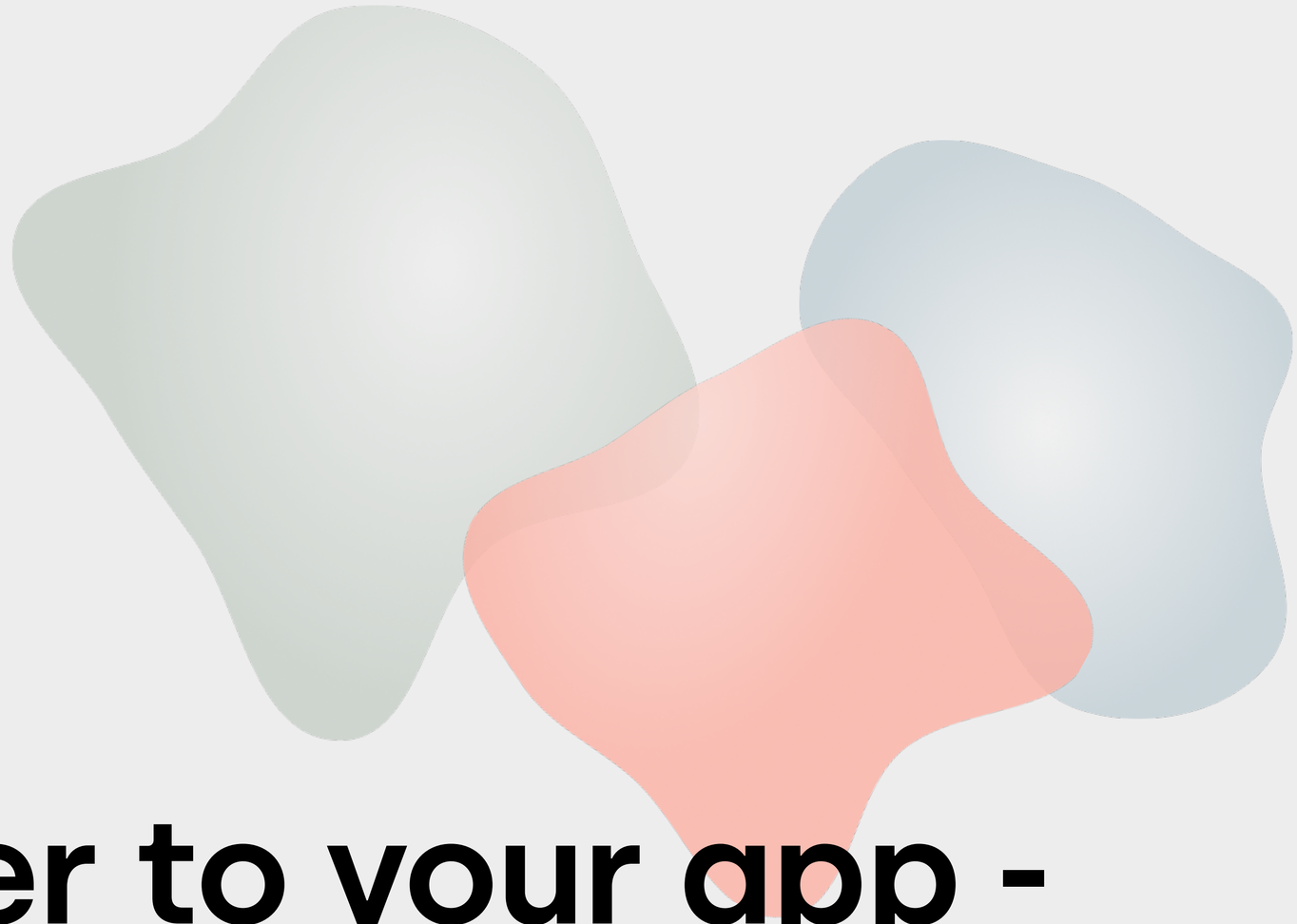
Łukasz Wiśniewski, @vishna



Adding Flutter to your app - what are they not telling you?

Droidcon Berlin, 2021

Few things to mention

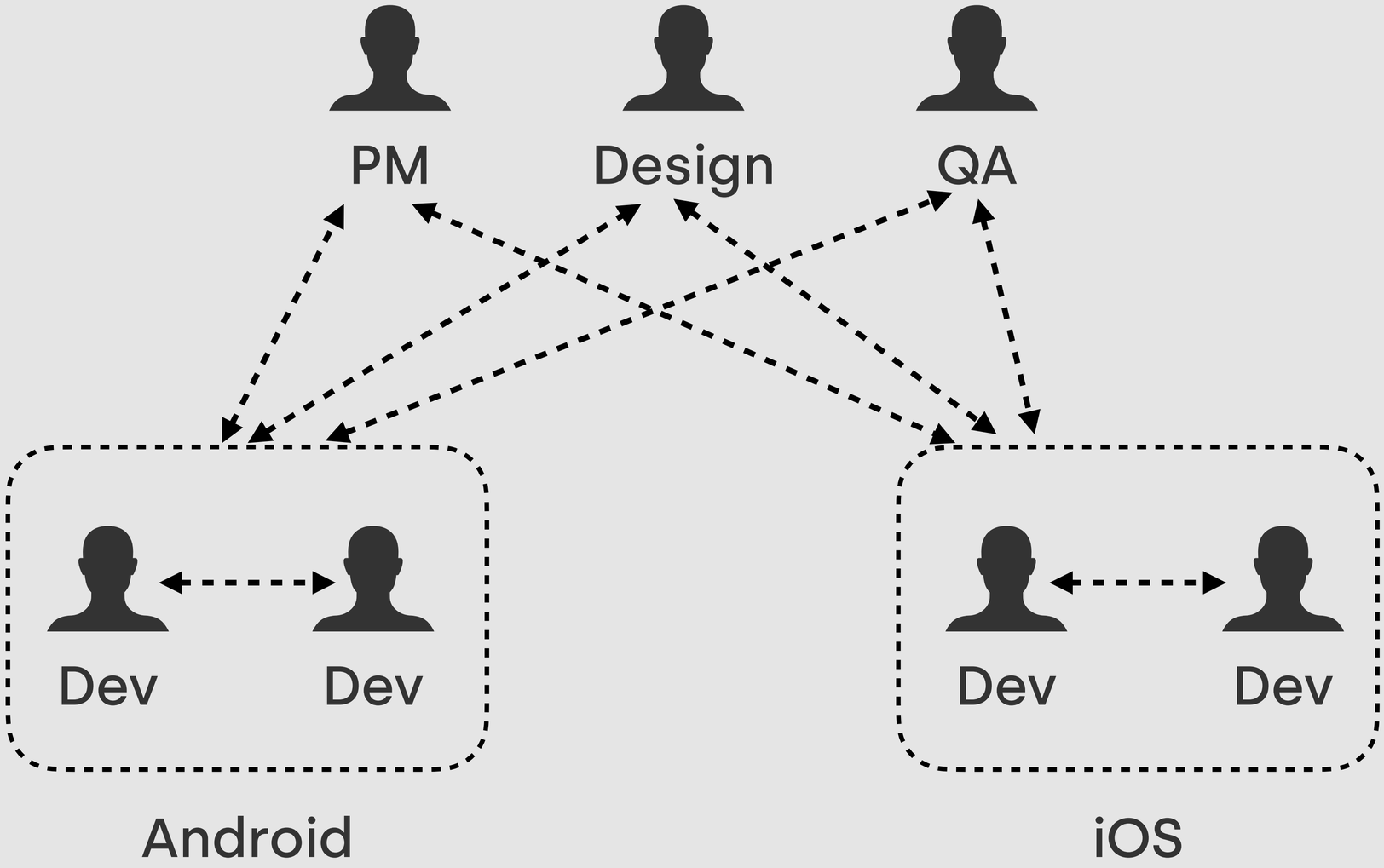
“BuildContext” of this presentation

- Abstract submitted sometime in March, 2020
- The pandemic
- It was Flutter 1.2
- Left EyeEm 📸, joined DB 🚂
- Left DB 🚂, starting something new 🚀
- It is Flutter 2.5 now

Why?

Feature Imparity

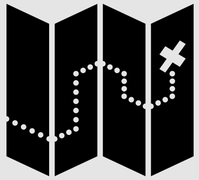
Small Team



How?

Introduce

Teach



Plan

Execute

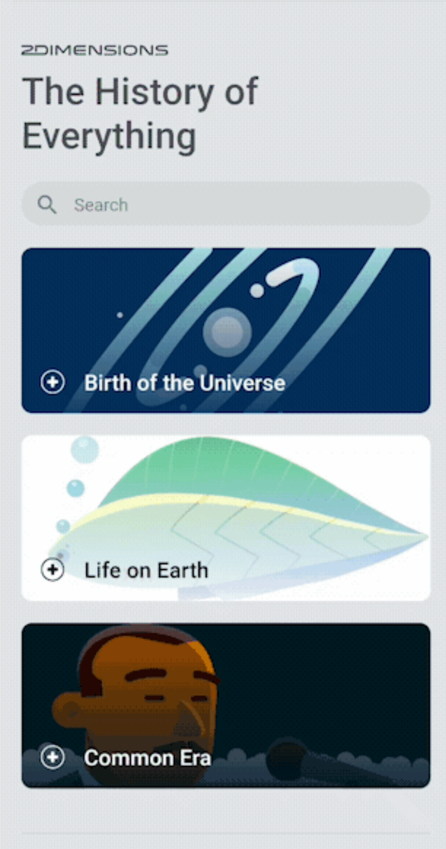
“

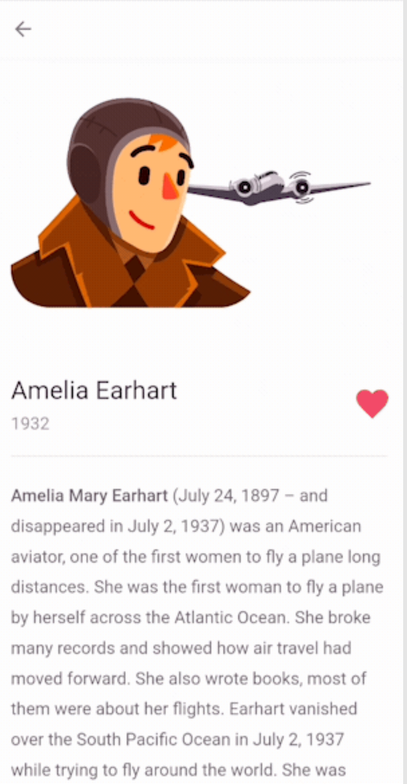
The biggest challenge is getting everyone on board.

Seeing is believing

What changed my mind about Flutter?

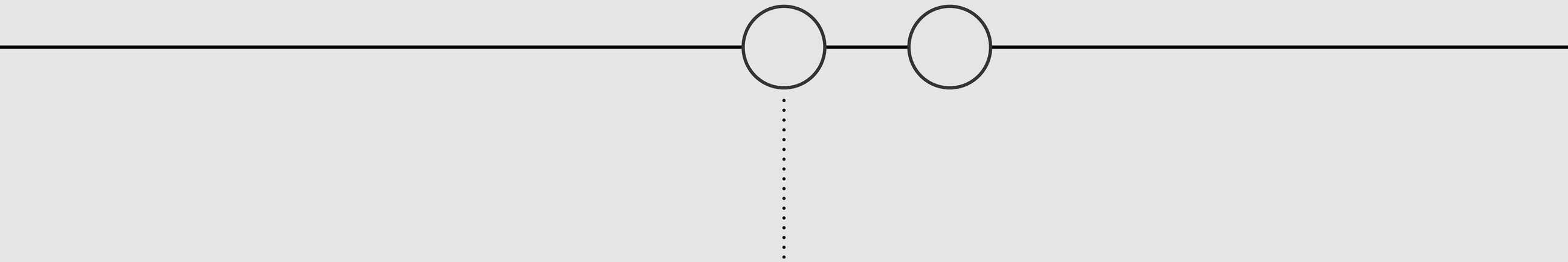
The History of Everything





Prototype Kick-Off

Collect Feedback



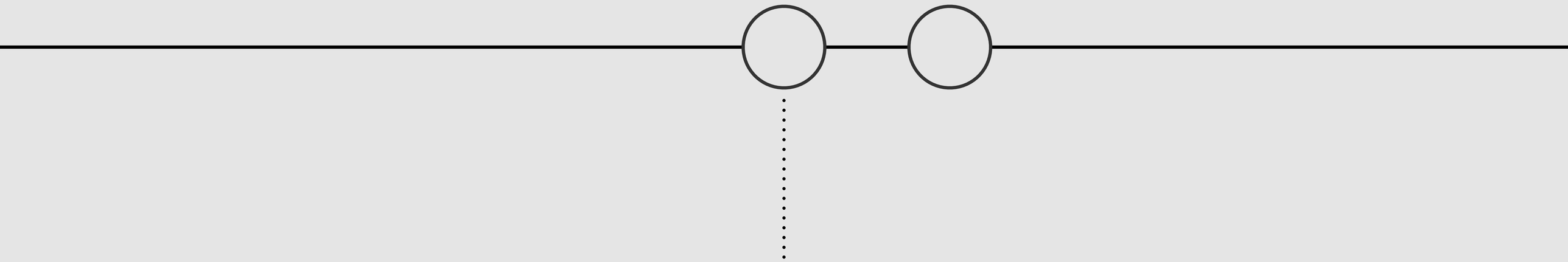
Showcase

Feedback Form

Collect answers asynchronously

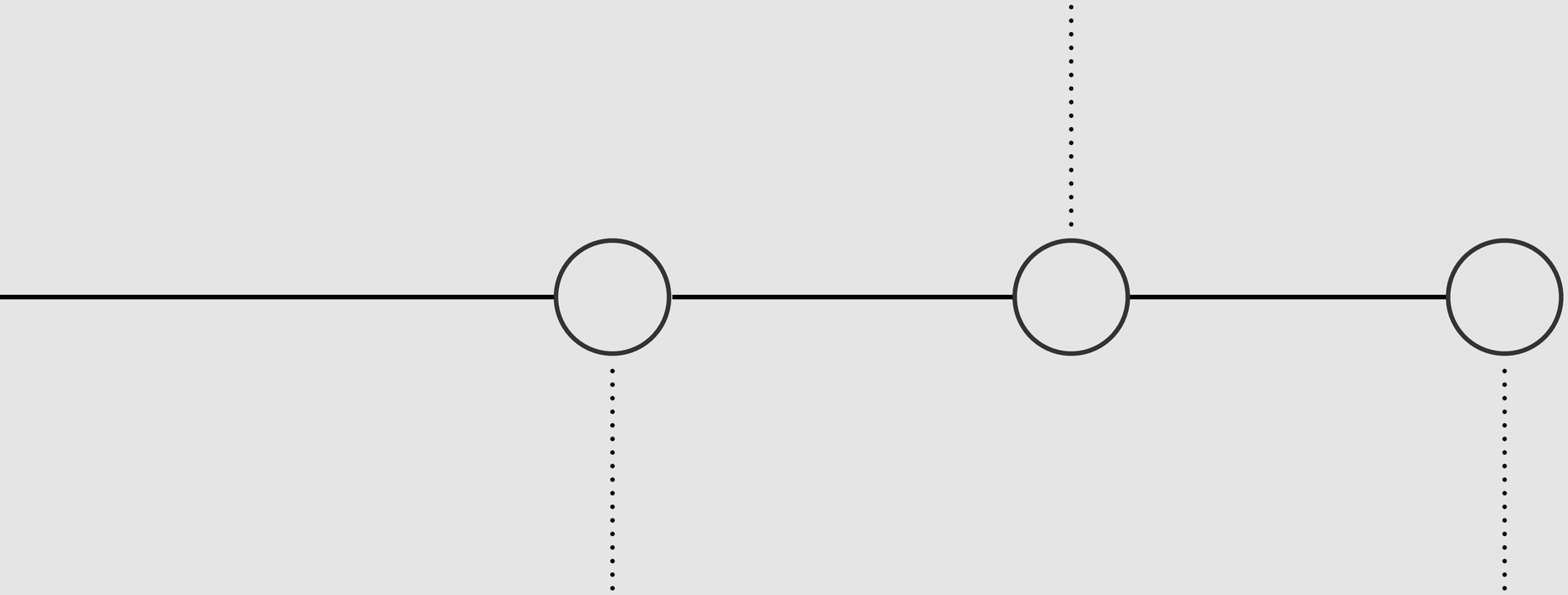
- How would you rate quality of the prototype?
- What other feature would you like to see in the prototype?
- How do you feel about using Flutter?
- Do you think cross-platform approach can benefit company?
- What risks do you see?
- Do you think Flutter can help attract developers to your company?
- Do you think knowing Flutter can increase your maker value?

