



## 小德

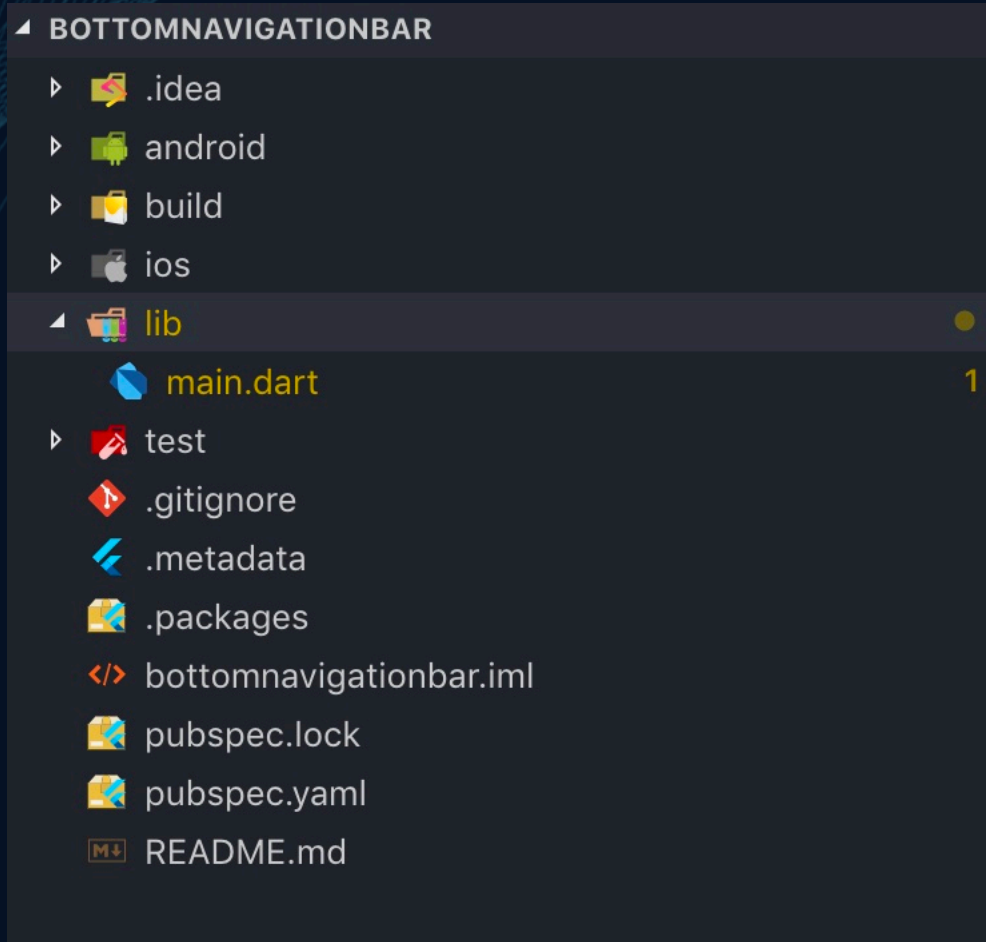
- 掘金电子书《Flutter 完全手册》作者
- 曾任职于阿里、腾讯

# 从 Native 到 Flutter 开发的变与不变

小德

# Flutter

- Project Structure



- Syntax

```
void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  // This widget is the root of your application
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        primarySwatch: Colors.blue,
      ), // ThemeData
      home: ChangeNotifierProvider<BottomNavigat
        child: BottomNavigationBarExample(),
        builder: (BuildContext context) => Botto
      ), // ChangeNotifierProvider
    ); // MaterialApp
  }
}
```

