



Flutter for Web

and Other News in the Flutter/Dart Ecosystem





REDDIYO

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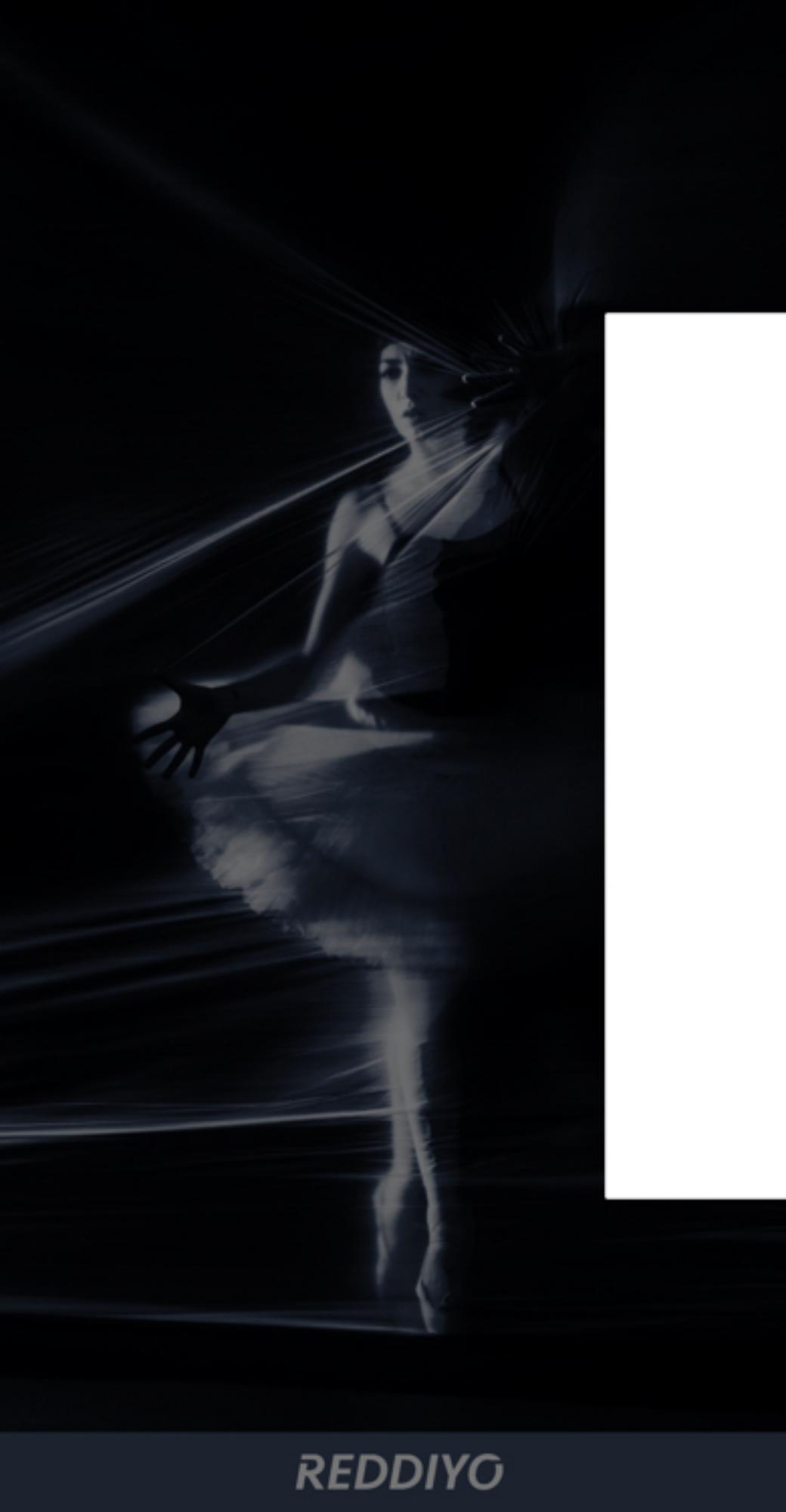
Agenda