Feedback Form



Showcase

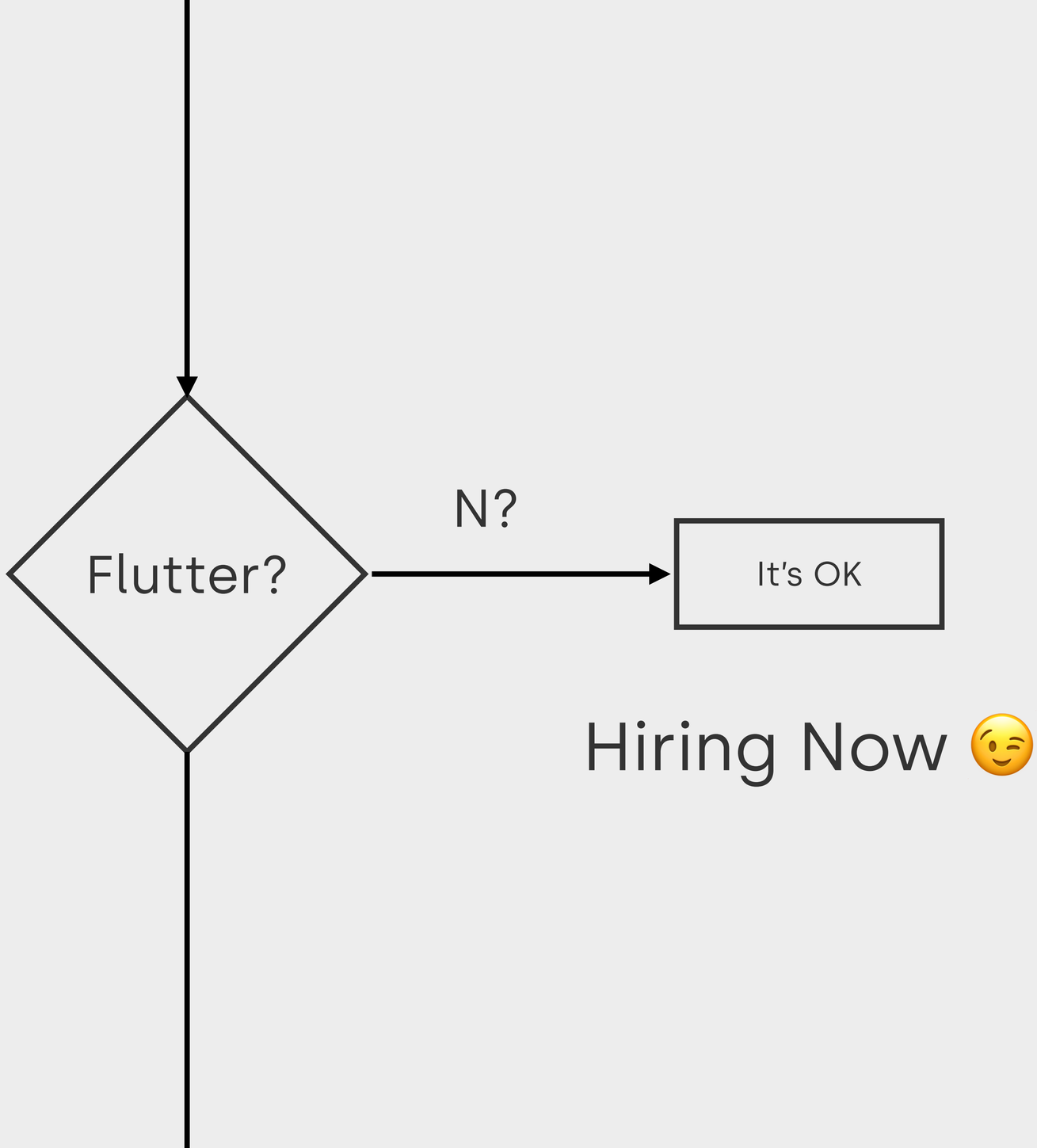
Feedback Summary



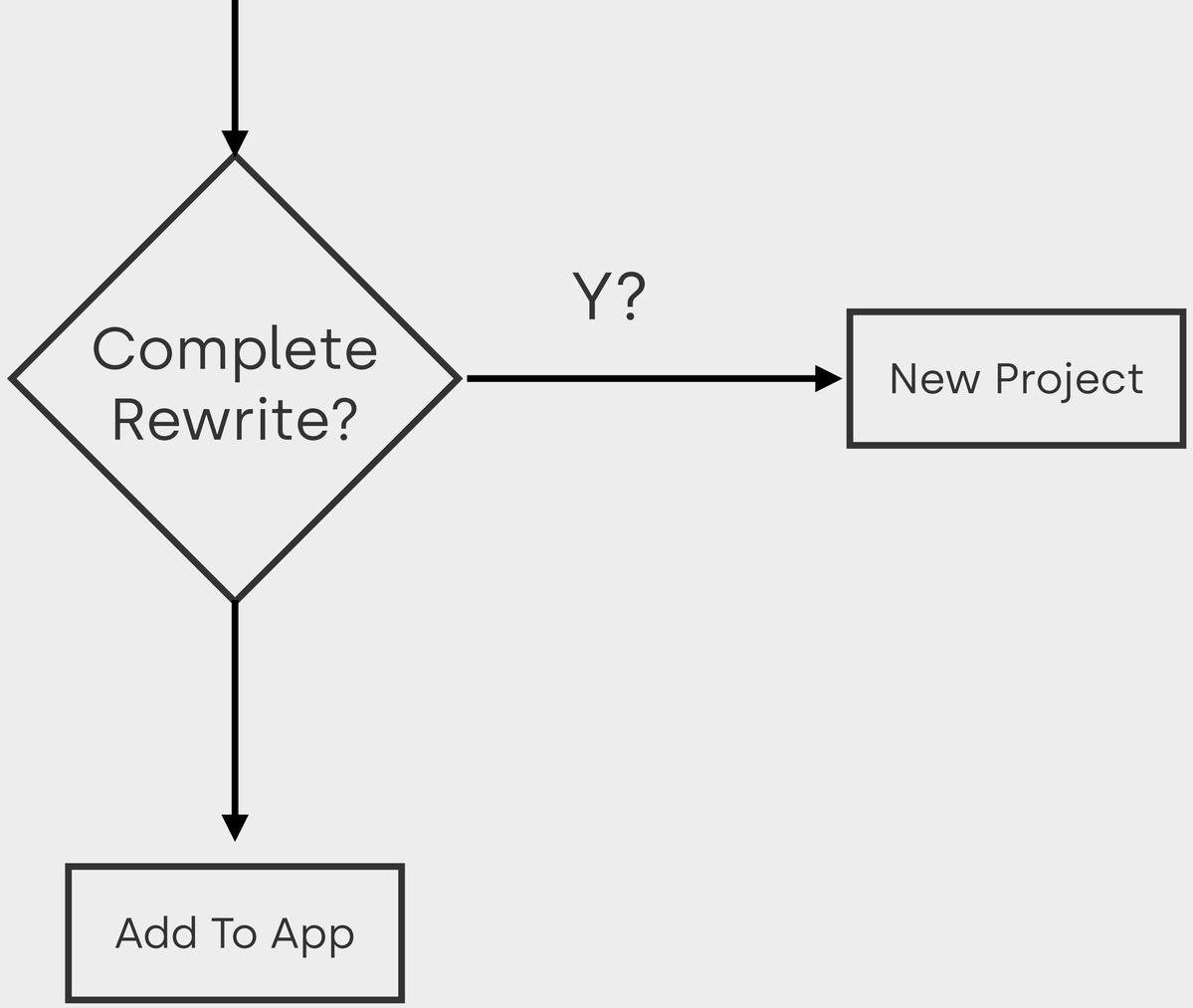
Deadline For Feedback

Meet & Decide

Decision Process

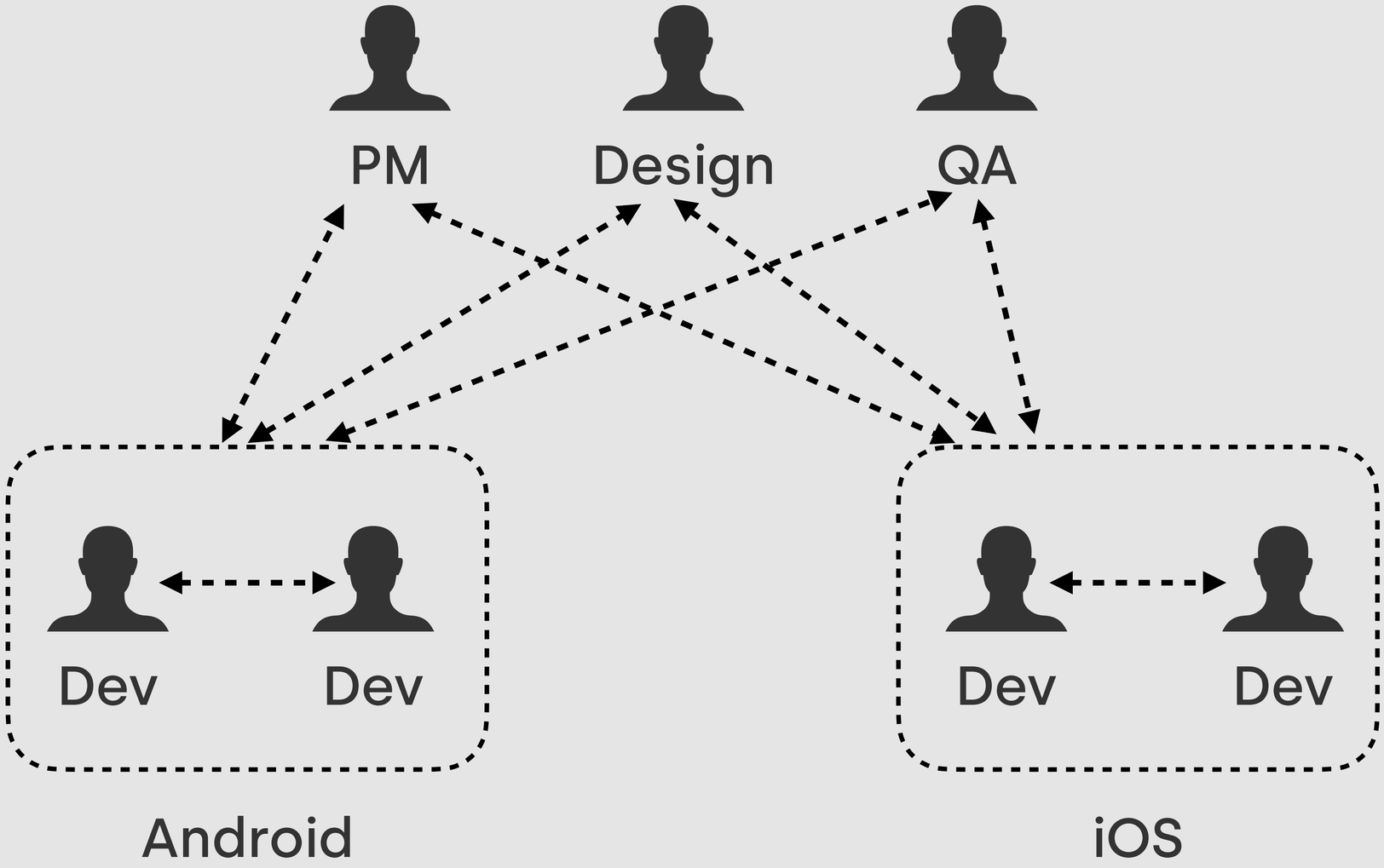


Hiring Now 😉

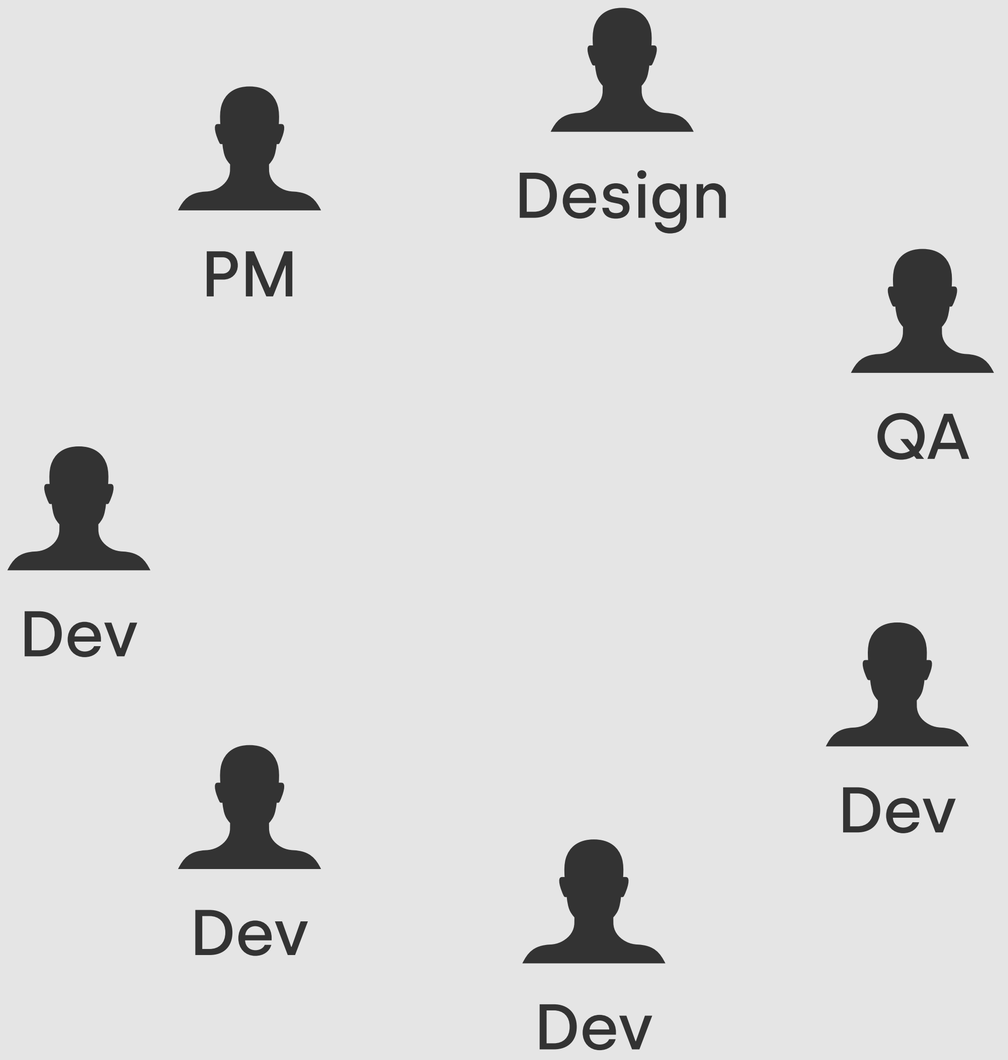

Complete Rewrite?
Y?
New Project
Add To App

Team, meet Flutter

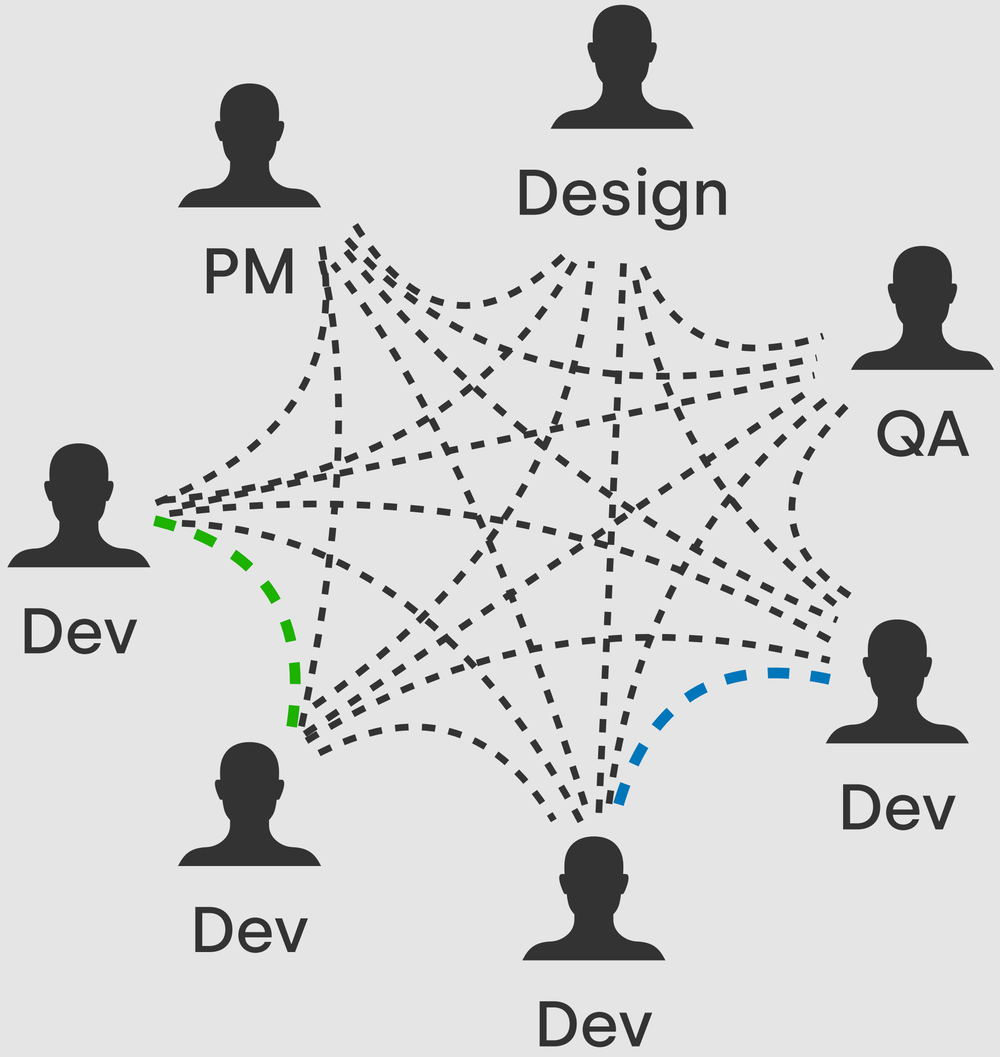
Team



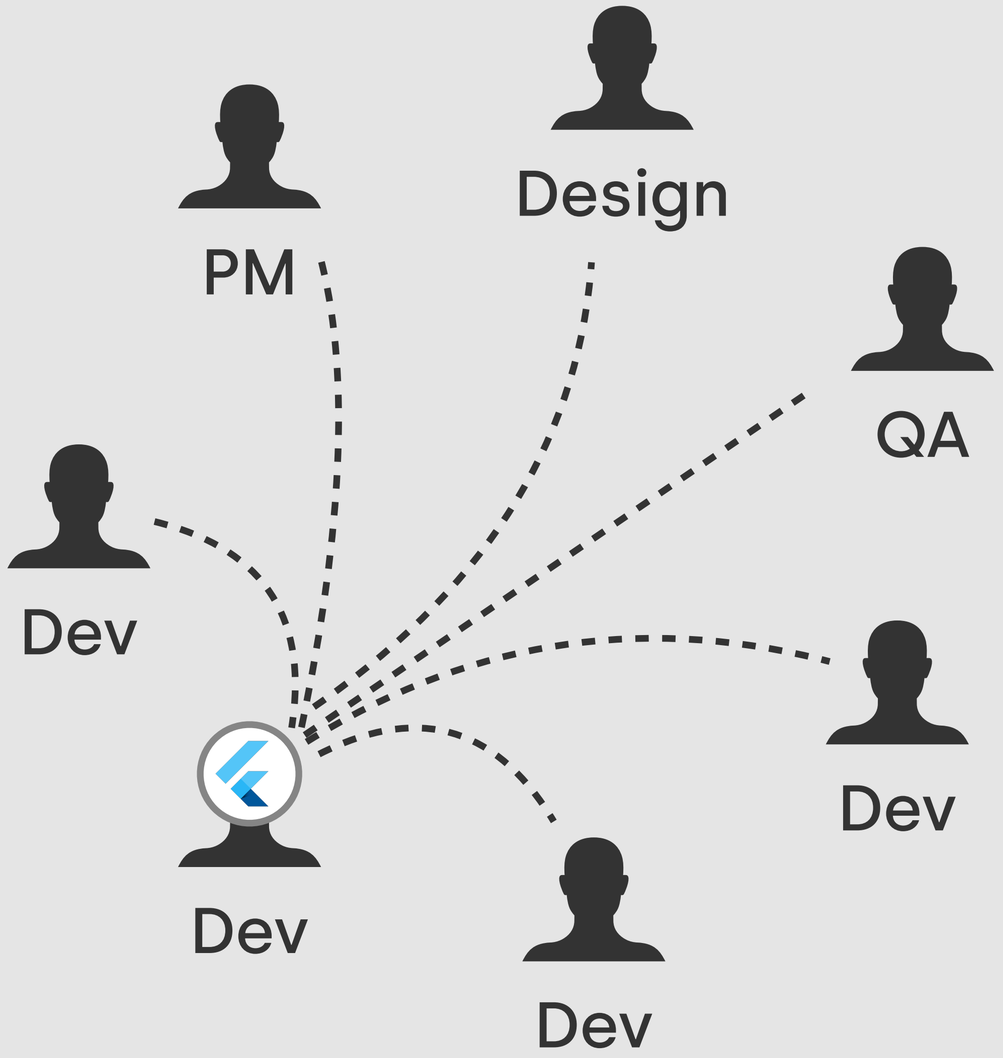
Team + Flutter



Team + Flutter



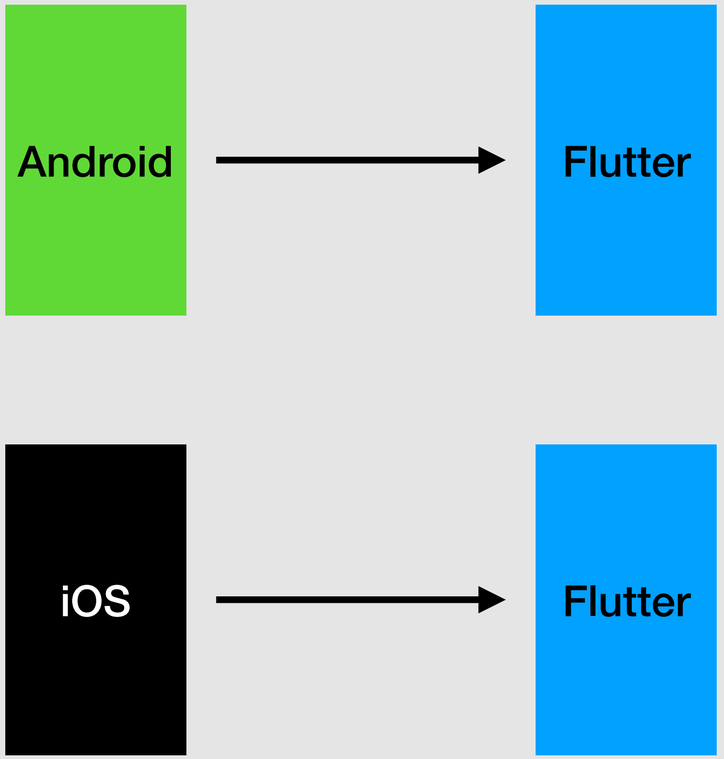
You're a “Flutter Expert” Now



Workshops

Workshop No 1

Verify Add2App compiles & runs with your apps



Workshop No 1

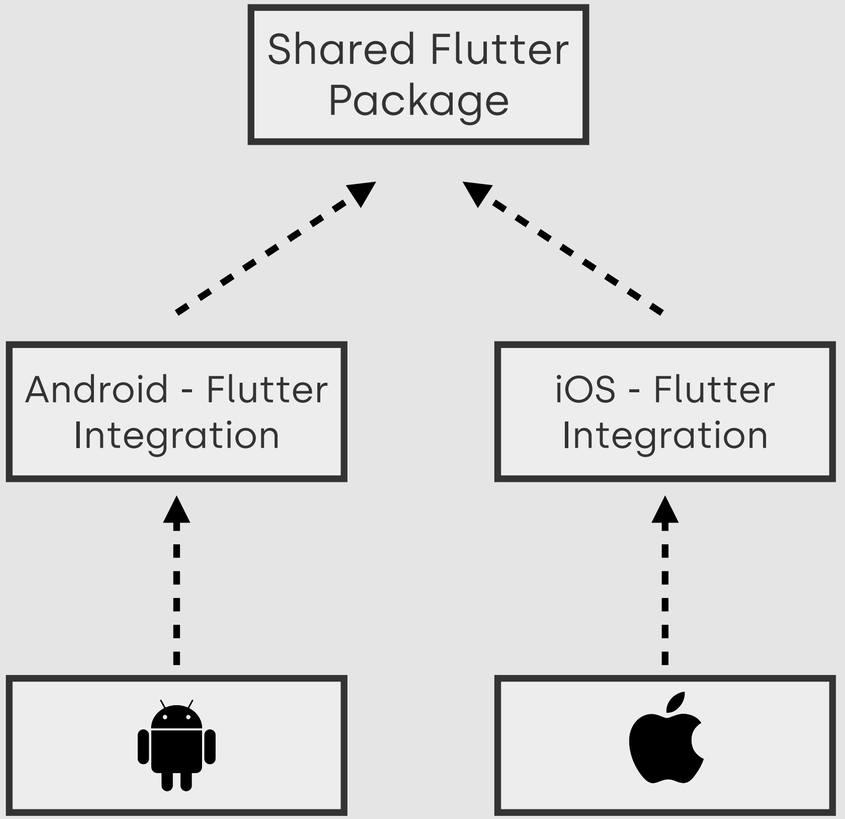
Agenda