# Flutter features

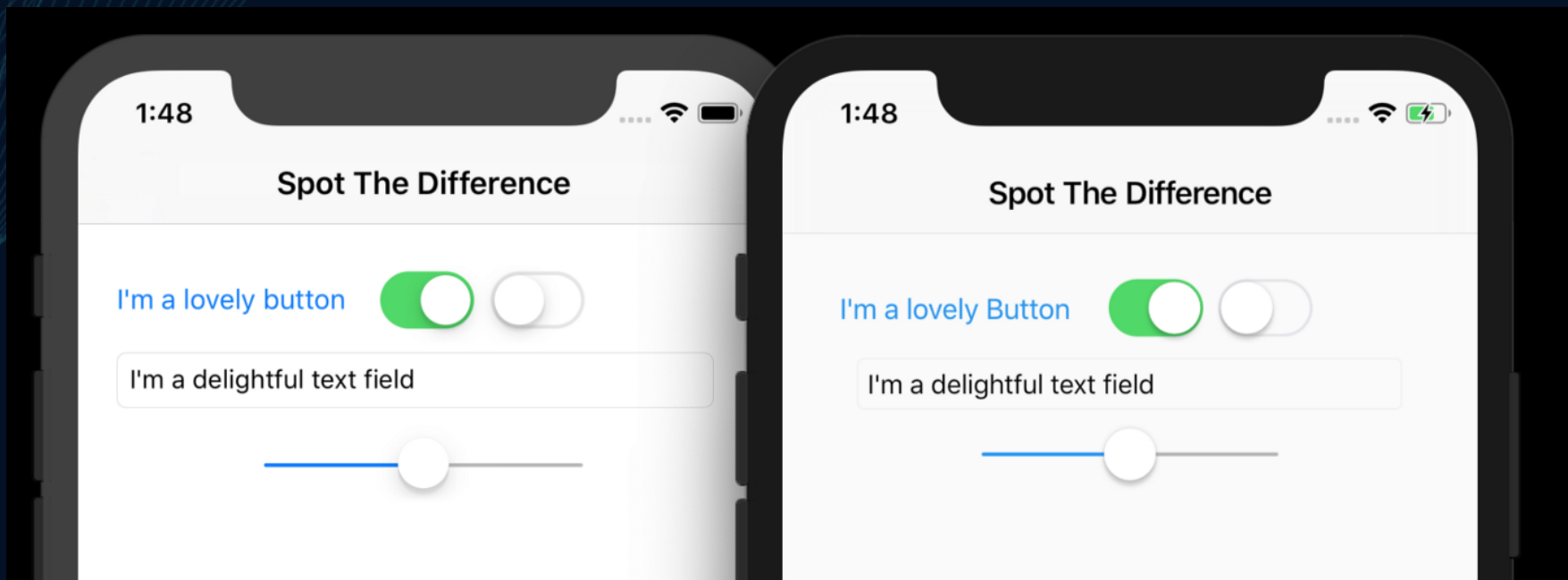
- 1、Flutter gives you control every pixel on the screen
- 2、Everything's a Widget

Flutter gives you control every pixel on the screen ?

~~Native~~

Cross-platform

- ReactNative
- Weex
- Xamarin



Skia → draw everything →

- pixel-perfect experience
- looks identical on every platform
- different behaviors on different platform

