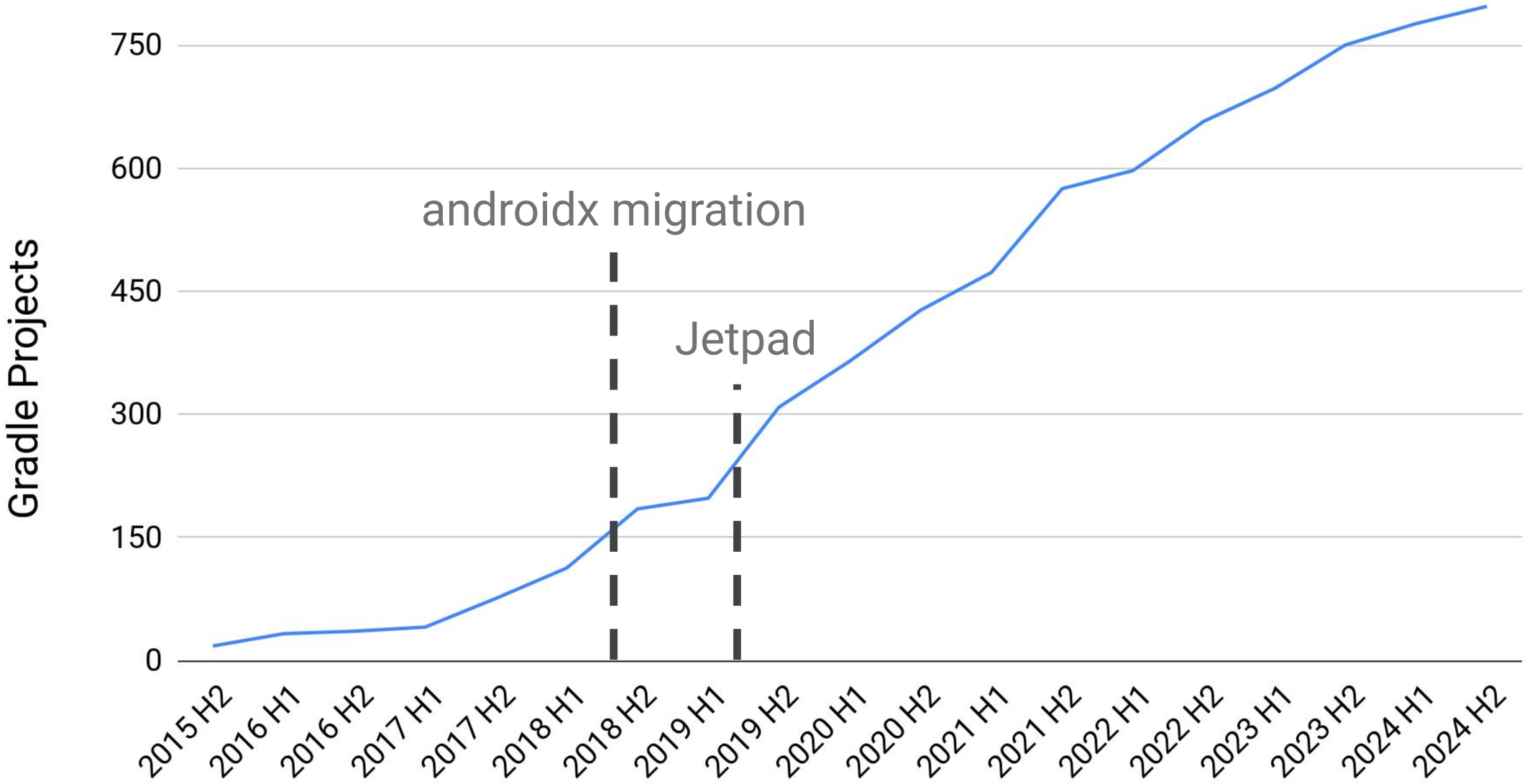
- cherry-pick only

How Has It Gone?