- Read/watch these:
  - Add Flutter To existing app (official docs)
  - Android with a side of Flutter, Filip Hráček
  - Adding Flutter you your Android App, Matt Carroll
  - How to add Flutter to your existing app, Salih Guler
- Try to get it working (🤞)
- Ask Flutter Community for help

Swift Package Manager #33850

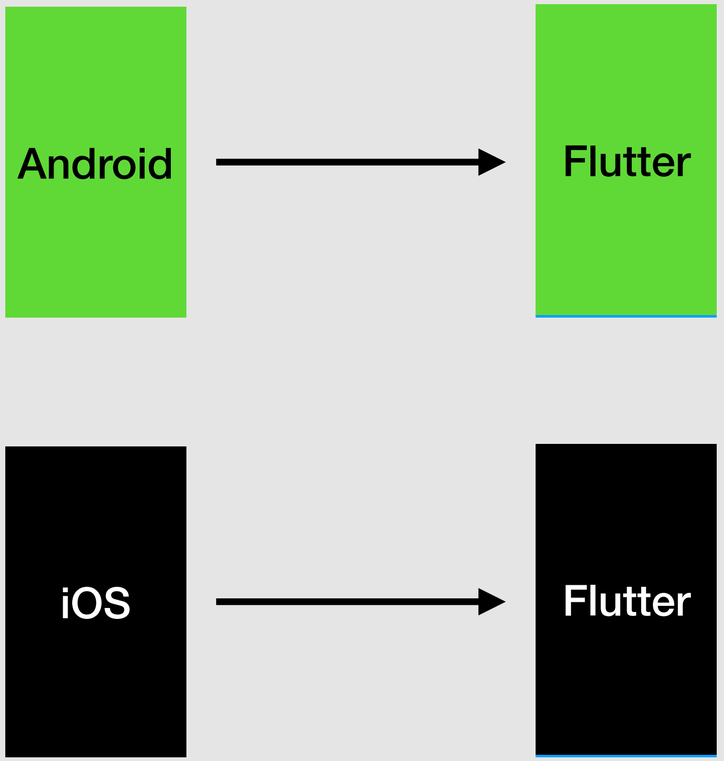
Workshop No 1

Outcome



Workshop No 2

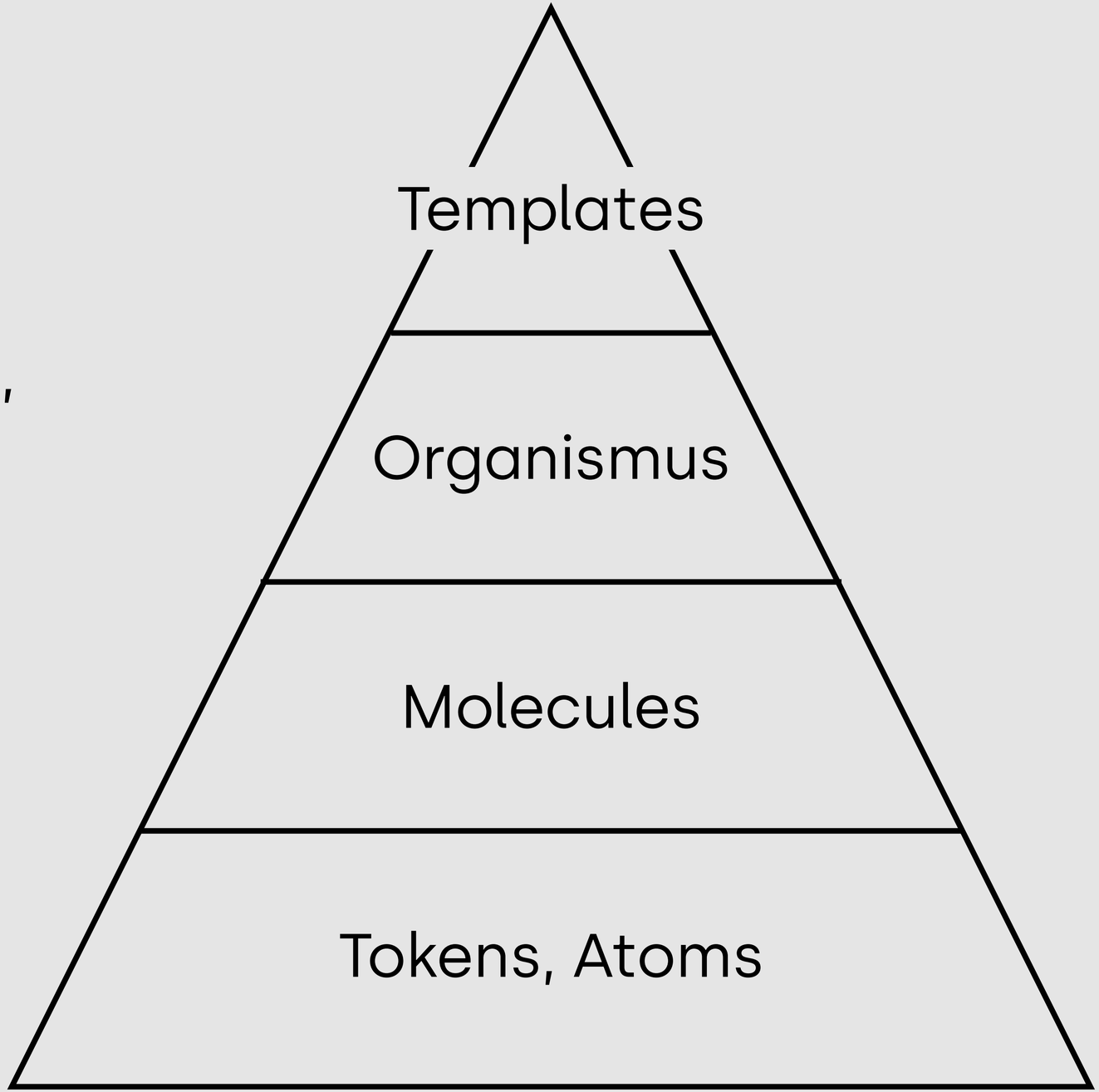
Make it look goooood



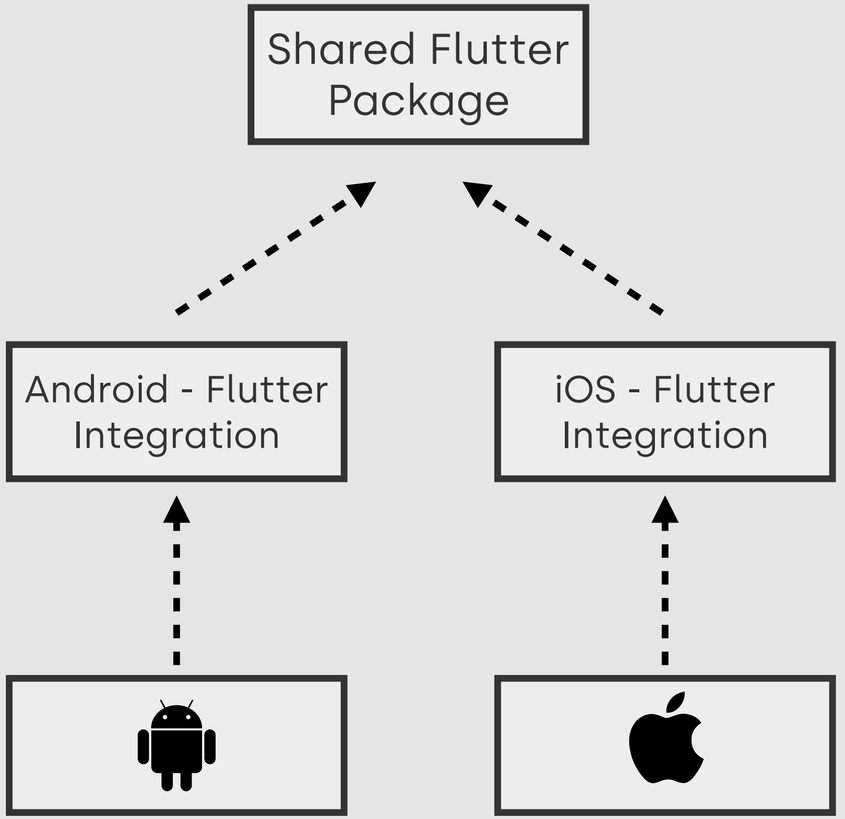
Workshop No 2

Start with Design System

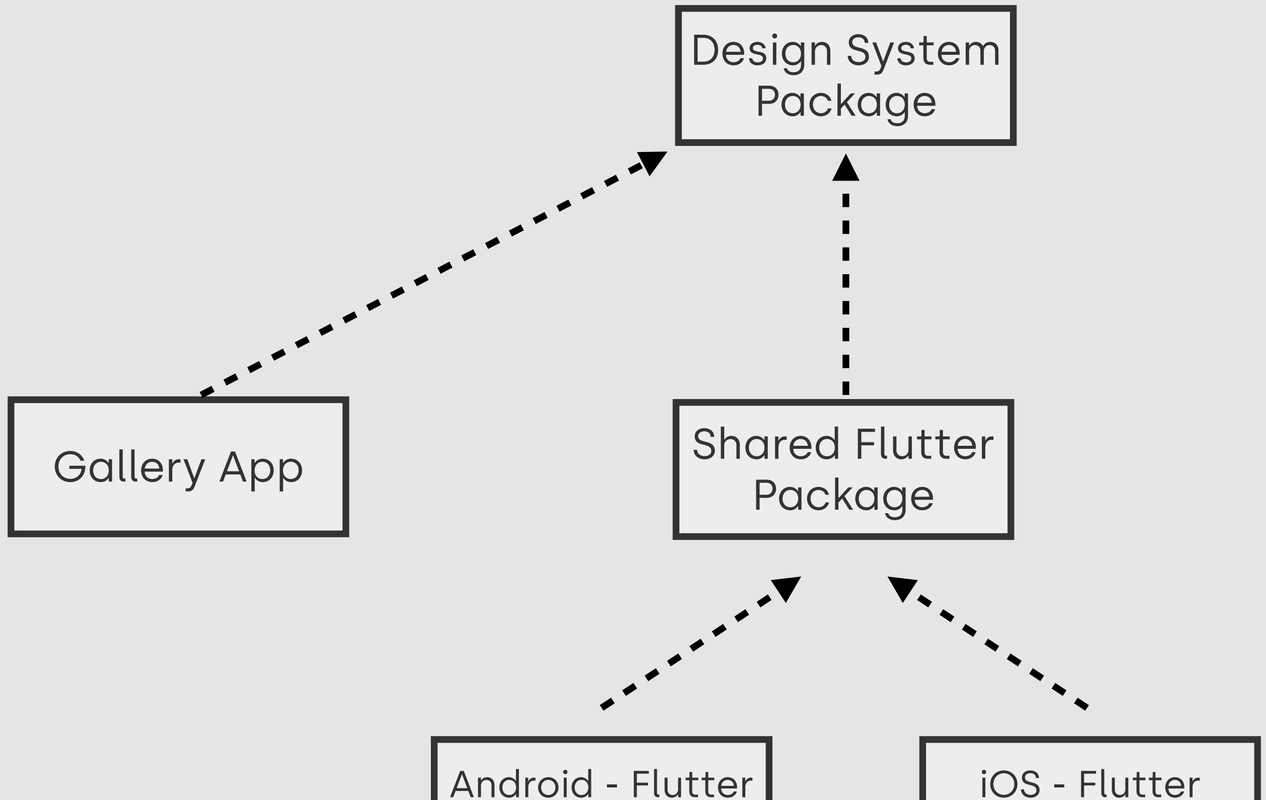
- Typography, Dimensions, Colors, Icons
- Buttons, Switches
- Navigation Bars, Cards
- Pages