# Design Style

- iOS design
- Material design
- Custom design

# Design Style

Native



custom designs



with image

Flutter



no image



Flutter designs



# Custom Widget

- Composing Widget
- Creating Custom Widget

# Layout

- logical pixel : dp
- Layout model : BoxConstraints

## Adaption Problem

AutoScaling : <https://github.com/koudle/AutoScaling>

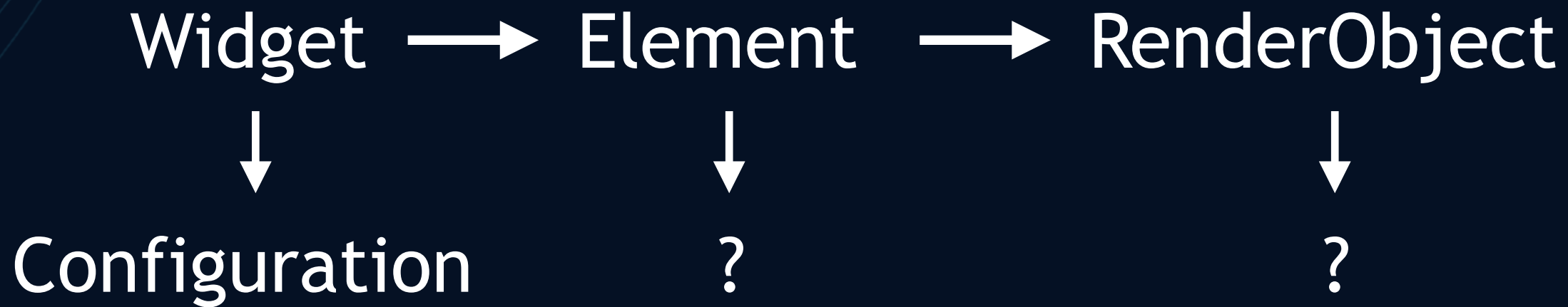
Everything's a Widget ?

Everything's a View ?

Everything's a Widget ?



# Widget



# Element

```
myElement.mount(...);    //create and add child
```

```
myElement.forgetChild(...);    //remove child
```

# Android View

```
myViewGroup.addView(...);    //add child
```

```
myViewGroup.removeView(...);    //remove child
```

# RenderObject

```
myRenderObject.layout(...);    //create and add child
```

```
myRenderObject.paint(...);    //remove child
```

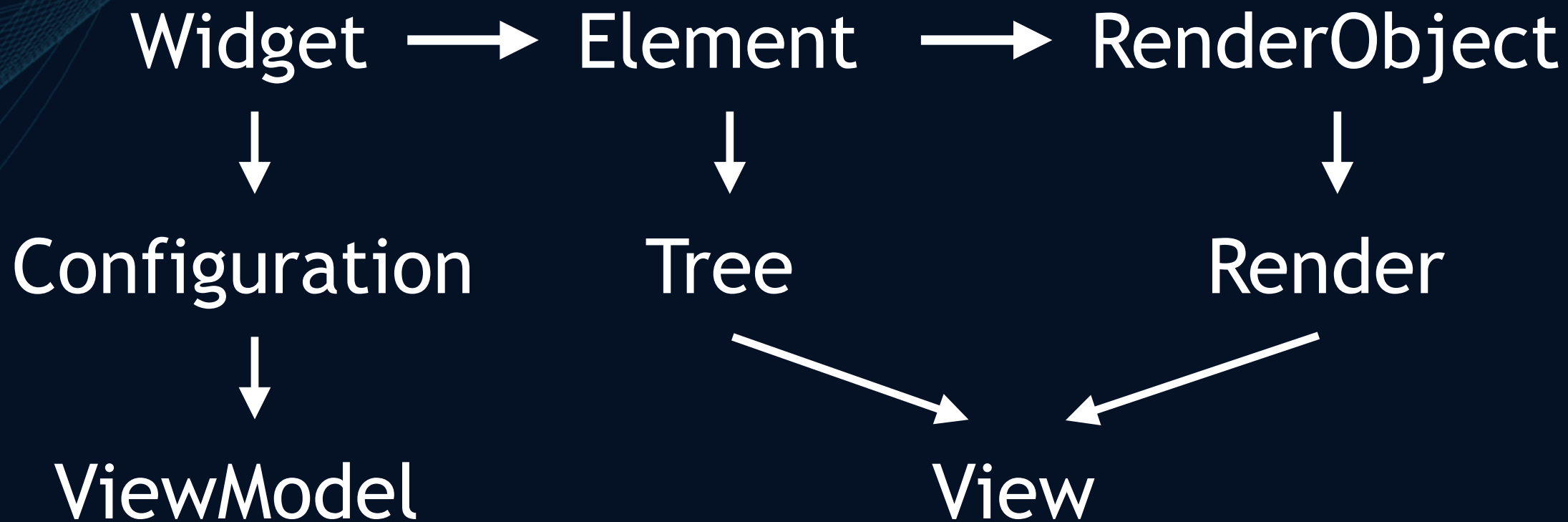
# Android View

```
myViewGroup.measure(...);    //measure
```

```
myViewGroup. layout(...);    //layout
```

```
myViewGroup. draw(...);    //draw
```