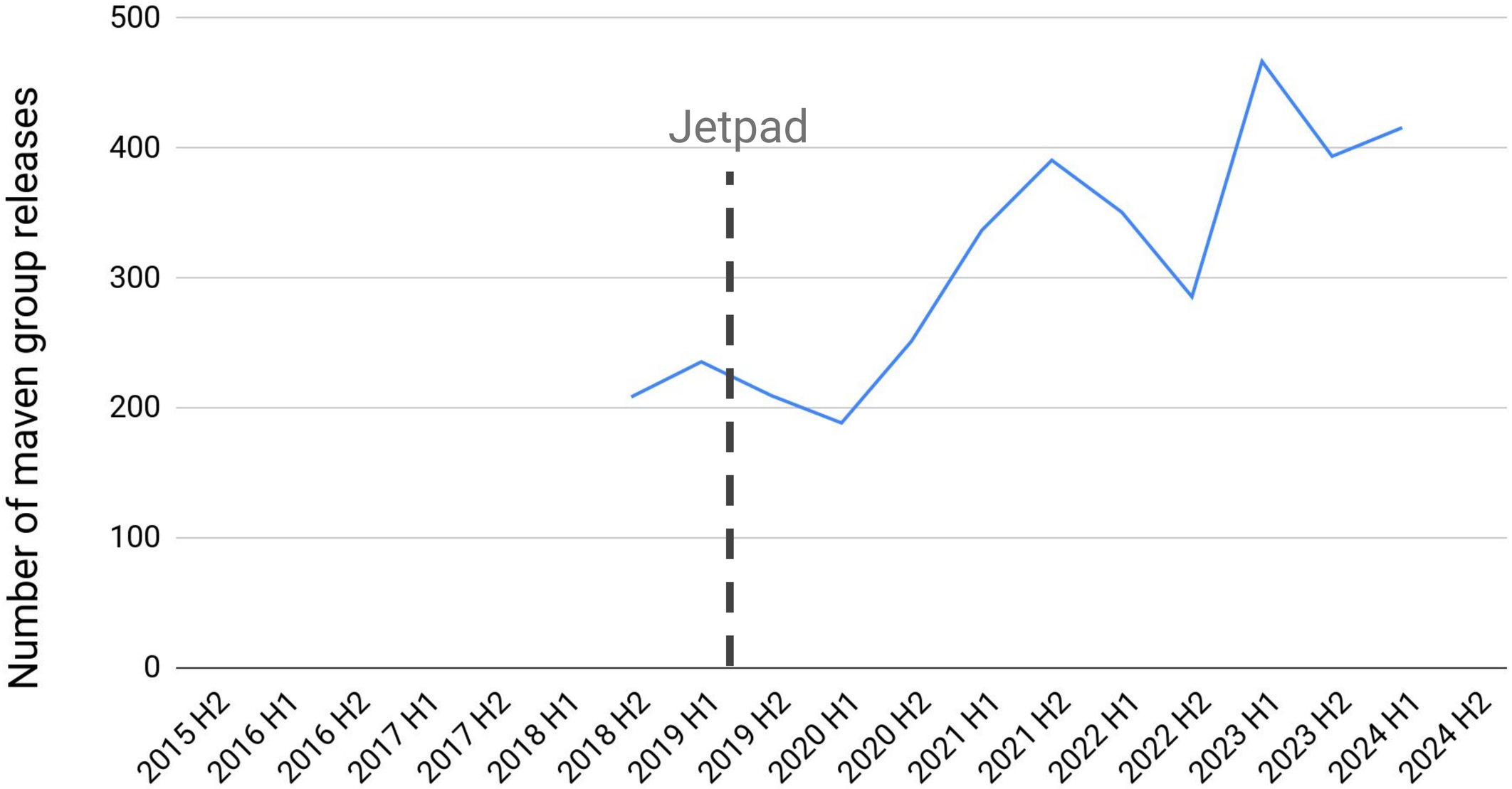
Scale of androidx



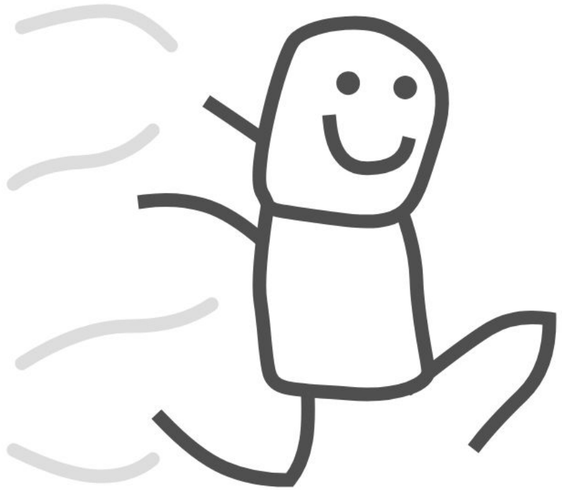
Scale of androidx



Scale of androidx



MISSION ACCOMPLISHED?



Current Pain Points

Painful bugfix releases

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Difficult build infrastructure backports to release branches

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Kotlin Multiplatform artifact explosion

That’s all Folks!