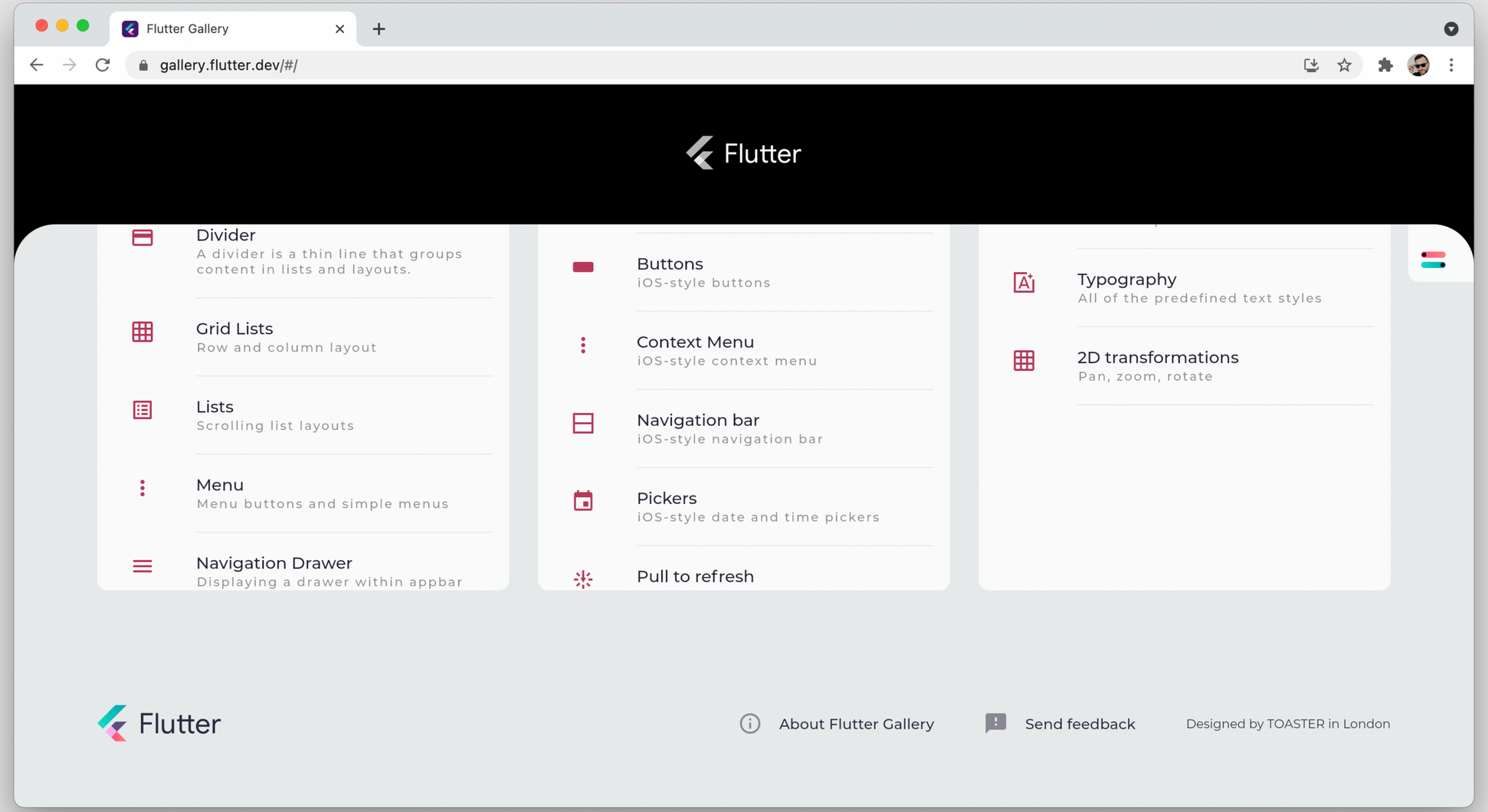
Workshop No 2



Workshop No 2

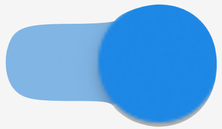


gallery.flutter.dev



Platform Specific UI

```
if (defaultTargetPlatform == TargetPlatform.android) {
  return Switch(value: value, onChanged: onChanged);
} else {
  return CupertinoSwitch(value: value, onChanged: onChanged);
}
```



```dart
class AdaptiveWidget extends StatelessWidget {
  final WidgetBuilder iOS;
  final WidgetBuilder android;
  const AdaptiveWidget({Key? key, required this.iOS, required this.android})
      : super(key: key);

  @override
  Widget build(BuildContext context) {
    if (defaultTargetPlatform == TargetPlatform.android) {
      android(context);
    } else {
      iOS(context);
    }
  }
}
```

```dart
class XYZSwitch extends StatelessWidget {
  final bool value;
  final ValueChanged<bool> onChanged;
  const AdaptiveWidget({Key? key, required this.value, required
this.onChanged})
      : super(key: key);

  @override
  Widget build(BuildContext context) {
    return AdaptiveWidget(
      android: (_) => Switch(value: value, onChanged: onChanged),
      iOS: (_) => CupertinoSwitch(value: value, onChanged: onChanged),
    );
  }
}
```

```
Switch(value: true, onChanged: () {})
```

```
XYZSwitch(value: true, onChanged: () {})
```

*Predictable Name

*Design System Prefix

Workshop 3

How to build a page?

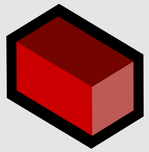
- State Management
- Navigation
- Dependency Injection?
- Tests?

Simple Page

Bunch of classes...

Templates

Quickly bootstrap pages

- Write your own script
- Use some IDE extension
- Check mason 

Templates

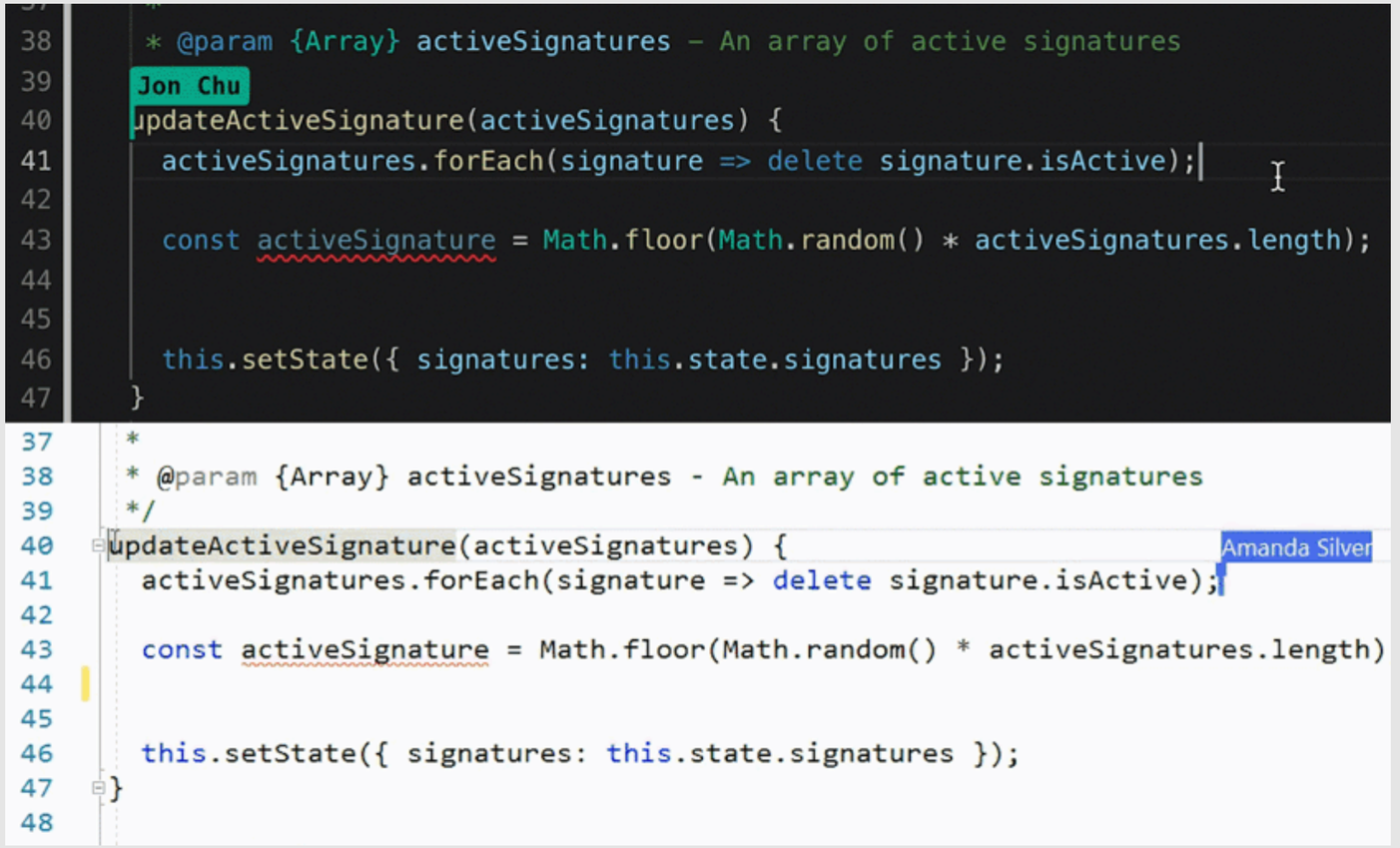
Benefits

- Consistent naming
- Time saved
- Less error prone

Remote Workshops

Remote Workshops

Live Code Sharing



Remote Workshops

Live Code Sharing + Around

```
38    * @param {Array} activeSignatures - An array of active signatures
39    Jon Chu
40    updateActiveSignature(activeSignatures) {
41      activeSignatures.forEach(signature => delete signature.isActive);
42
43      const activeSignature = Math.floor(Math.random() * activeSignatures.length);
44
45
46      this.setState({ signatures: this.state.signatures });
47    }
```

```
37    *
38    * @param {Array} activeSignatures - An array of active signatures
39    */
40    updateActiveSignature(activeSignatures) {                    Amanda Silver
41      activeSignatures.forEach(signature => delete signature.isActive);
42
43      const activeSignature = Math.floor(Math.random() * activeSignatures.length)
44
45
46      this.setState({ signatur                te.si
47    }
48
```