# Widget



# ViewModel

Native



View

Flutter



Widget(ViewModel)



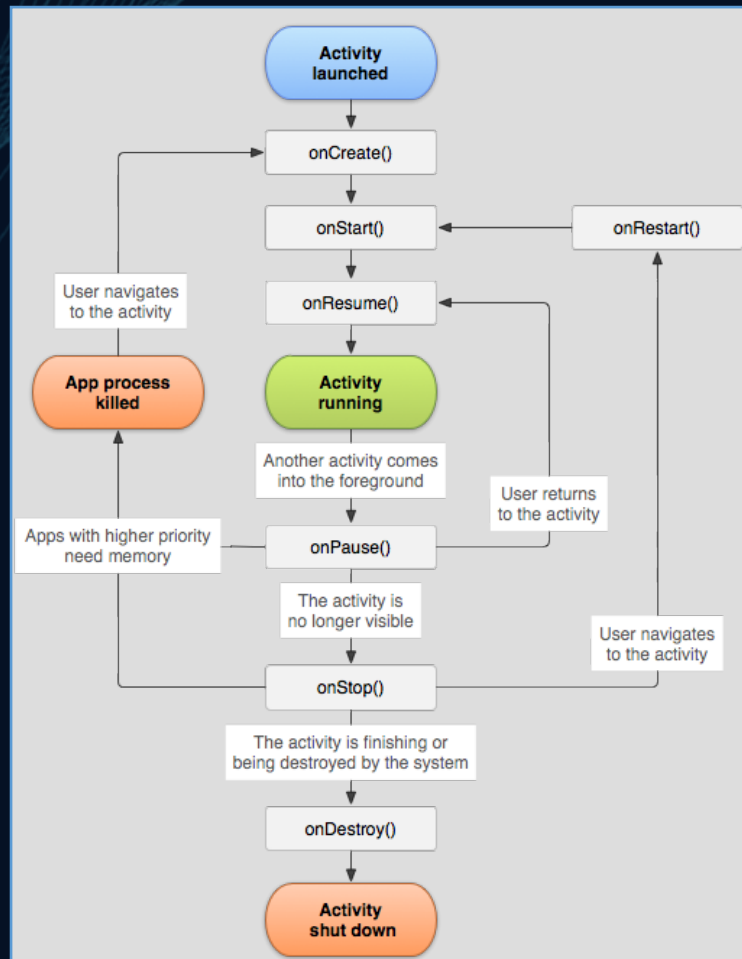
Declarative



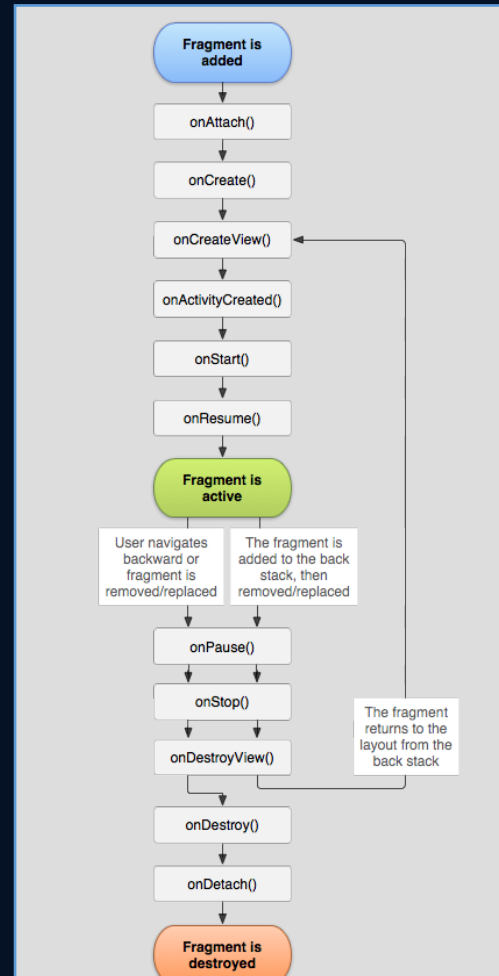
# Flutter's Lifecycle

# Android Lifecycle

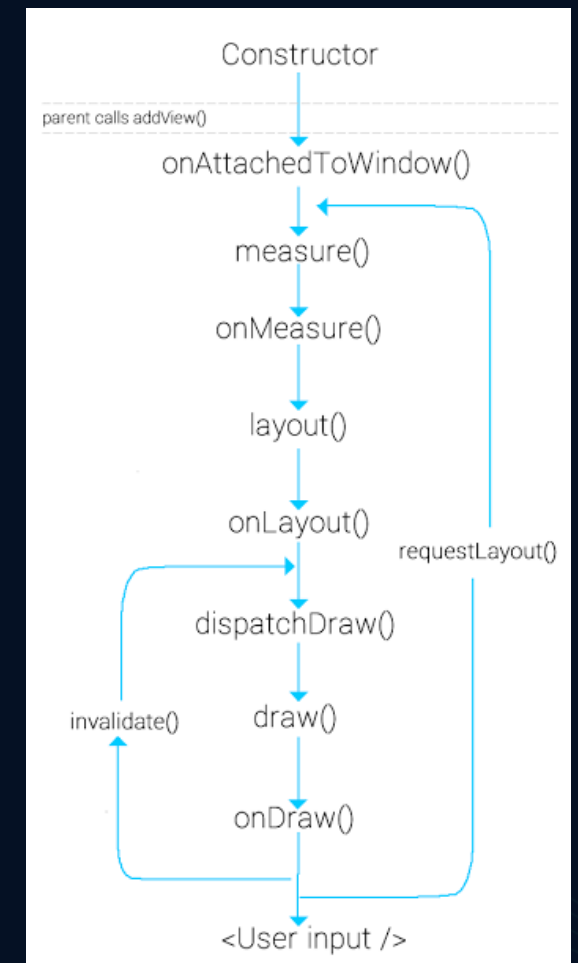
## Activity



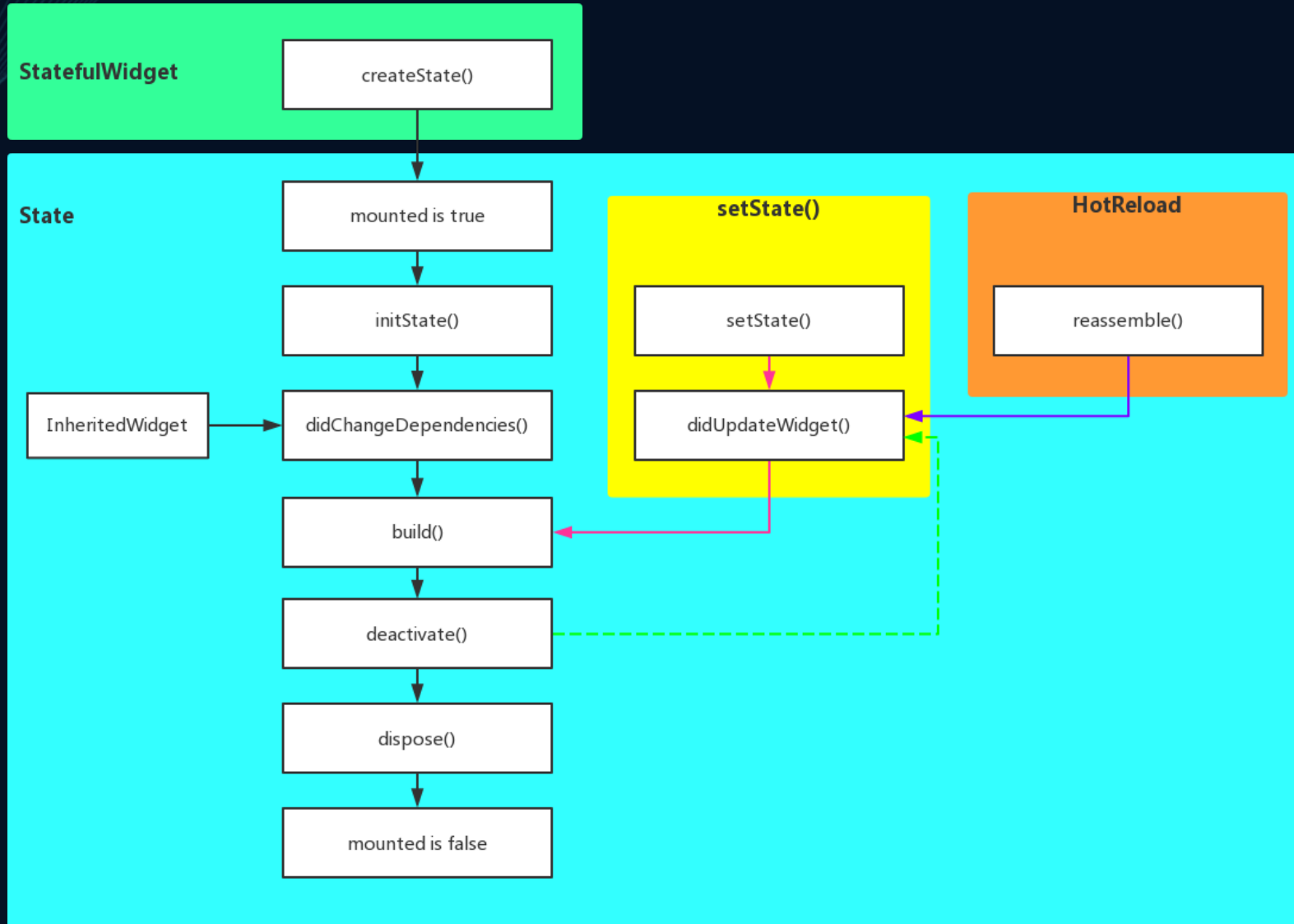
## Fragment



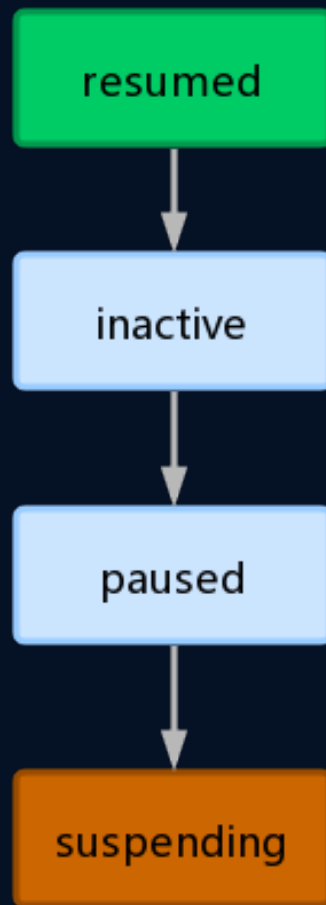