- Flutter for Web
 - Intro
 - The Good Parts
 - Good to Know Widgets
 - Work In Progress
- Other Flutter News
- Dart Updates
- Flutter Predictions
- Resources



Intro to Flutter for Web

- Hummingbird -> Flutter for Web -> Flutter
- Flutter All the Things! ↗
- Technical Preview
- HTML, CSS (w/canvas fallback)
- Tech Stack ↗



Intro to Flutter for Web

- Humminbird -> Flutter for Web -> Flutter



RaspberryPi

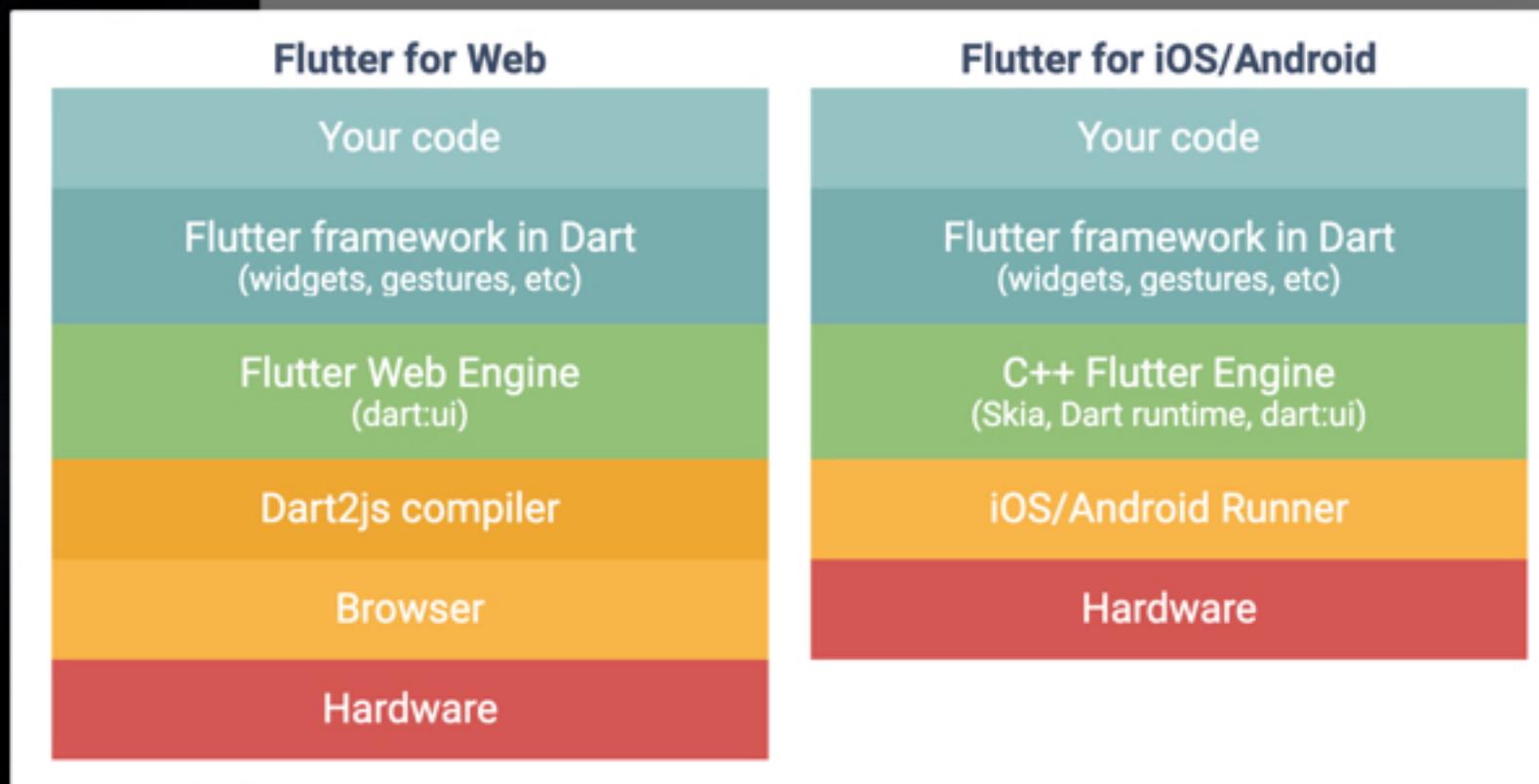


Chrome OS



Intro to Flutter for Web

- Hummingbird -> Flutter for Web -> Flutter
- Flutter All the Things! ☺





The Good Parts

- Widgets Just Work
- Responsive Web
- Dart2JS Compiler
- Dart DevTools



Good To Know Widgets

- RawKeyboardListener [🔗](#)
- MouseRegion [🔗](#)
- SelectableText [🔗](#)

Good To Know Widgets

- RawKeyboardListener ↗

RawKeyboardListener Example

```
import 'package:flutter/material.dart';
import 'package:flutter/services.dart';

class CharacterModal extends StatelessWidget {
  final FocusNode _focusNode = FocusNode();

  @override
  Widget build(BuildContext context) {

    FocusScope.of(context).requestFocus(_focusNode);
    return RawKeyboardListener(
      focusNode: _focusNode,
      onKey: (RawKeyEvent event) {
        if (event.runtimeType == RawKeyDownEvent && event.logicalKey.keyId == KeyCode.BACKSPACE) {
          _focusNode.unfocus();
          Navigator.pop(context, null);
        }
      },
      child: Text('Placeholder'),
    );
  }
}
```

<https://youtu.be/IyFZznAk69U>

Good To Know Widgets

MouseRegion Example

```
class Example extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    void _handleHover(PointerEvent _) {
      print('hover on');
    }
    void _handleHoverOff(PointerEvent _) {
      print('hover off');
    }

    return MouseRegion(
      onEnter: _handleHover,
      onExit: _handleHoverOff,
      child: Text('Example Text')
    );
  }
}
```

Good To Know Widgets

- RawKeyBoardListener ↗

SelectableText Example