Migration

Feed

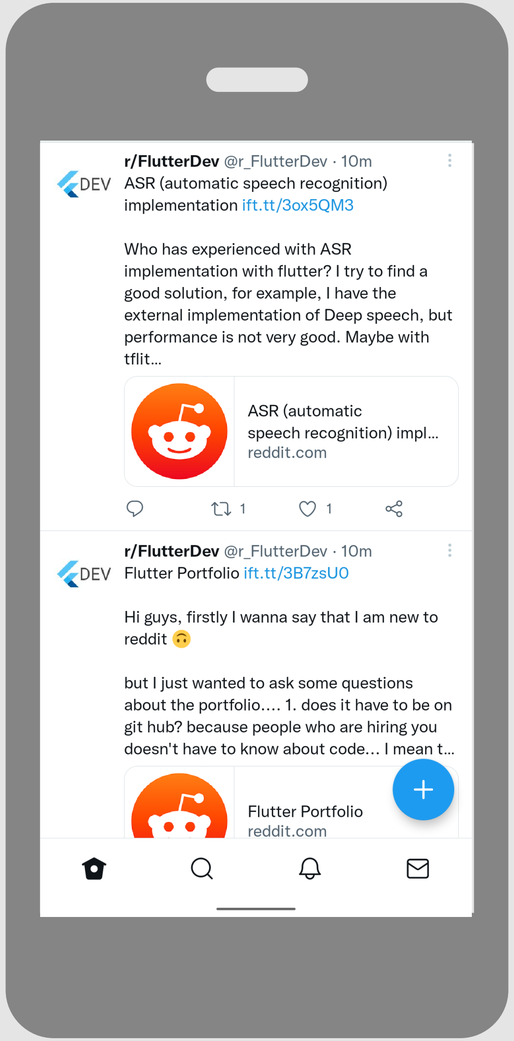
Home

Settings

Onboarding

Search

Tweet Details



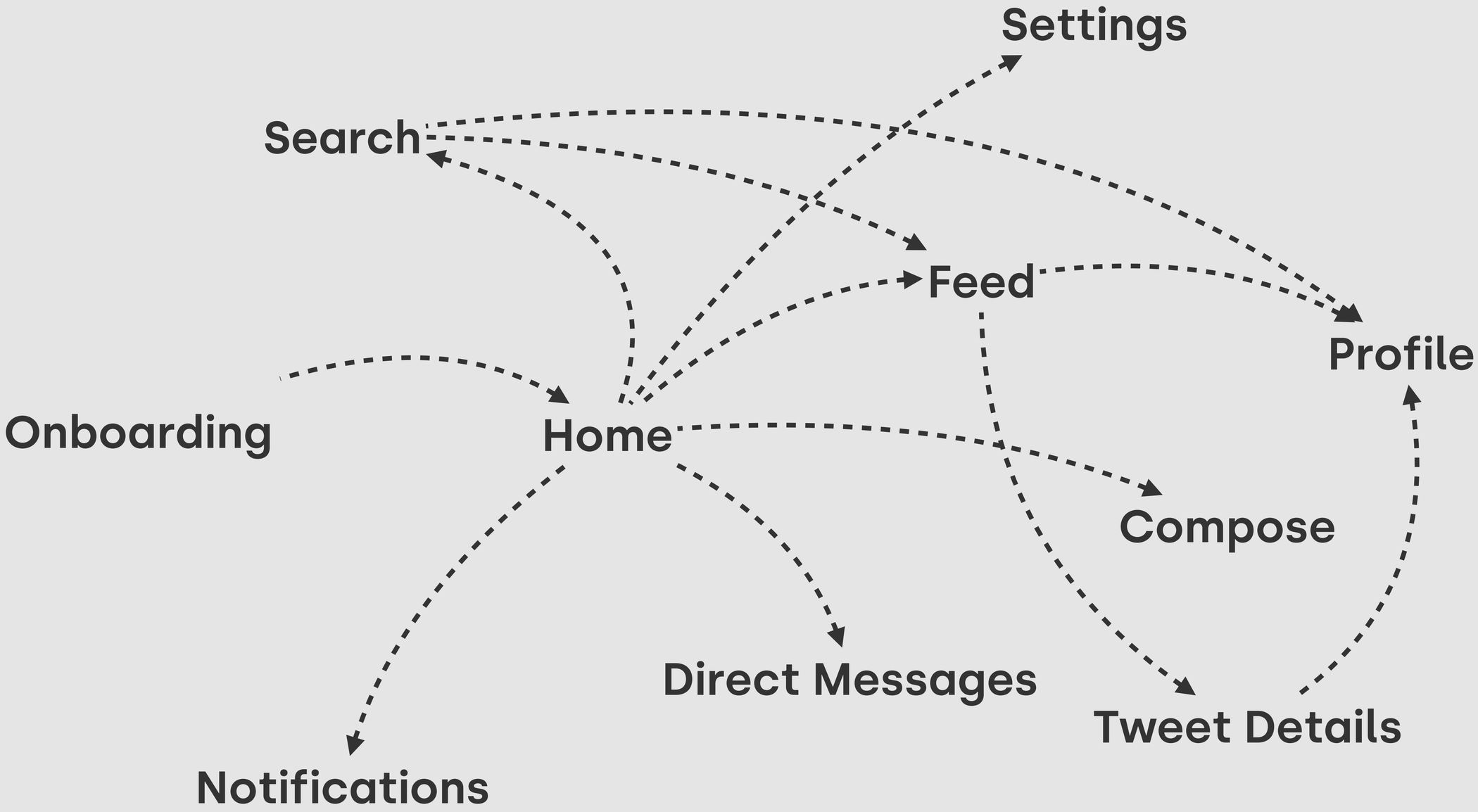
Notifications

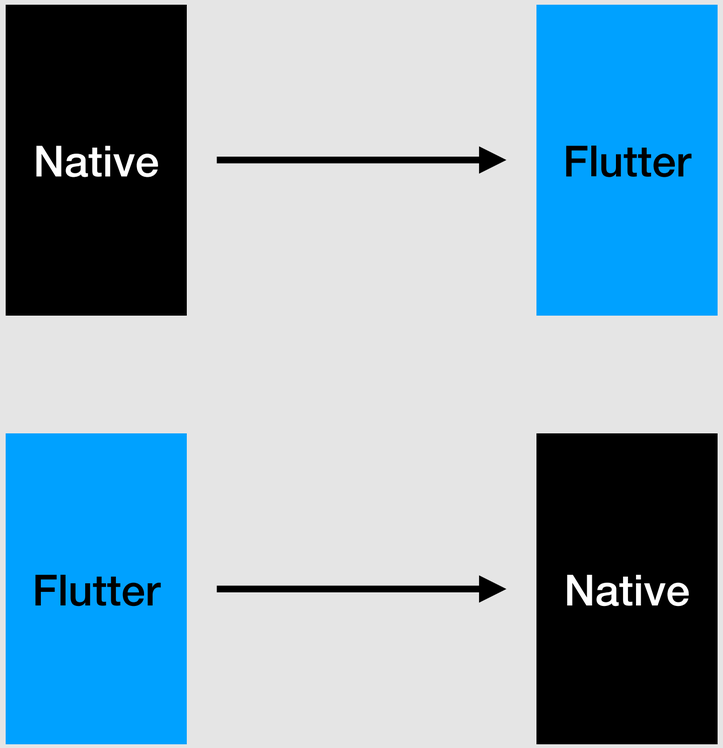
Direct Messages

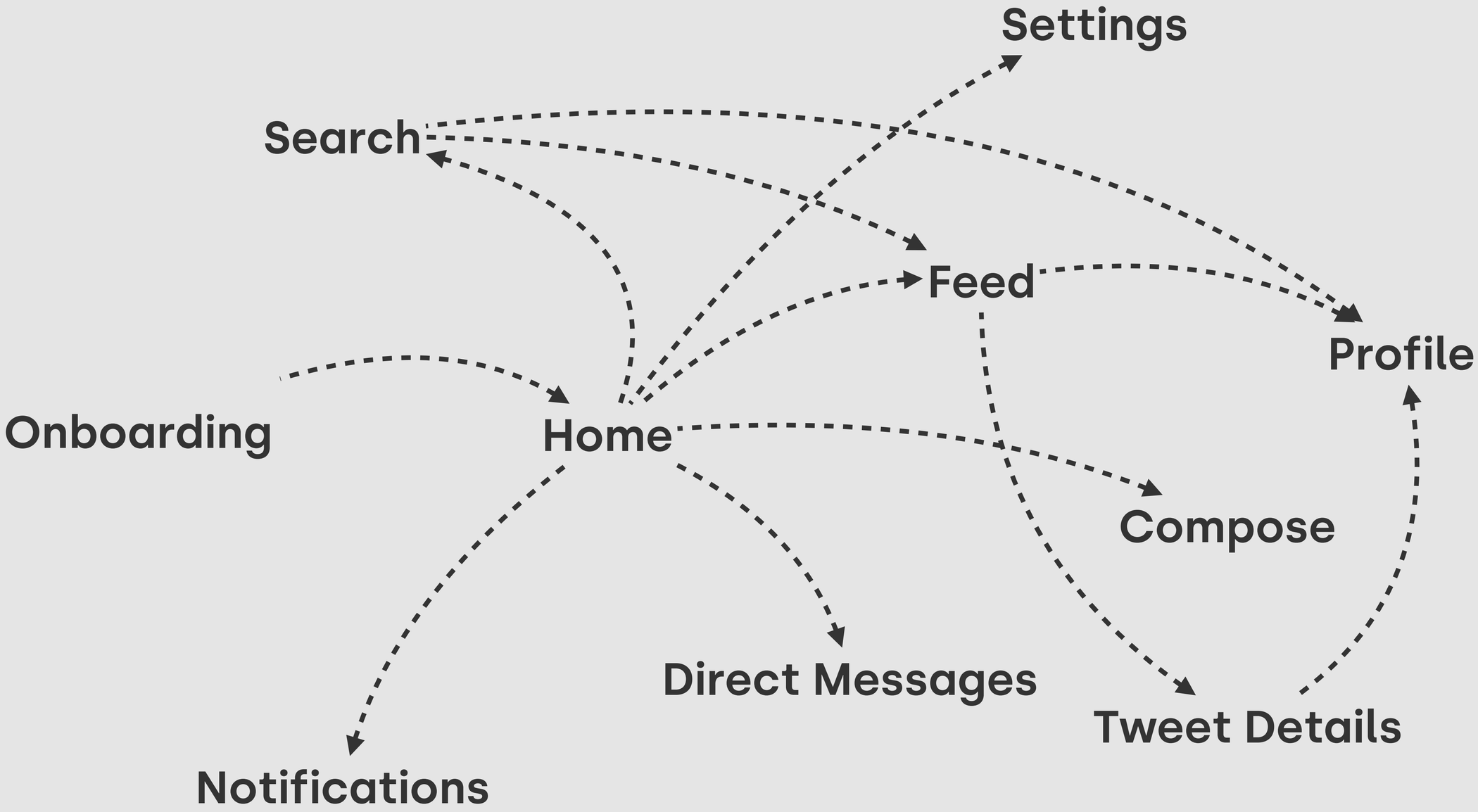
Profile

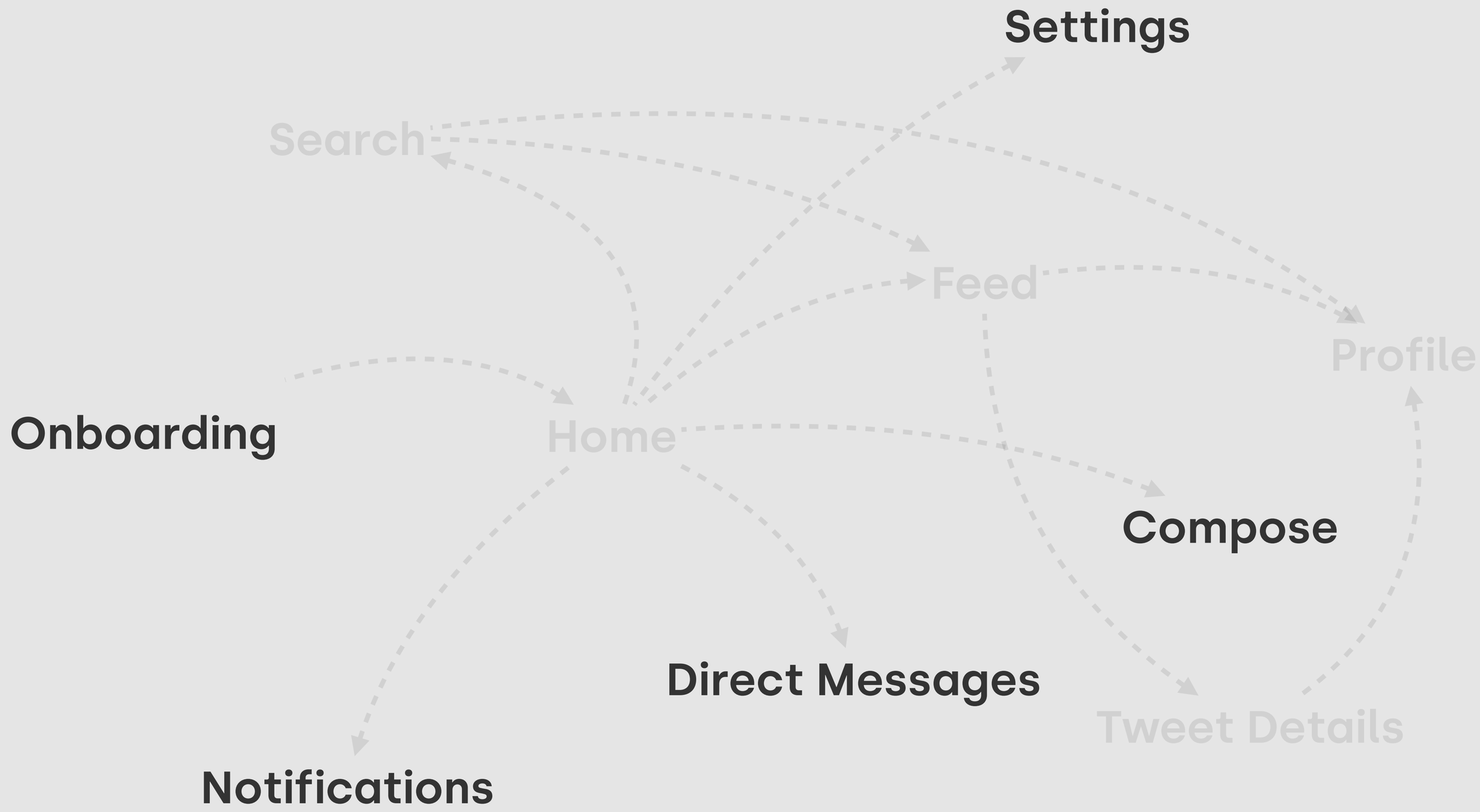
Compose

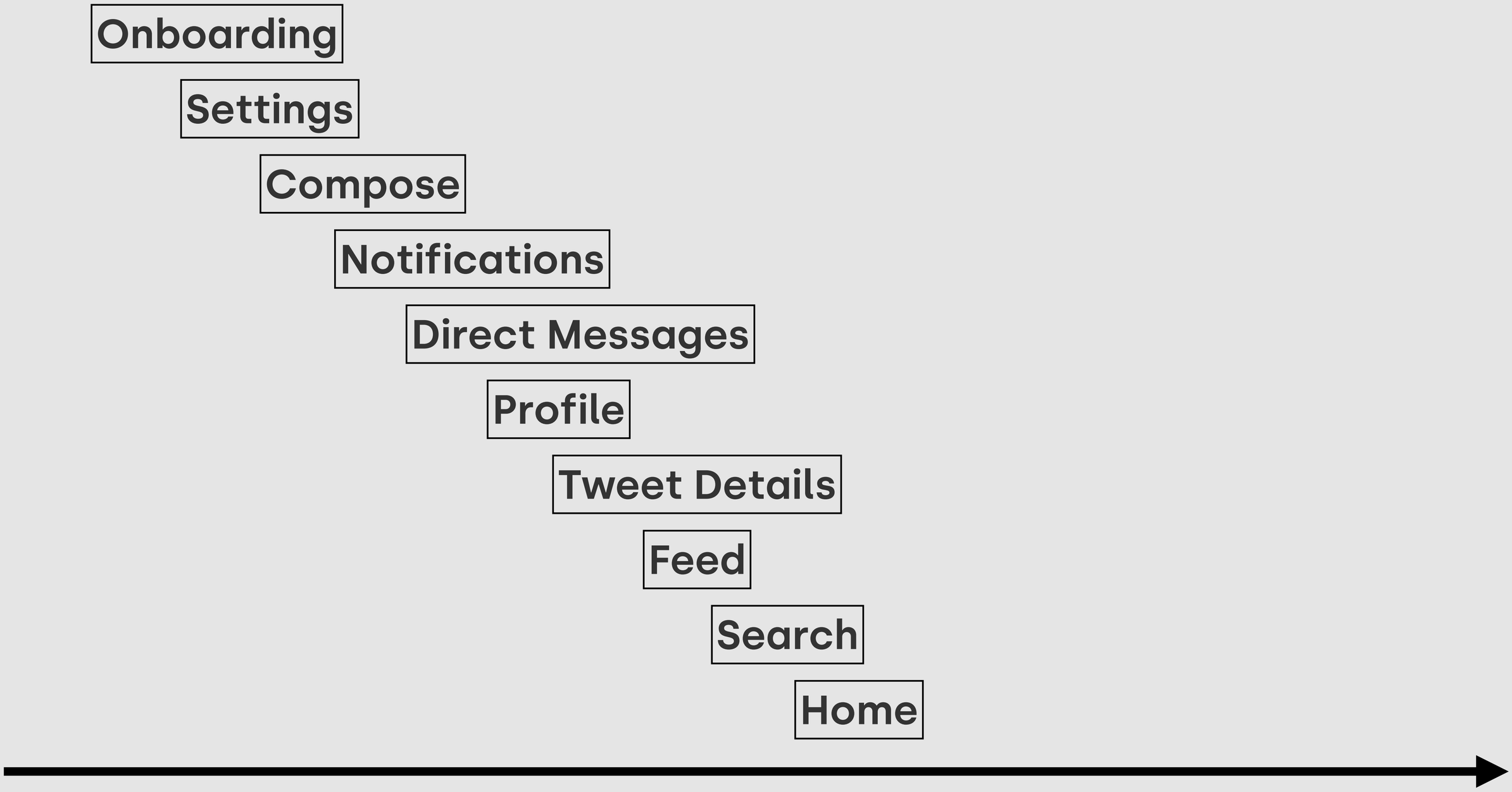
Discover

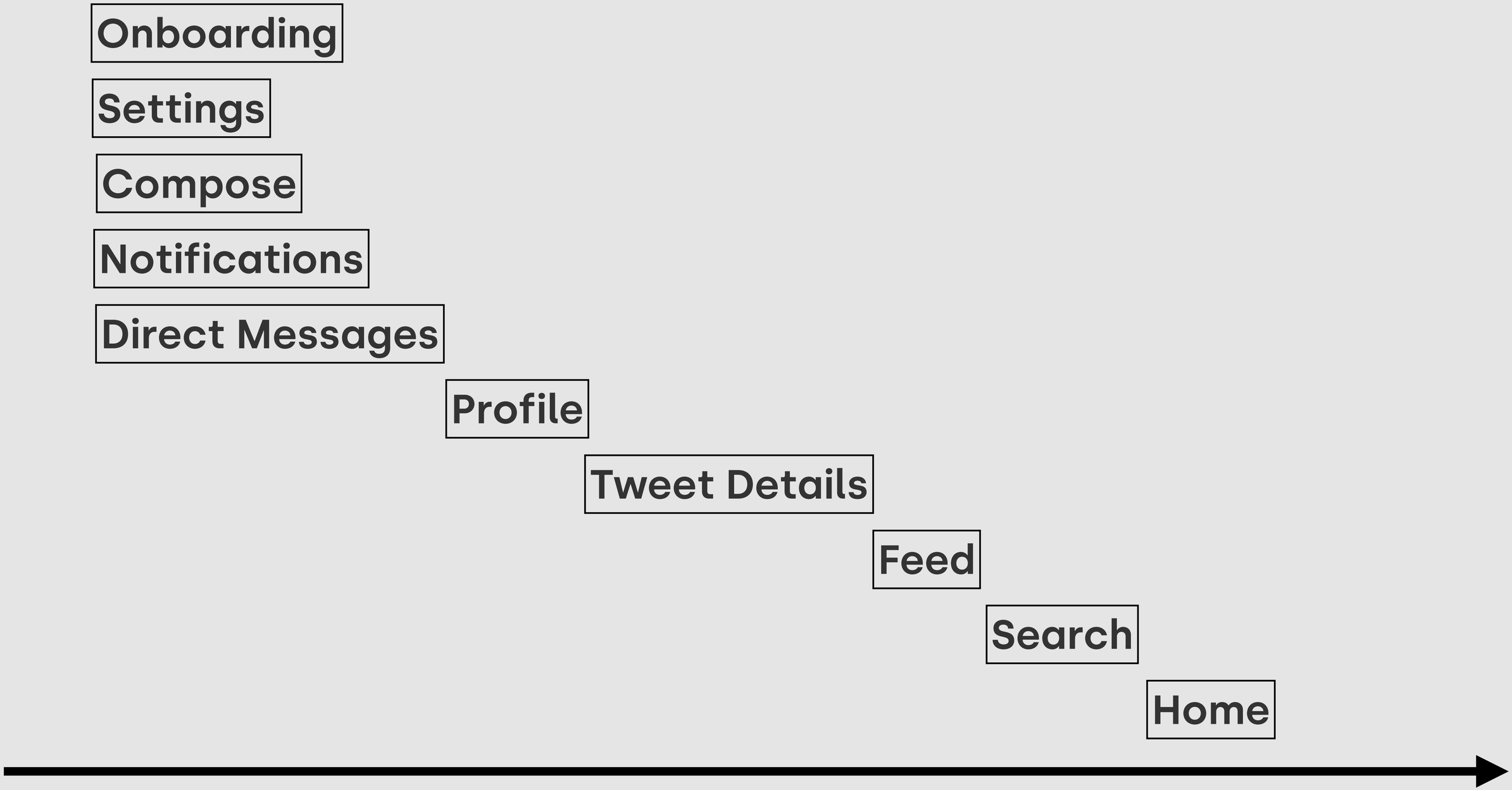

Settings
Search
Feed
Profile
Onboarding
Home
Compose
Direct Messages
Tweet Details
Notifications


Native
Flutter
Flutter
Native

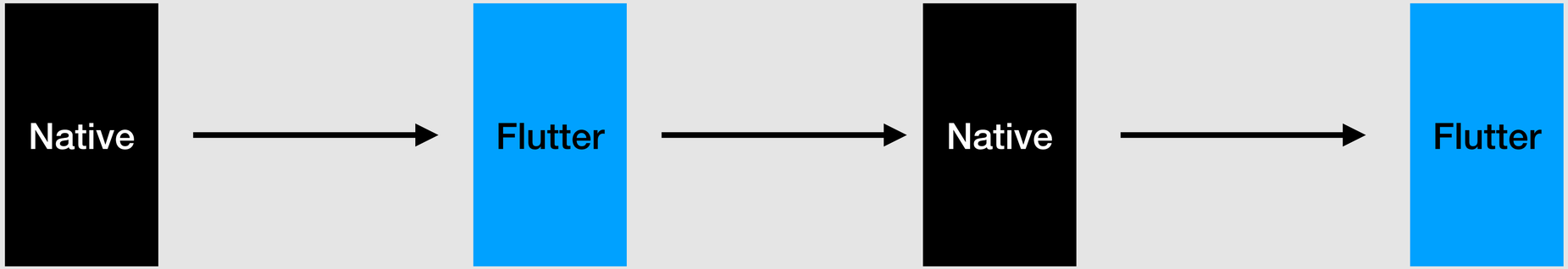

Settings
Search
Feed
Profile
Onboarding
Home
Compose
Direct Messages
Tweet Details
Notifications

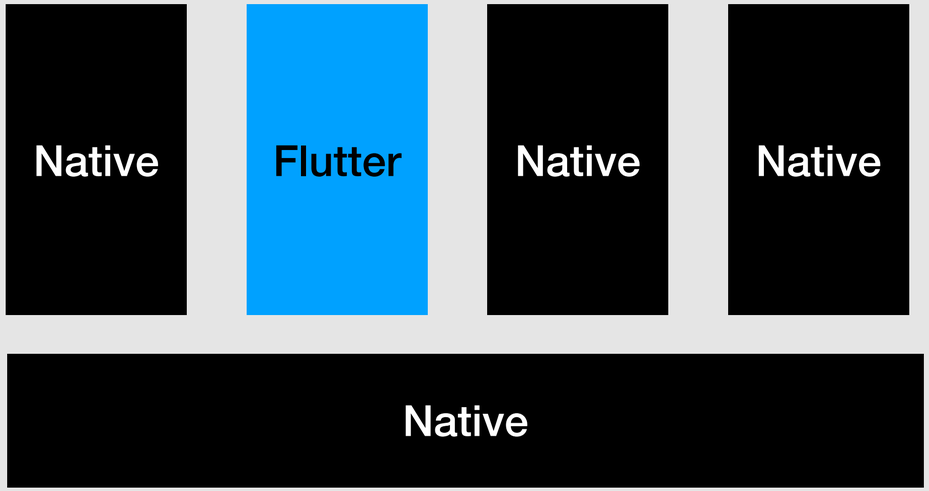

Settings
Search
Feed
Profile
Onboarding
Home
Compose
Direct Messages
Tweet Details
Notifications


Onboarding
Settings
Compose
Notifications
Direct Messages
Profile
Tweet Details
Feed
Search
Home


Onboarding
Settings
Compose
Notifications
Direct Messages
Profile
Tweet Details
Feed
Search
Home