## View



# Flutter StatefulWidget Lifecycle



# Flutter App Lifecycle



# Flutter's Thread

Flutter's thread

single-threaded



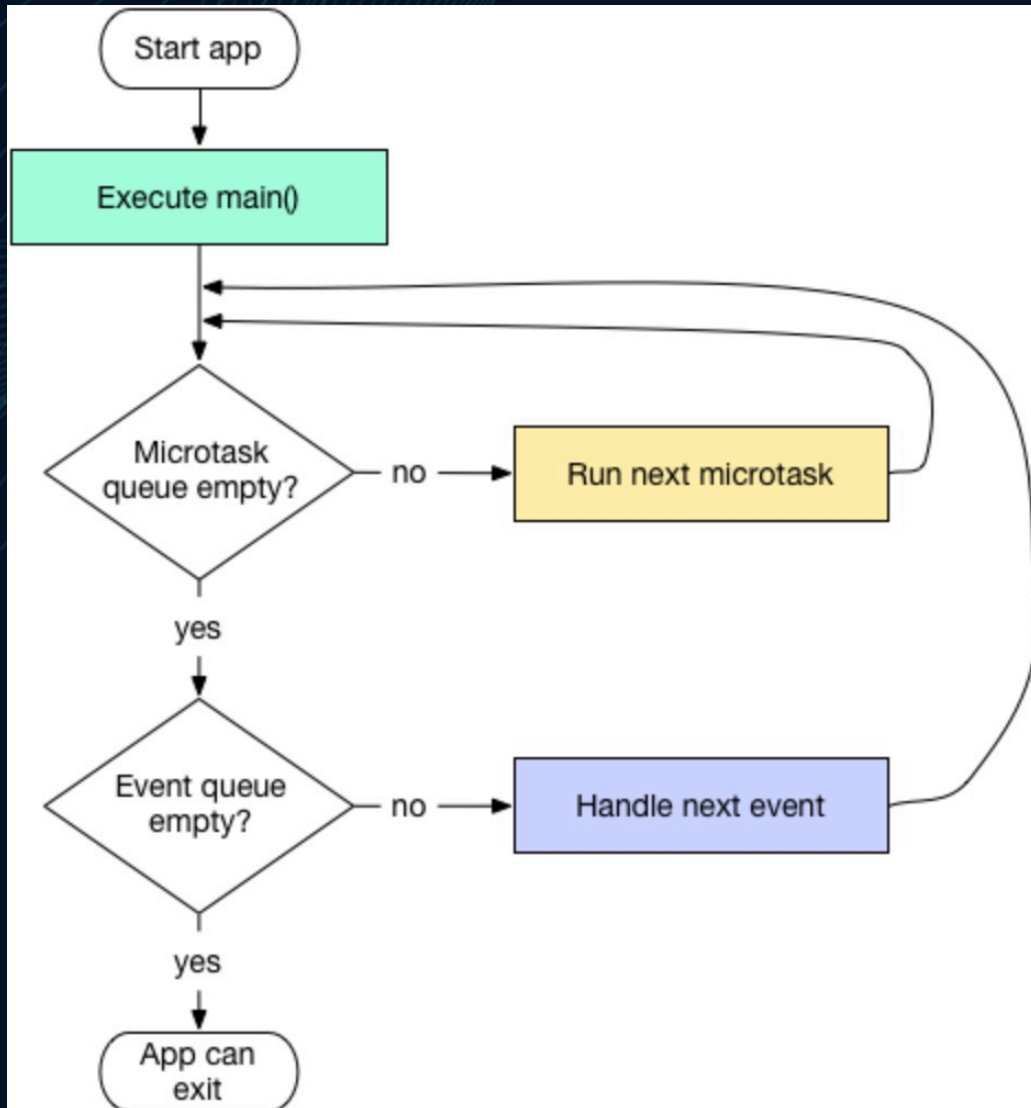
isolate



thread

private memory

# isolate — event loop



## 1、MicroTask queue

Internal actions

## 2、Event queue

External actions

- I/O
- gesture
- drawing
- timers
- streams
- futures
- async
- await
- ...

Single Thread



Block Thread



Asynchronously



async  
await

# async/await

async is concurrency on the same thread



# async/await

```
Future<int> findPrimeCount(int num) async {  
    int primeCount = 0;  
    for (int i = 1; i <= num; i++) {  
        int divideCount = 0;  
        for (int j = 1; j <= i; j++) {  
            if (i % j == 0) {  
                divideCount++;  
            }  
            if (divideCount <= 2) {  
                primeCount++;  
            }  
        }  
    }  
    return primeCount;  
}
```

- CPU Bound
- IO Bound

async/await

CPU Bound → isolate

IO Bound → async

# 谢谢