```
import 'package:flutter/material.dart';
import 'dart:html';

class SelectableTextExample extends StatelessWidget {

  @override
  Widget build(BuildContext context) {
    return SelectableText(
      'Example Text',
      onTap: () {
        window.open(
          'https://api.flutter.dev/flutter/material/SelectableText-class.html',
          'tab'
        );
      }
    );
  }
}
```



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Work in Progress

- No Stateful Hot Reload
- Still Need to Optimize
- Plugin System Not Robust Yet
- Hash Bang Routing Only
- Performance
- Merging to Master != Production Ready



Other Flutter News

- Provider Wins!
- New Widgets
 - Reorderable List View [↗](#)
 - Range Slider [↗](#)
 - Expanding Search
<https://youtu.be/YSULAJf6R6M> (minute 8:35)
- Accessibility Semantics Label [↗](#)
- Dark Theme Support (Android)
- Flutter Interact (Dec 11th)

Other Flutter News

ReorderableListView Example

```
ReorderableListView(  
  onReorder: (oldIndex, newIndex) {  
    setState(() {  
      //update model here  
      _updateMyItems(oldIndex, newIndex);  
    }  
  },  
  
  children: [  
    for (final item in myItems)  
    ListTile(  
      key: ValueKey(item),  
      title: Text('Item #\$item')  
    )  
  ]  
)
```

8:35)

<https://youtu.be/3fB1mxOsqJE>

Other Flutter News

• Provider Widget

RangeSlider Example

```
class RangeSliderExample extends StatefulWidget {
  @override
  _RangeSliderExampleState createState() => _RangeSliderExampleState();
}

class _RangeSliderExampleState extends State<RangeSliderExample> {
  RangeValues _values = RangeValues(0, 10);

  @override
  Widget build(BuildContext context) {
    return RangeSlider(
      values: _values,
      min: 0,
      max: 10,
      divisions: 10,
      onChanged: (RangeValues values) {
        setState(() {
          _values = values;
        });
      },
    );
  }
}
```

8:35)

Other Flutter News

- Provider Wins!