Mixing Navigation 🐉🐉🐉



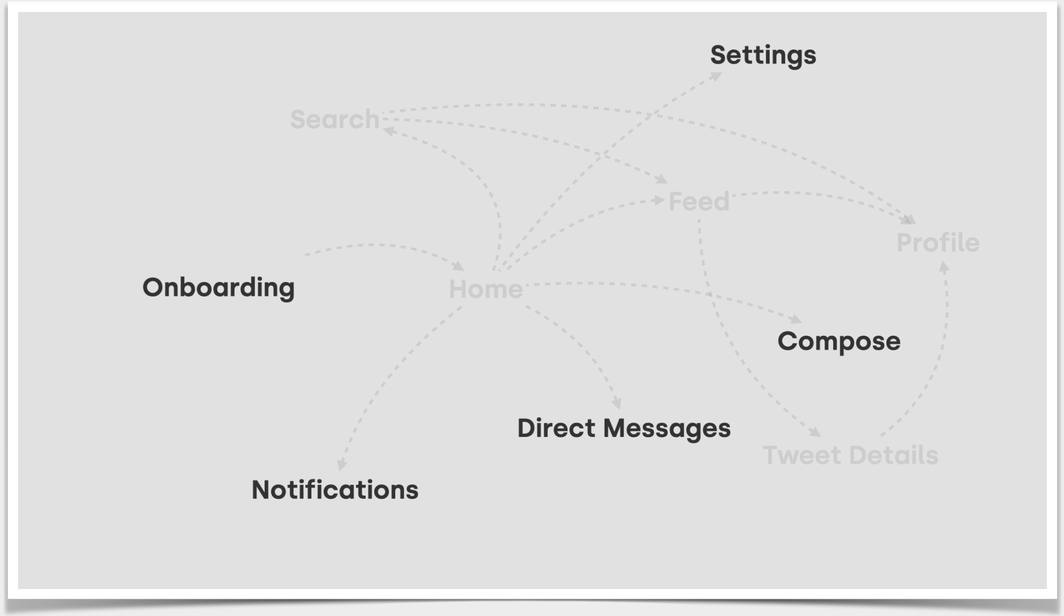


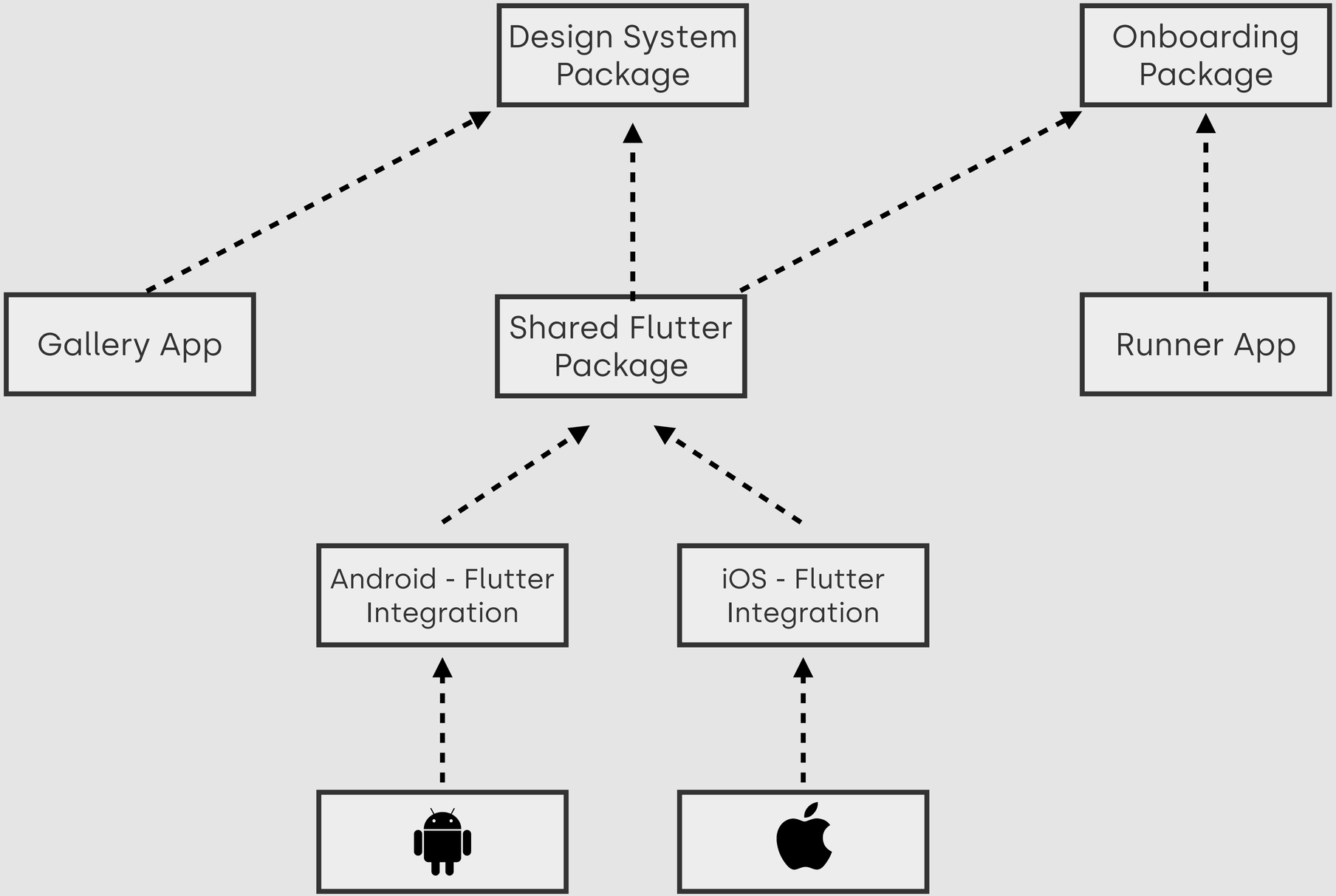
Mixing Navigation 🐉🐉🐉

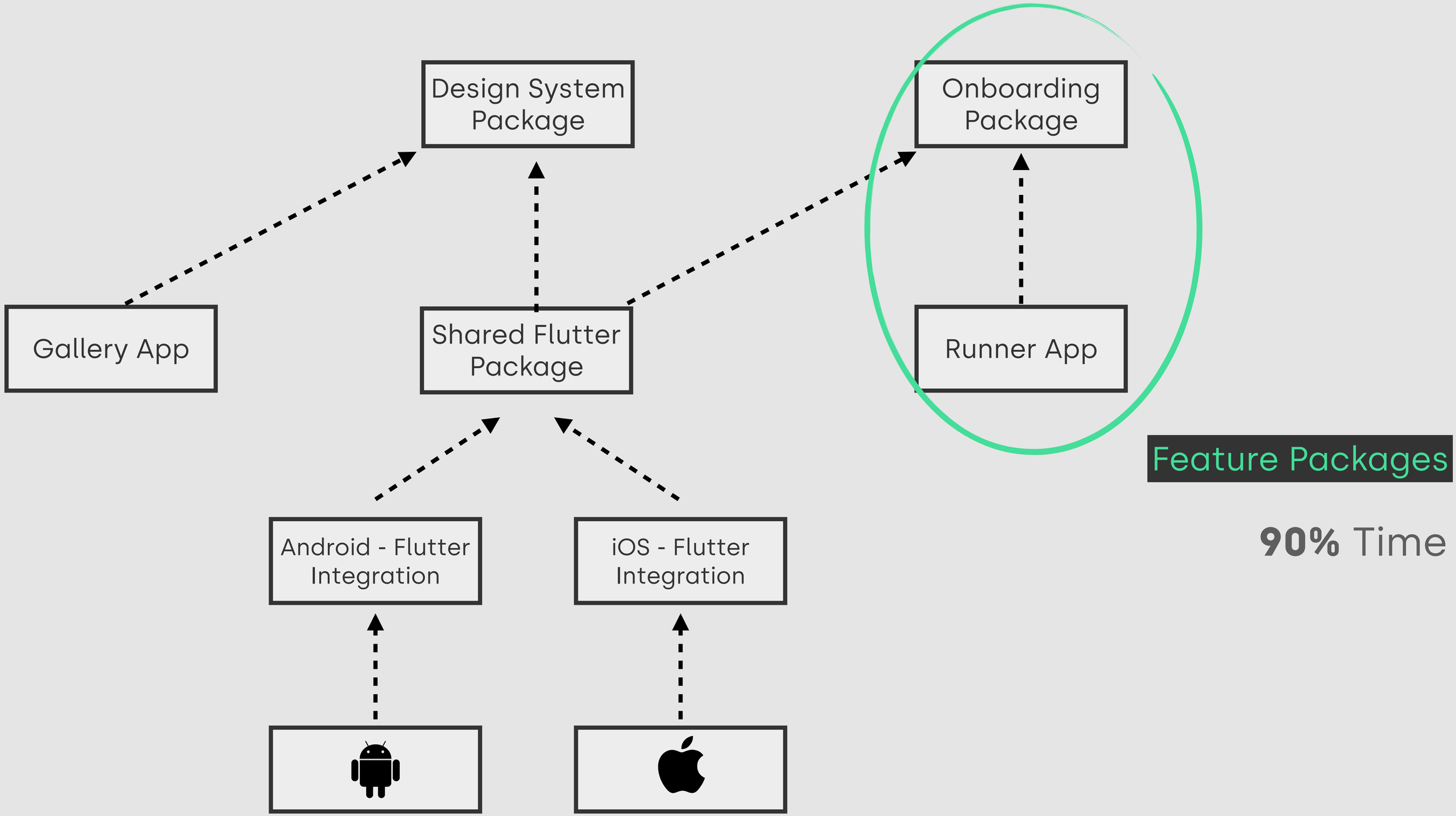
- Prior to Flutter 2.0, quite big memory footprint
- “Multiple Flutters” is now experimental
- No native views
- Complexity of handling 3 navigation stacks (Flutter, iOS, Android)
- No fancy transitions

Leaf Nodes Strategy

- Navigation graph driven product roadmap
- Relatively safe but still harder than starting from scratch



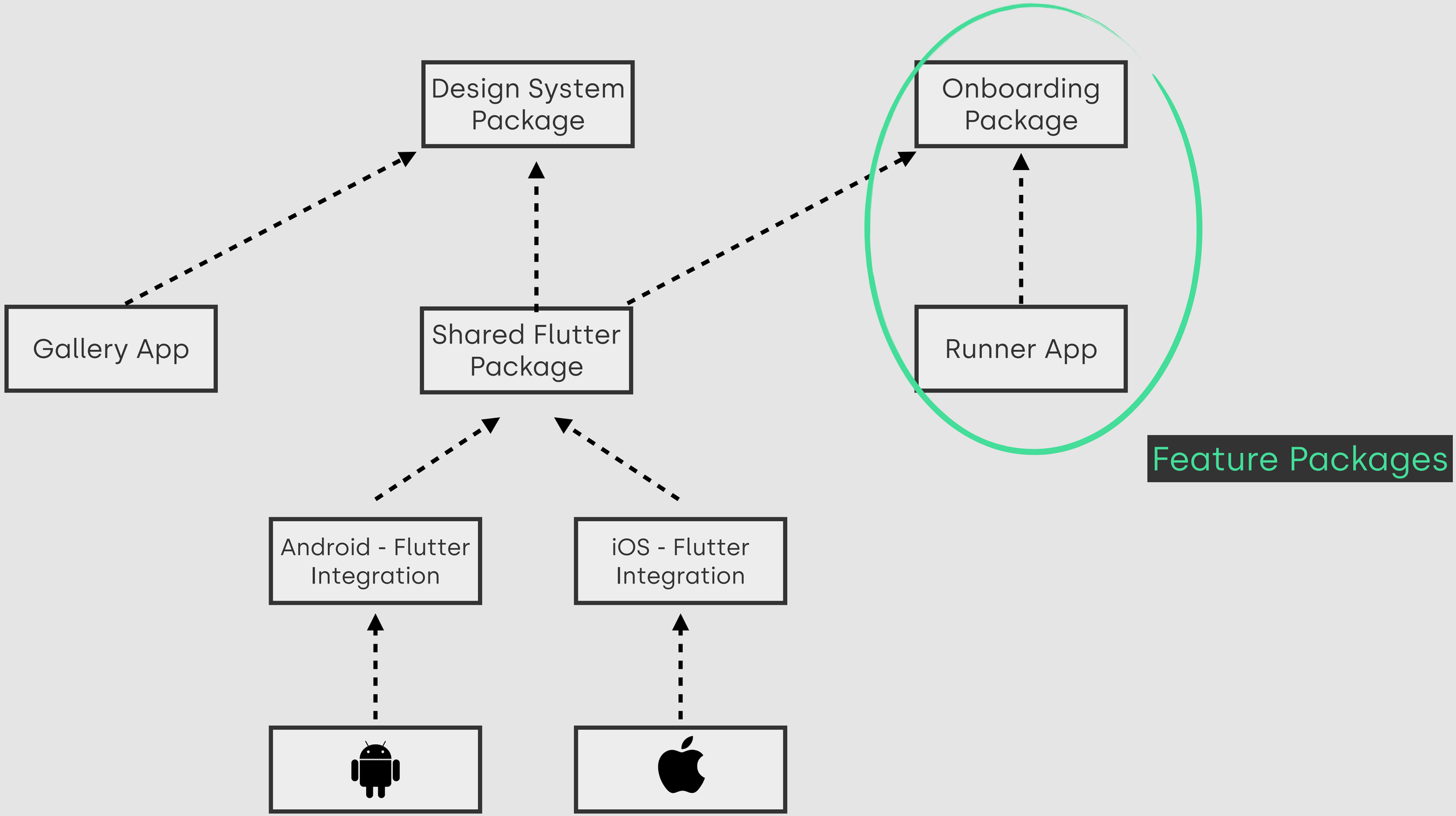

Design System Package
Onboarding Package
Gallery App
Shared Flutter Package
Runner App
Android - Flutter Integration
iOS - Flutter Integration


Design System Package
Onboarding Package
Gallery App
Shared Flutter Package
Runner App
Android - Flutter Integration
iOS - Flutter Integration
Feature Packages
90% Time

Feature Packages

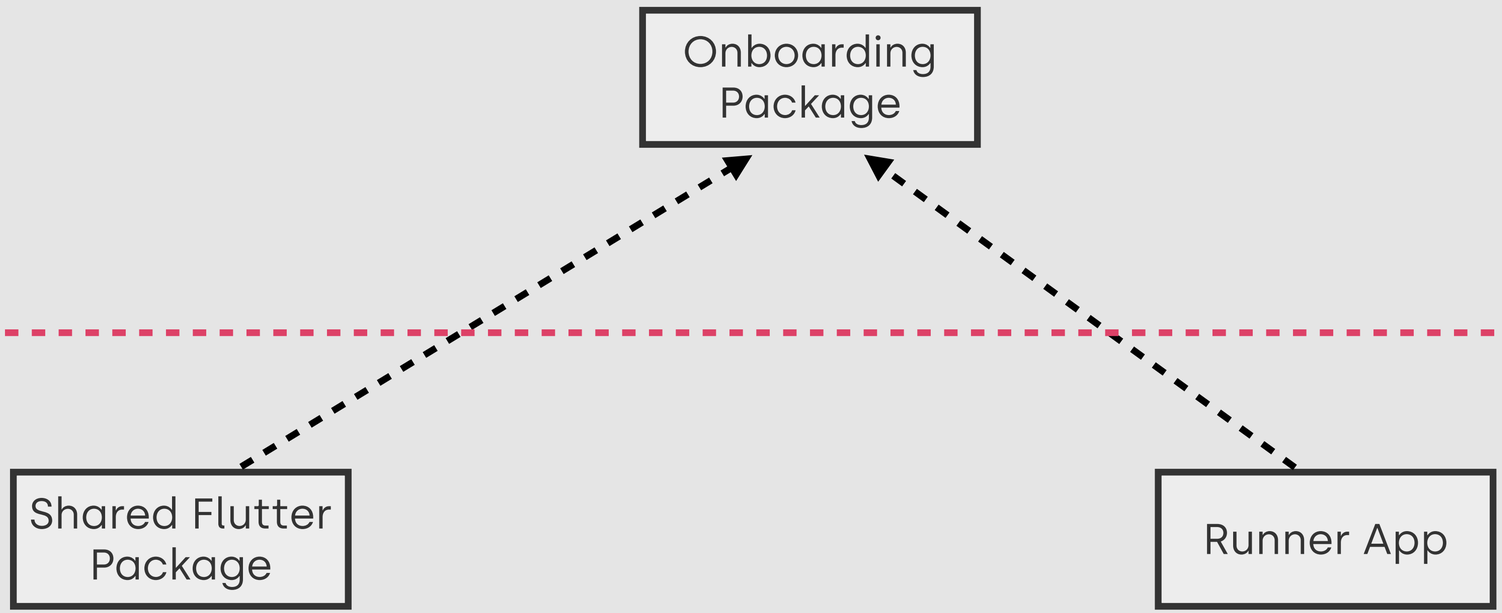
Development in Isolation

- Stay away from platform tools (XCode, Gradle)
- Hot reload
- All the Flutter tooling goodness
- Testable (Headless UI tests)


Design System Package
Onboarding Package
Gallery App
Shared Flutter Package
Runner App
Feature Packages
Android - Flutter Integration
iOS - Flutter Integration

Abstract Services

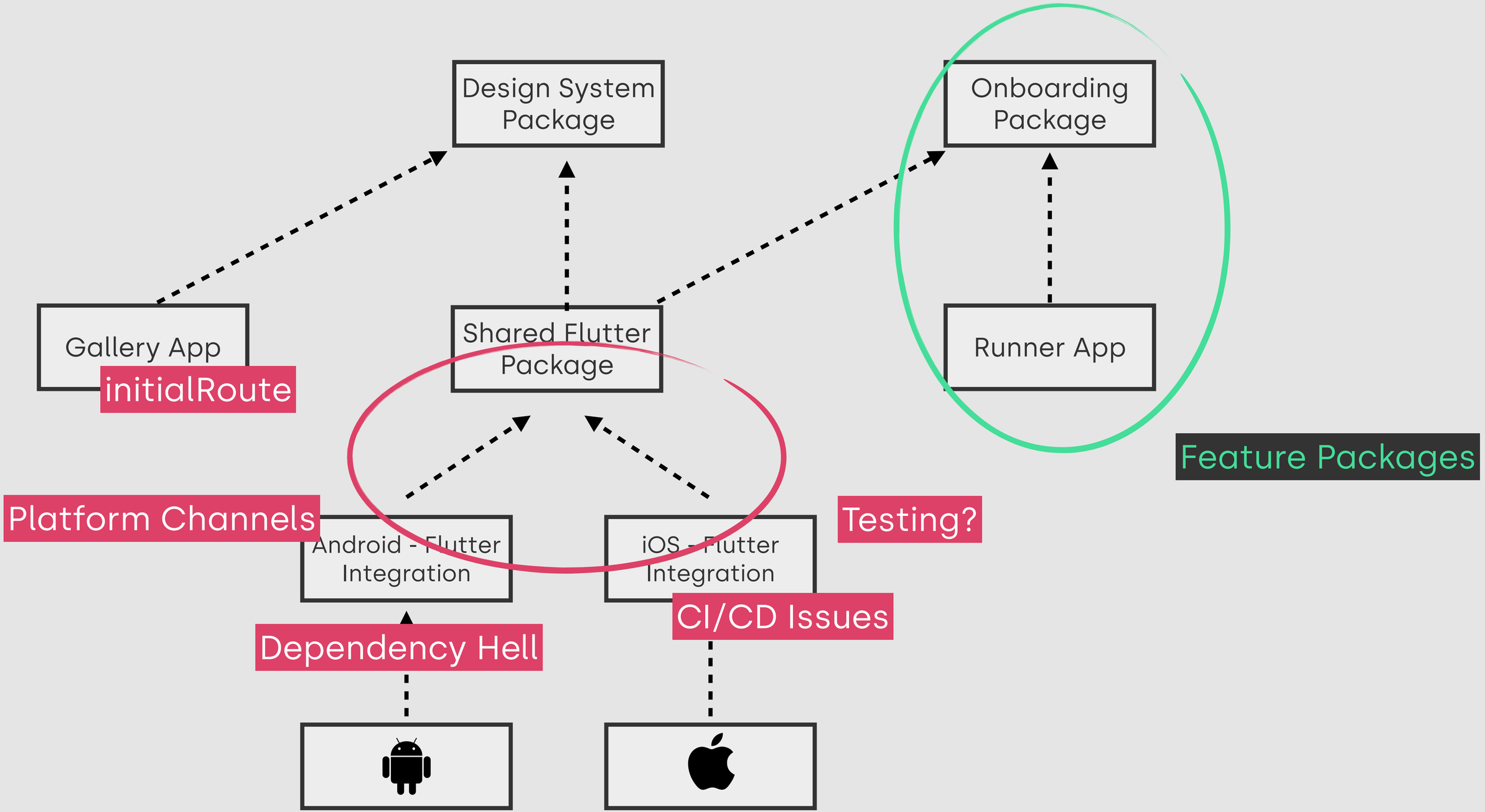
Interface packages



Plugin packages

Integration

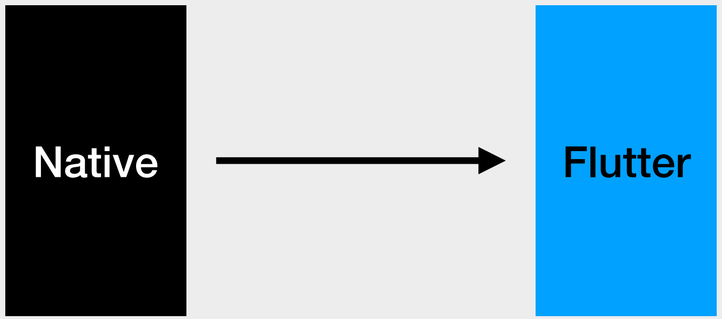
10% Time


Design System Package
Onboarding Package
Gallery App
initialRoute
Shared Flutter Package
Runner App
Feature Packages
Platform Channels
Testing?
Android - Flutter Integration
iOS - Flutter Integration
CI/CD Issues
Dependency Hell