Semantics Examples

```
Text(  
  '50 mph',  
  semanticLabel: 'fifty miles per hour'  
)  
  
Icon(  
  Icons.keyboard_arrow_left,  
  semanticLabel: 'Previous Slide',  
)  
  
Semantics(  
  label: 'accessibility text',  
  child: MyWidget()  
)  
  
Row(children: <Widget>[  
  Semantics(  
    sortKey: OrdinalSortKey(2.0),  
    label: 'second item',  
    child: MyWidget()  
  ),  
  Semantics(  
    sortKey: OrdinalSortKey(1.0),  
    label: 'first item',  
    child: MyOtherWidget()  
])
```

8:35)

<https://youtu.be/YSULAJf6R6M>



Dart Updates

- Spread Operator [↗](#)
- Collection if and for [↗](#)
- Structured Error Messages [↗](#)
- ML Code Completion (preview) [↗](#)
- C Interoperability (preview)

Dart Updates

- Spread Operator ↗

Spread Operator Example

```
// insert all the elements of a list into another list
```

```
var list = [1, 2, 3];
var list2 = [0, ...list];
assert(list2.length == 4);
```

```
// use null-aware spread operator to avoid exceptions if
// the list you are inserting might be null
```

```
var list;
var list2 = [0, ...?list];
assert(list2.length == 1);
```

<https://youtu.be/J5DQRPRBiFI>

Dart Updates

- Spread Operator ↗
- Collection if and for ↗

Collection Construction Before/After

```
Widget build(BuildContext context) {    Widget build(BuildContext context) =>  
  var items = [Text('Contents')];  
  
  if (page != pages.last)  
    items.add(Text('Next'));  
  
  for (var section in sections) {  
    items.addAll(section.chapters);  
  }  
  
  items.add(Text('Index'));  
  
  return Column(children: items);  
}  
  
Widget build(BuildContext context) =>  
Column(children: [  
  Text('Contents'),  
  if (page != pages.last)  
    Text('Next'),  
  for (var section in sections)  
    ...section.chapters,  
  Text('Index'),  
]);
```

<https://youtu.be/J5DQRPRBiFI>

Dart Updates

- Spread Operator ↗
- Collection if and for ↗

```
Exception caught by rendering library
The following assertion was thrown during layout:
A RenderFlex overflowed by 1183 pixels on the right. 1

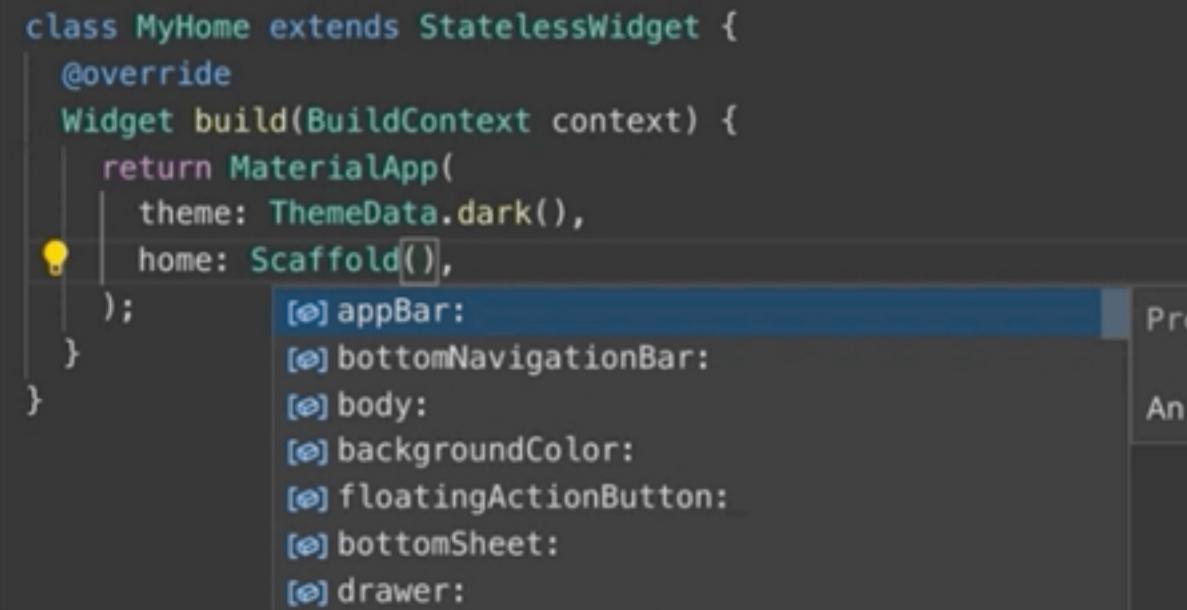
2 User-created ancestor of the error-causing widget was:
Container file:///Users/taodong/Development/flutter_projects/flutter_error_studies/lib
/rearflex_overflow_error.dart:13:15
The overflowing RenderFlex has an orientation of Axis.horizontal.
The edge of the RenderFlex that is overflowing has been marked in the rendering with a yellow and
black striped pattern. This is usually caused by the contents being too big for the RenderFlex.

3 Consider applying a flex factor (e.g. using an Expanded widget) to force the children of the
RenderFlex to fit within the available space instead of being sized to their natural size.
This is considered an error condition because it indicates that there is content that cannot be seen.
If the content is legitimately bigger than the available space, consider clipping it with a ClipRect
widget before putting it in the flex, or using a scrollable container rather than a Flex, like a
ListView.

4 The specific RenderFlex in question is: RenderFlex#6eef9 relayoutBoundary=up3 OVERFLOWING <9 children>
```

Dart Updates

- Spread Operator ↗
- Collection if and for ↗
- Structured Error Messages ↗



A screenshot of a Dart code editor showing a tooltip for the `Scaffold` widget. The code defines a `MyHome` class that extends `StatelessWidget`. Inside the `build` method, a `Scaffold` widget is returned with a `MaterialApp` theme. A tooltip is displayed over the `Scaffold` call, listing its properties: `appBar`, `bottomNavigationBar`, `body`, `backgroundColor`, `floatingActionButton`, `bottomSheet`, and `drawer`. The `appBar` property is highlighted.

```
class MyHome extends StatelessWidget {  
  @override  
  Widget build(BuildContext context) {  
    return MaterialApp(  
      theme: ThemeData.dark(),  
      home: Scaffold(),  
    );  
  }  
}
```



Flutter Predictions

- Flutter for iOS/Android
 - Incremental adoption among large companies ↗
 - Full adoption among startups/small biz
 - Community will gain momentum
- Flutter for Web
 - Mobile devs will love it
 - Web devs will be slower to adopt
 - Beta announcement at Flutter Interact