Enter The Flutter

Initial Route

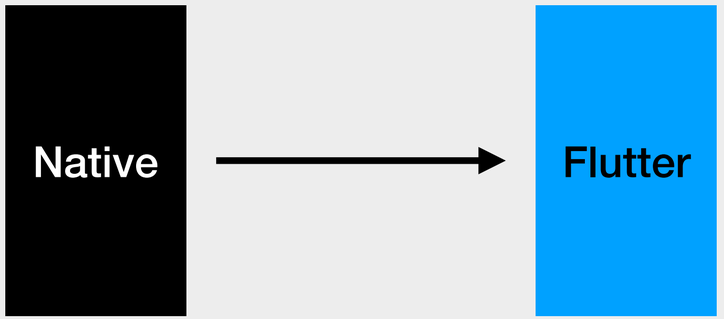
1. initalRoute
2. Dart entrypoint `void main()`



Enter The Flutter

Initial Route

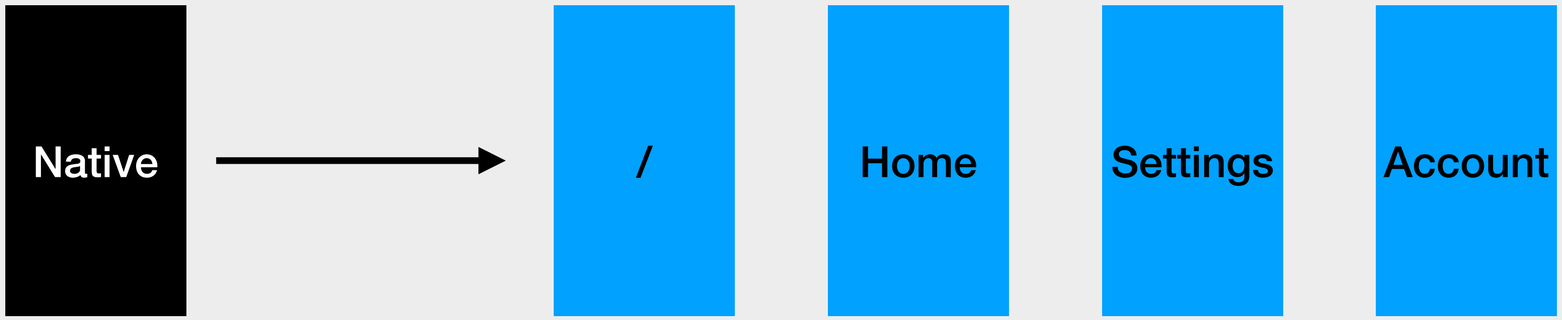
initalRoute = /home/settings/account



Enter The Flutter

Initial Route

initalRoute = /home/settings/account



> if the route was /a/b/c, then the app would start with the four routes /, /a, /a/b, and /a/b/c loaded, in that order.

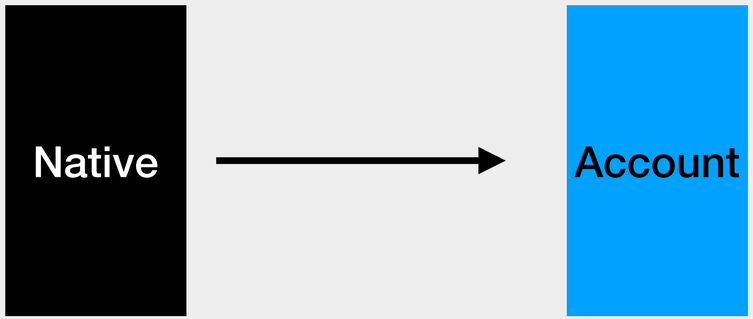
Source: Flutter Docs

Enter The Flutter

Initial Route Fix

initalRoute = home_settings_account

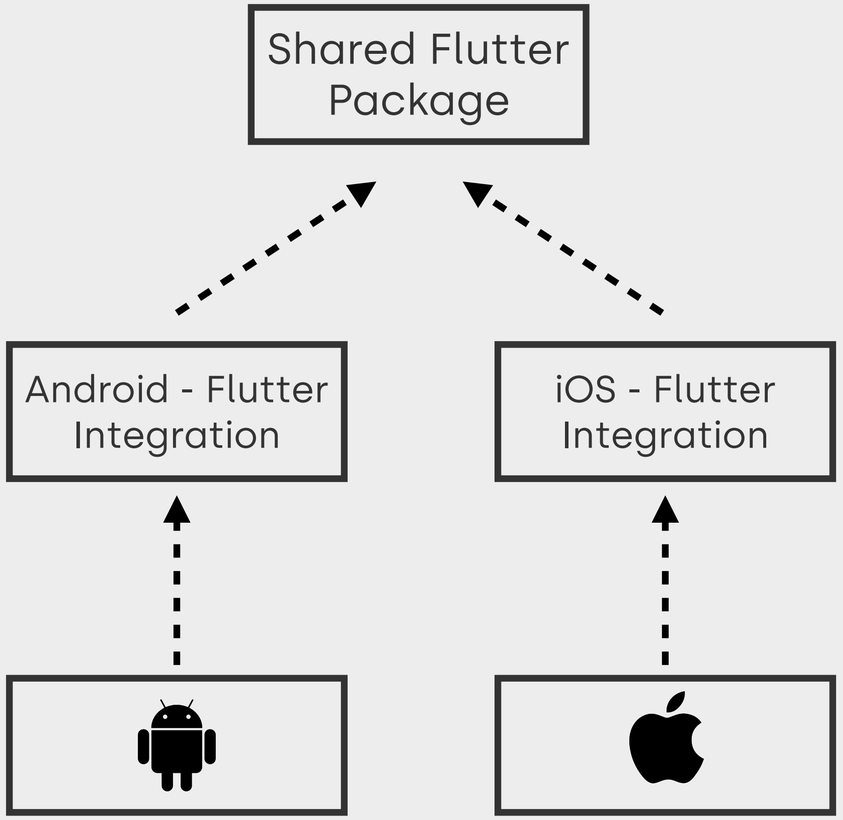
...or override the default behaviour

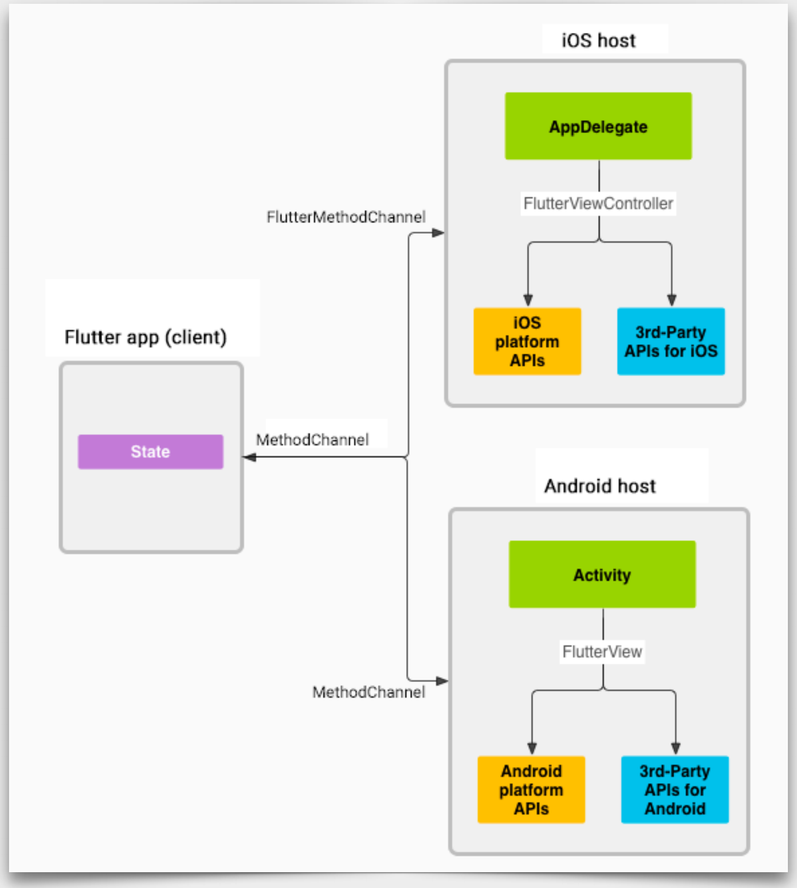


How do I pass extra bundle?

Platform Channels

You'll probably need to write few





initialRoute

...is a platform channel

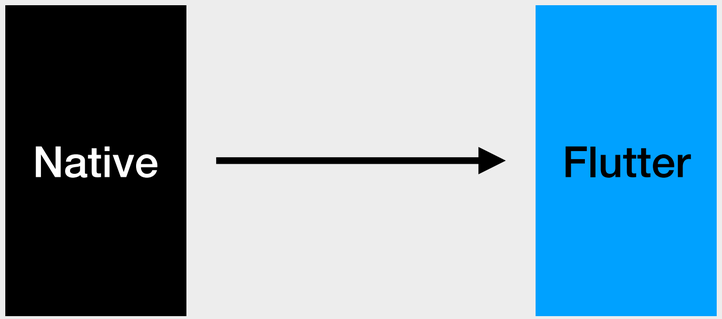
```
flutterEngine.getNavigationChannel().setInitialRoute(path);
```

!!!must be called before executing main()

Platform Channels

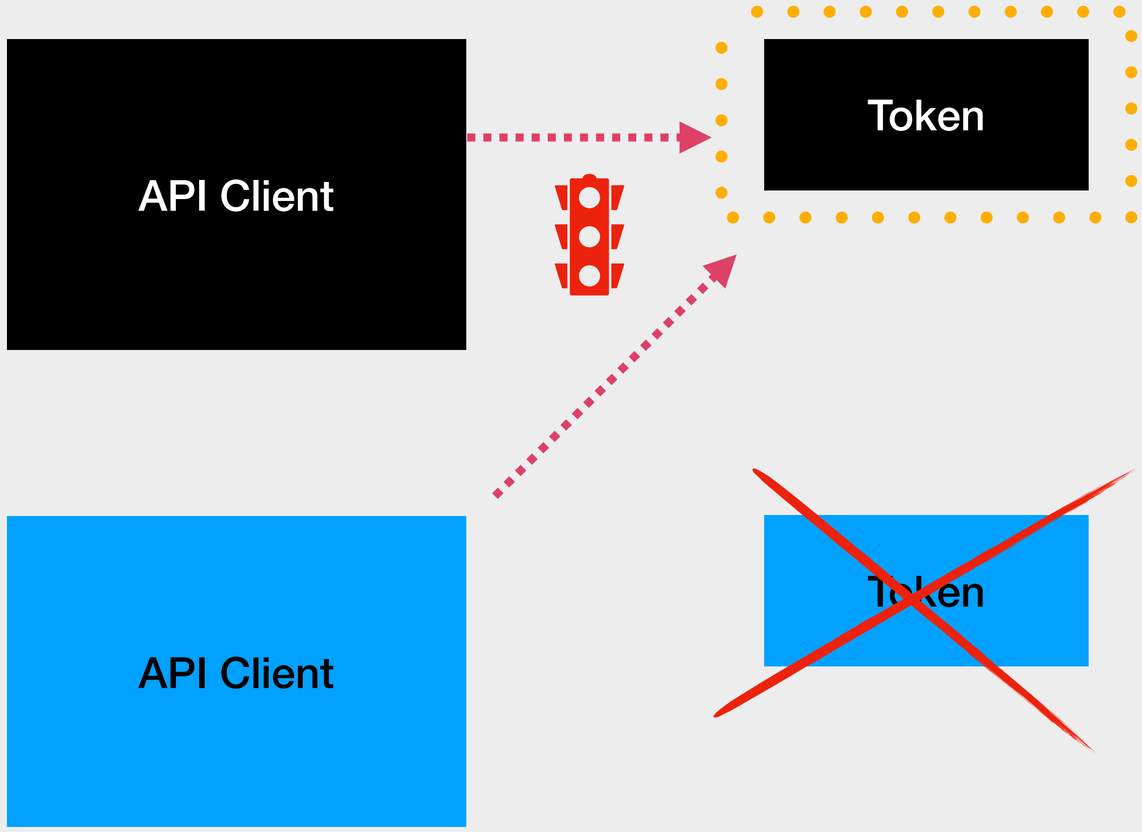
Initial Args

```
Future<Map<String, dynamic>> getInitalArgs()
```



Platform Channels

API Calls & Authentication



Platform Channels

Pre-existing libraries (e.g. tracking)

Library initialisation ceremony **x2**

Platform Channels

Pre-existing libraries (e.g. tracking)

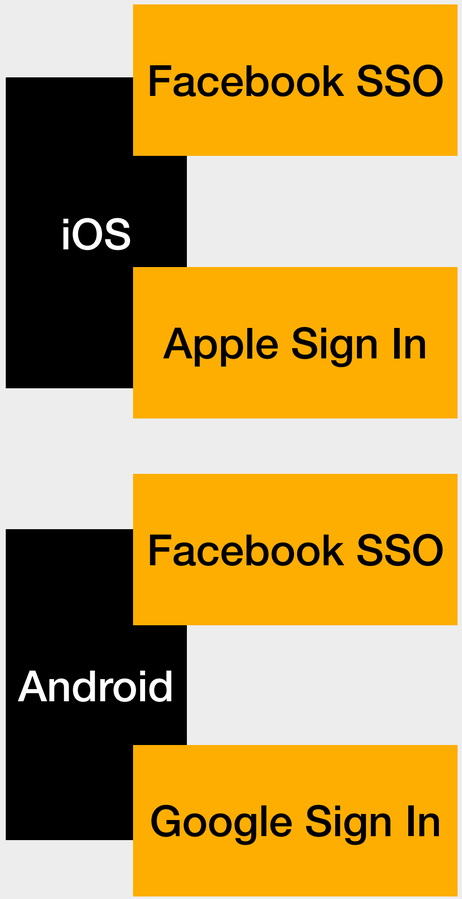
Platform Channels

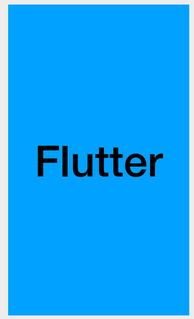
Pigeon by flutter.dev

- Type Safe/Strong Typed
- Generated Host Code
- Java
- Objective-C

Dependency Hell

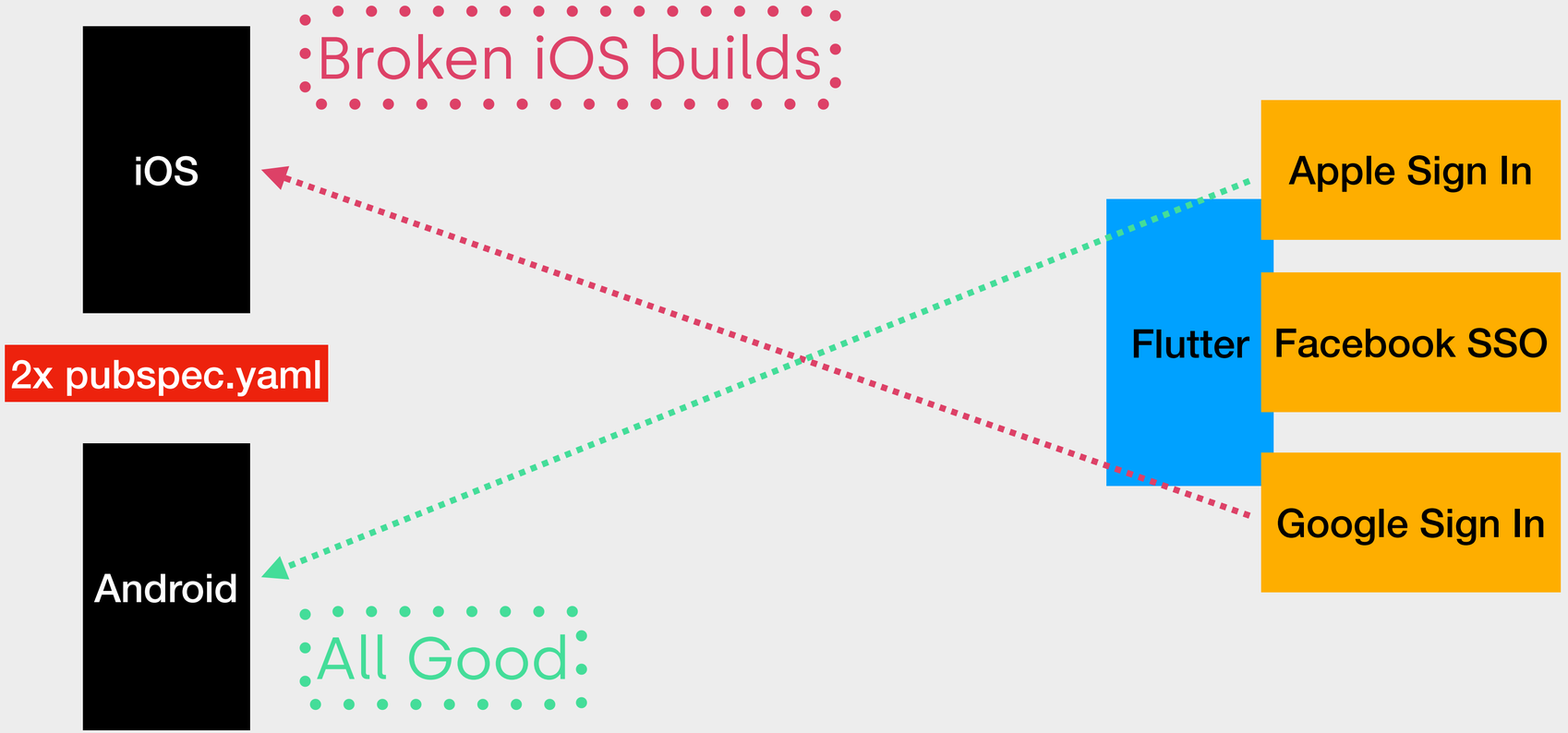
What could go wrong?

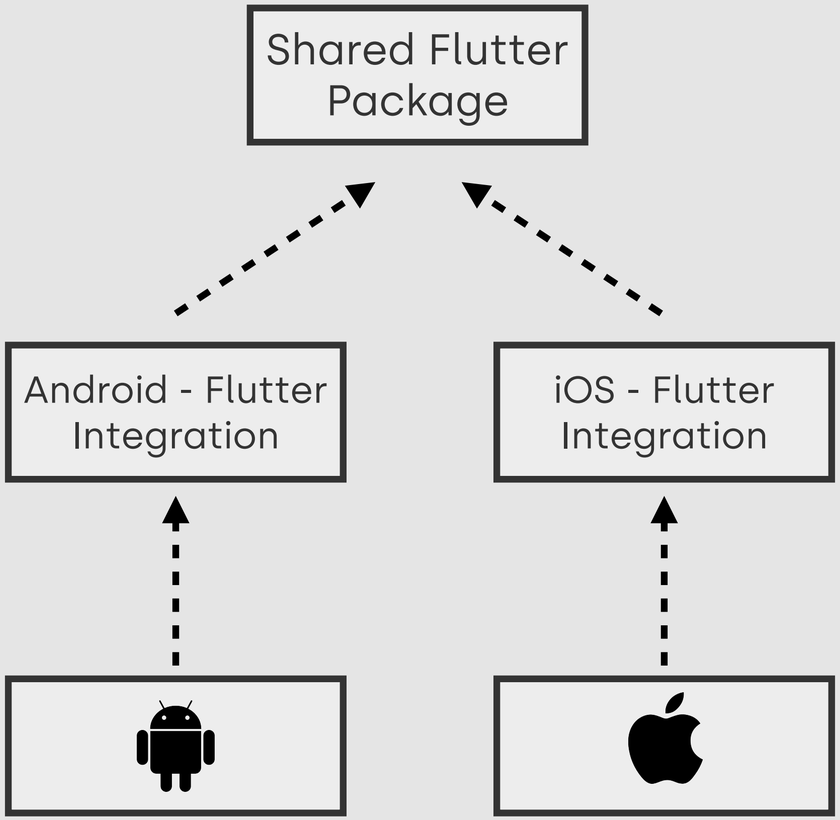


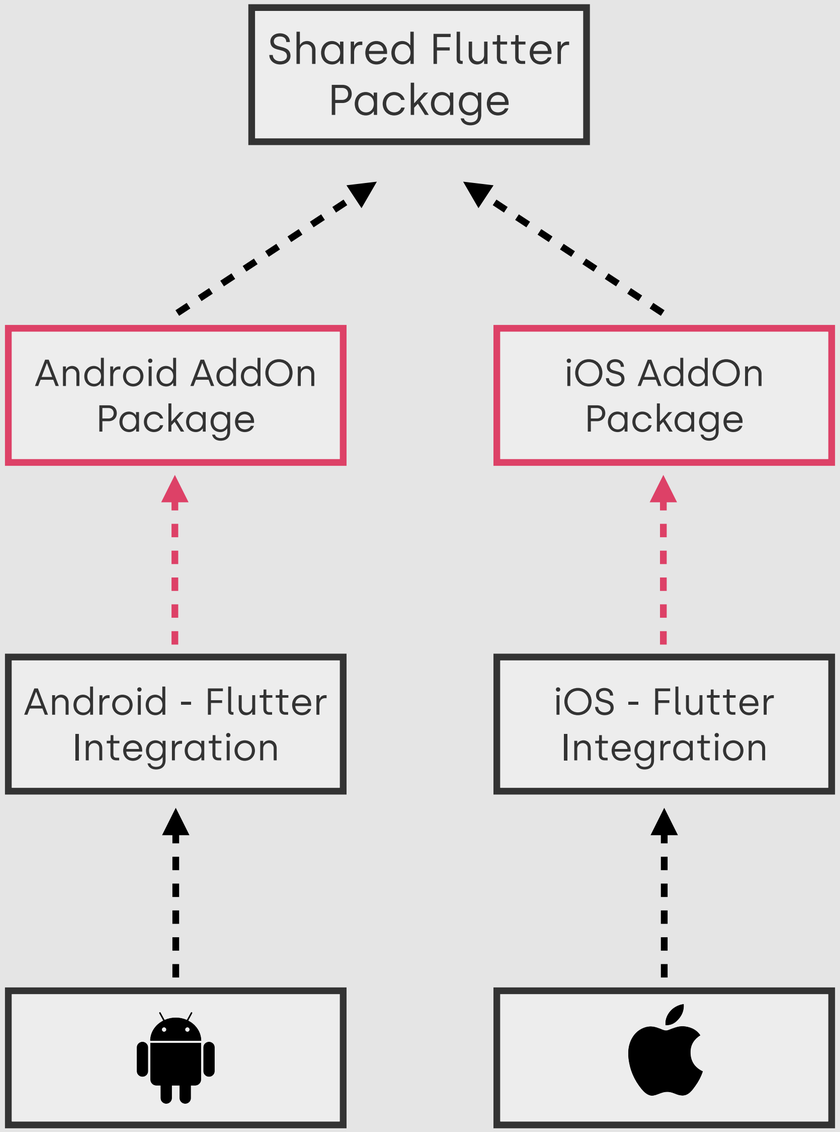


Dependency Hell

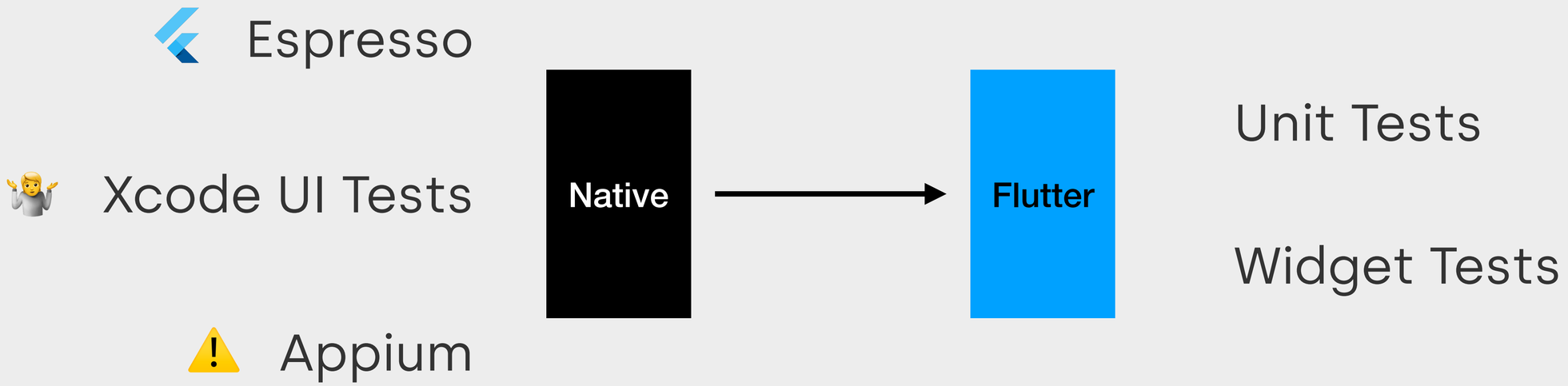
What could go wrong?




Shared Flutter Package
Android - Flutter Integration
iOS - Flutter Integration

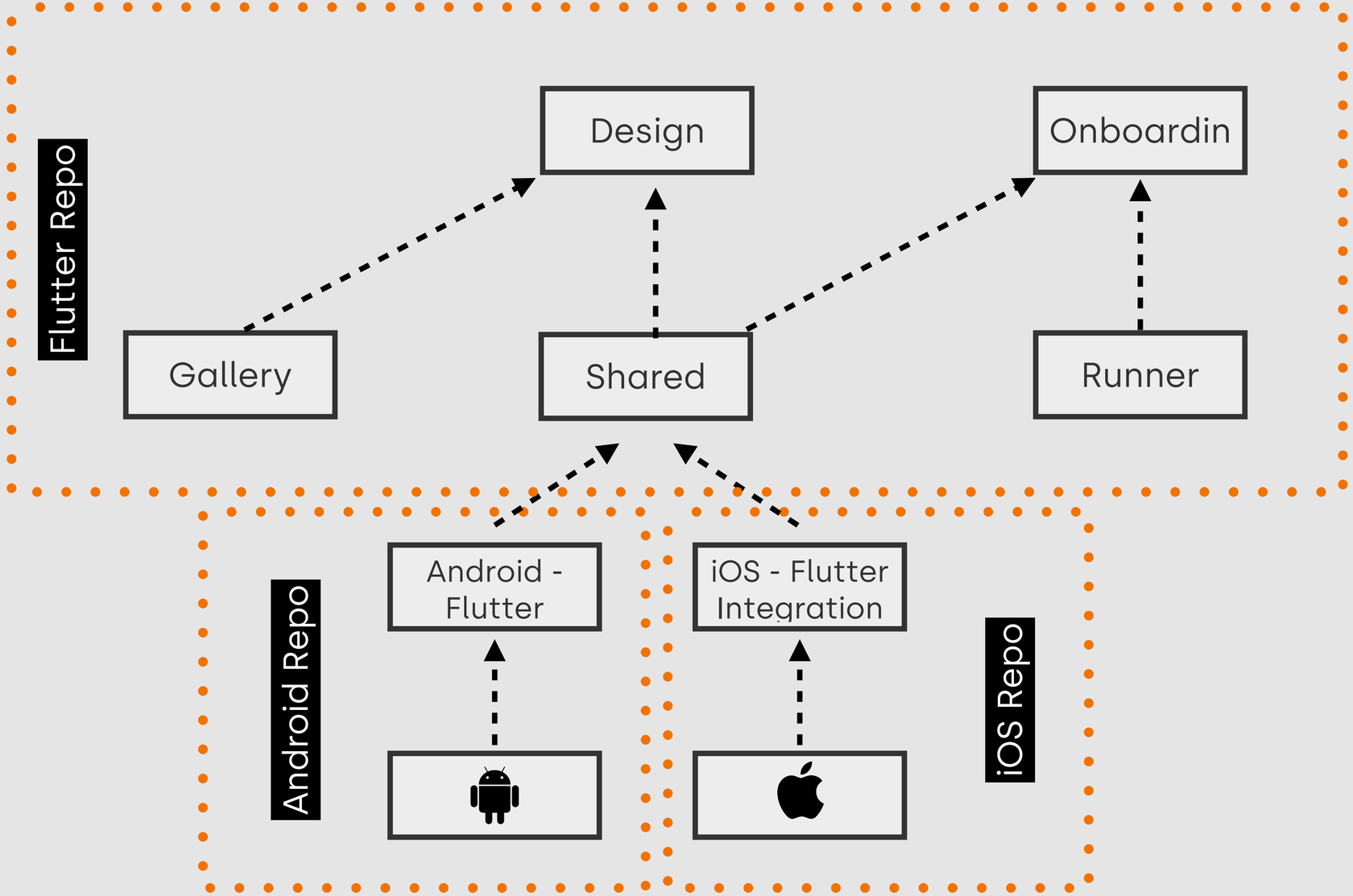

Shared Flutter Package
Android AddOn Package
iOS AddOn Package
Android - Flutter Integration
iOS - Flutter Integration

Integration Testing

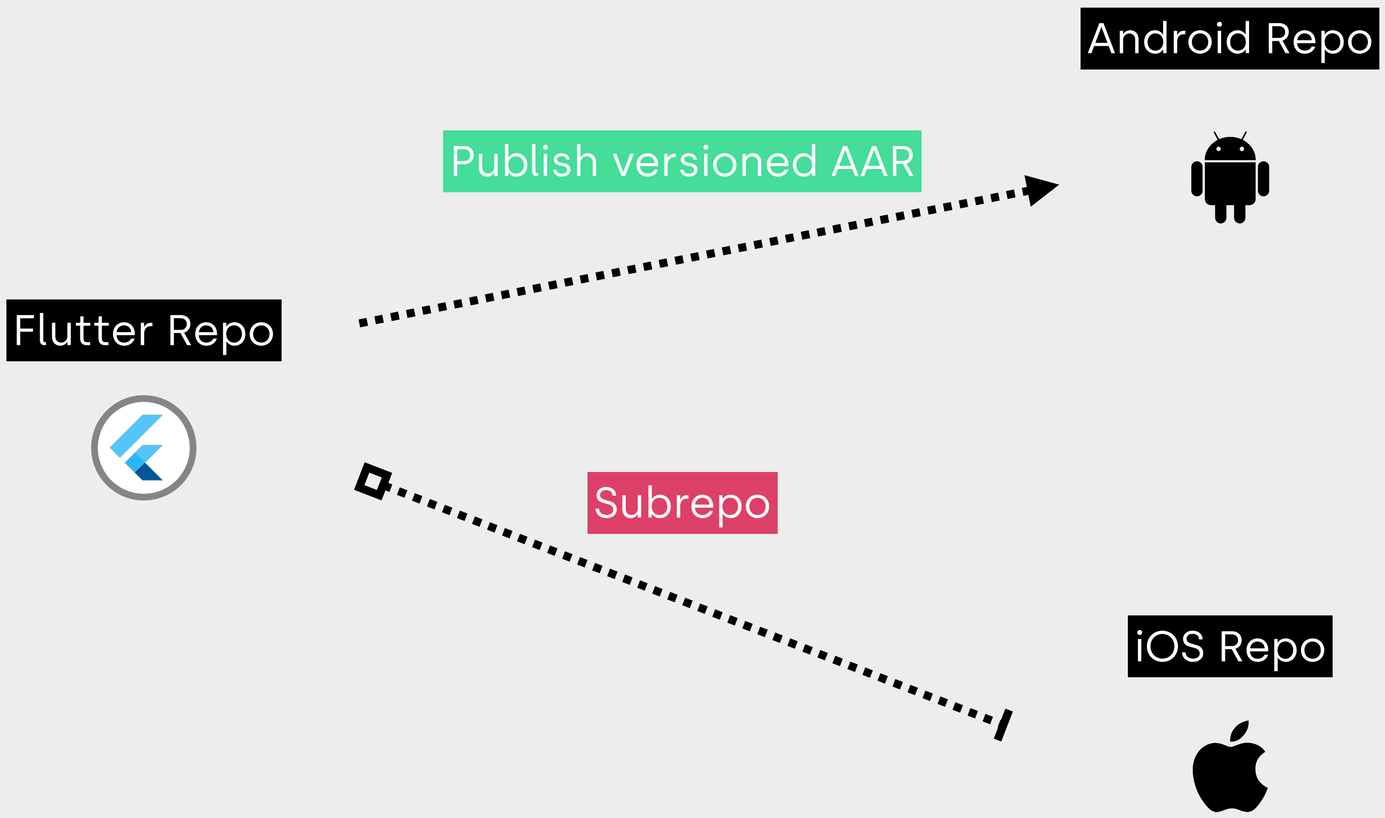


CI/CD: The Mistakes

Separate Repos

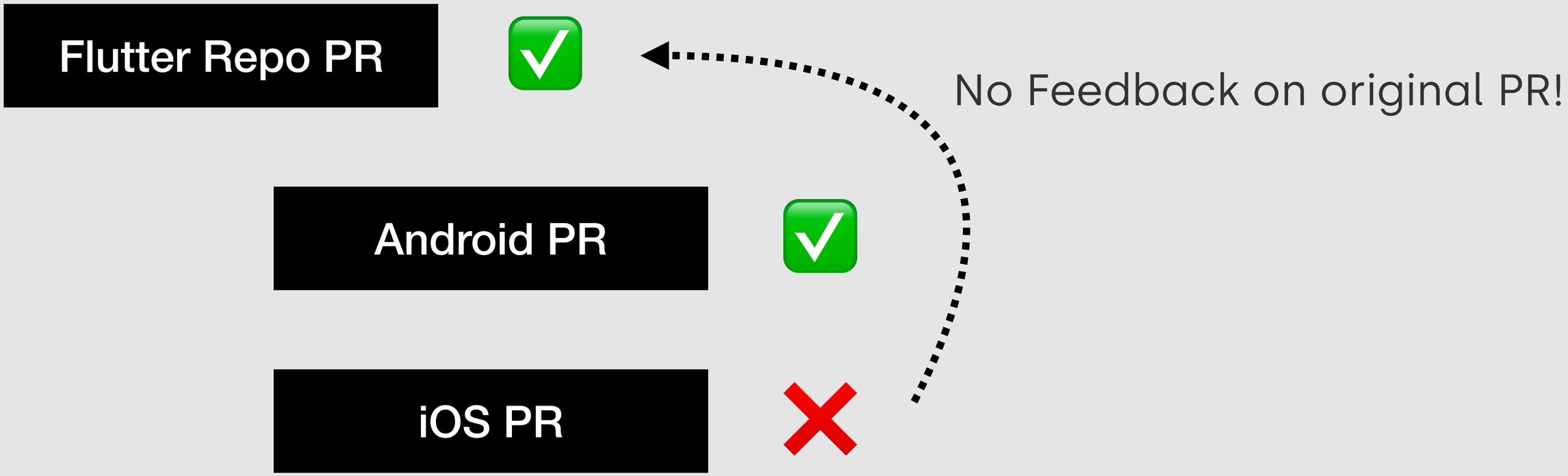


Different Distribution Workflows



Single Change

Cascade of PRs



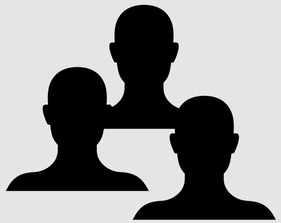
Single Change

I wish we went for mono repo approach

Mono Repo PR ✅

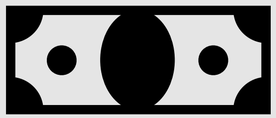
- New Git history
- Need to migrate existing workflows
- No AAR packaging
- No subrepo
- Reduced feedback loop

The Aftermath.



Team Merged

Flutter Engineers



Money Saved

Success

Questions?

Thank You 💖

Twitter, GitHub, Medium: **@vishna**

Hiring Now: **bit.ly/betterflutter**