Flutter Predictions

Flutter for iOS/Android

The New York Times

ebay™



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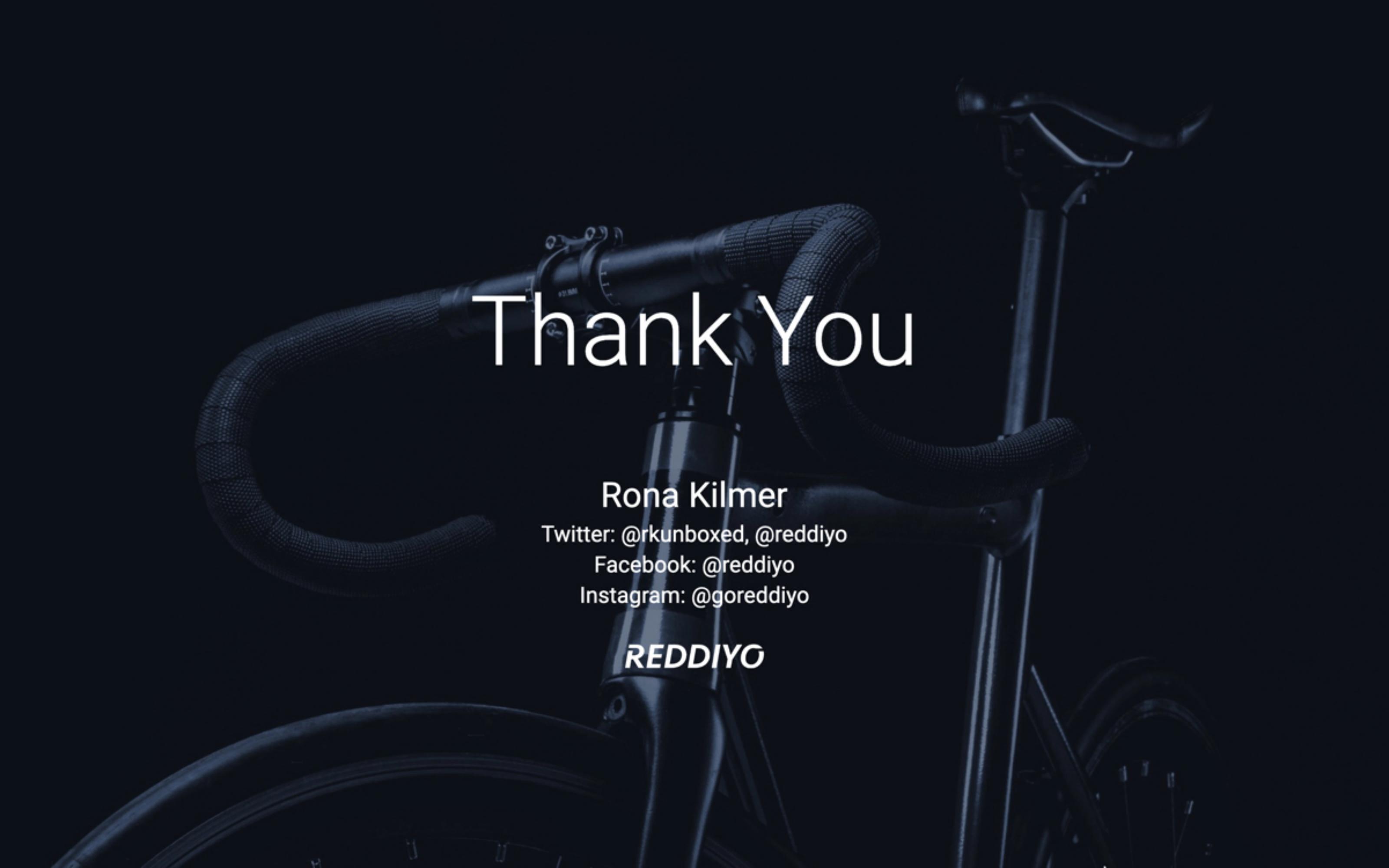
PHILIPS

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Resources

- [Flutter.dev/web](https://flutter.dev/web)
- I/O Flutter Playlist
 - <https://goo.gle/2ZTbnOs>
- Developer Quest Sample App
 - github.com/2d-inc/developer_quest
- ItsAllWidgets.com
- Provider Package
 - <https://pub.dev/packages/provider>
- Flutter & Raspberry Pi Talk @ OSCON
 - <https://youtu.be/X-4LJSqCPzM>
- Source Code for this Deck
 - github.com/reddiyo-os/flutter-slides-gdg-boulder



Thank You

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