UNIVERSITY OF PADOVA
DEPARTMENT OF INFORMATION ENGINEERING

Biomedical Wearable Technologies
for Healthcare and Wellbeing

Fitbitter

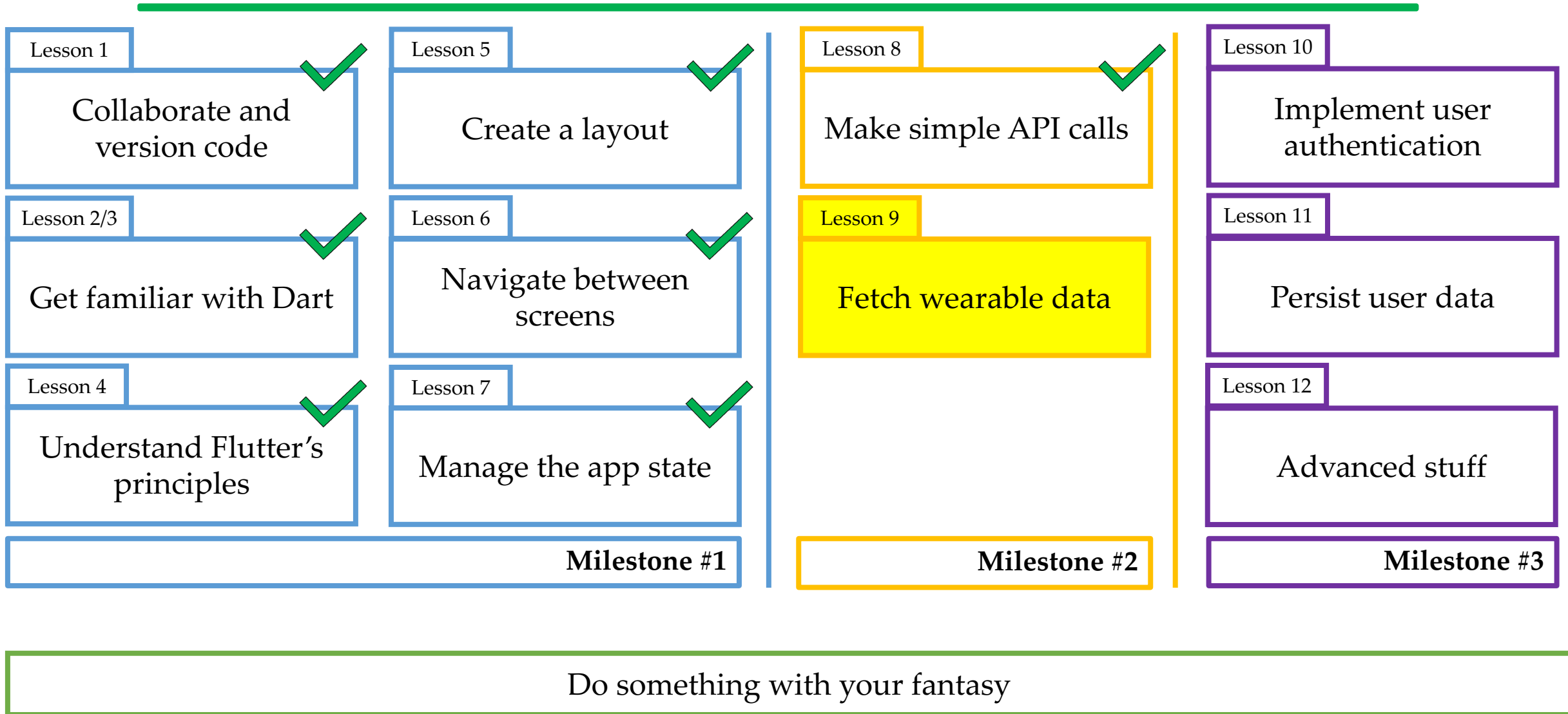A.Y. 2021-2022

Giacomo Cappon

Outline

- **Recap**
- The network flow
- Health data from the Web
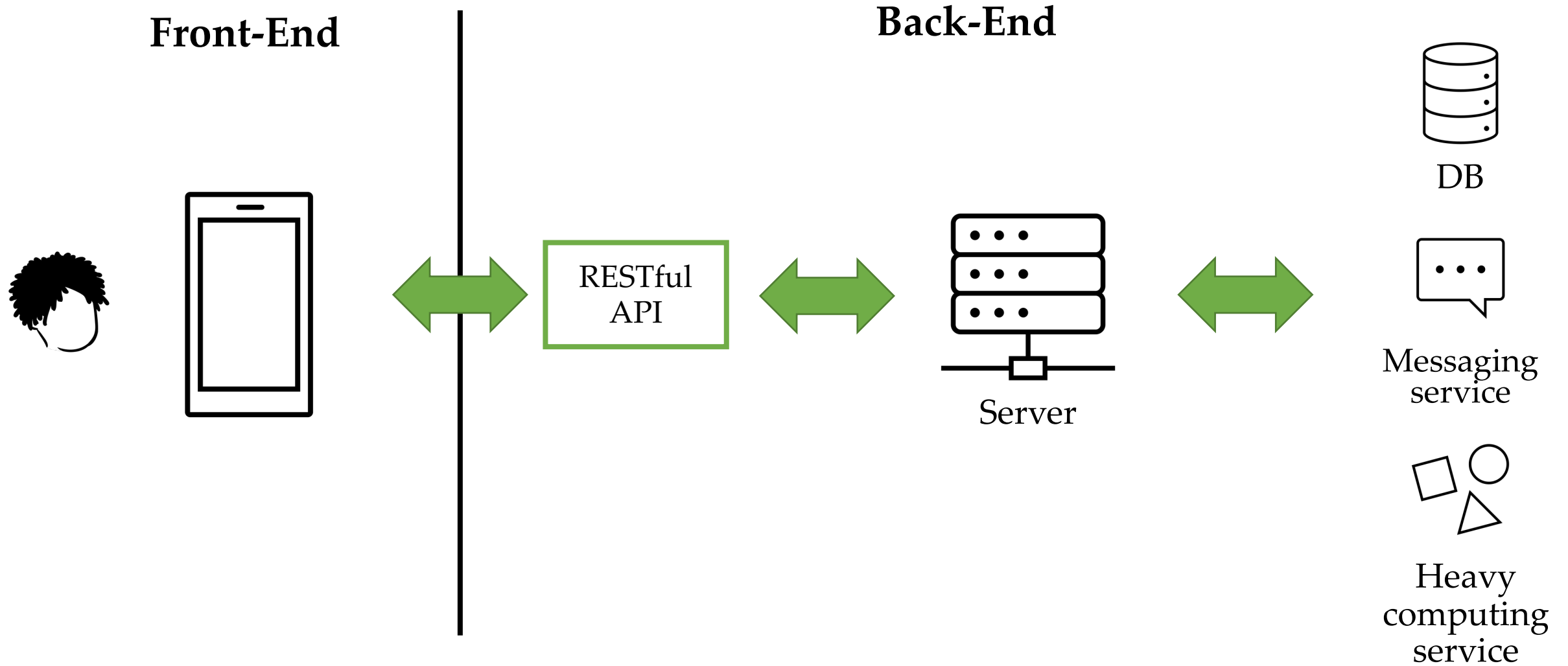- Fitbit Web API
- Fitbitter

- Homework
- Resources

Recap

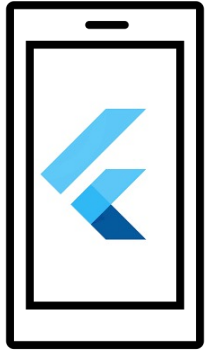| Milestone #1	Milestone #2	Milestone #3
Lesson 1 — Collaborate and version code ✔	**Lesson 8** — Make simple API calls ✔	**Lesson 10** — Implement user authentication
Lesson 2/3 — Get familiar with Dart ✔	**Lesson 9** — Fetch wearable data	**Lesson 11** — Persist user data
Lesson 4 — Understand Flutter's principles ✔		**Lesson 12** — Advanced stuff
Lesson 5 — Create a layout ✔		
Lesson 6 — Navigate between screens ✔		
Lesson 7 — Manage the app state ✔		

Do something with your fantasy

Outline

The network flow

Front-End

Back-End

RESTful API

Server

DB

Messaging service

Heavy computing service
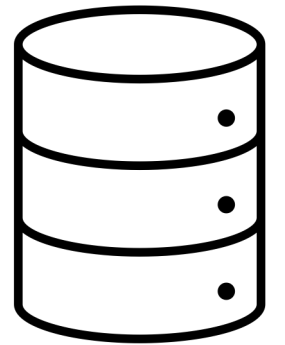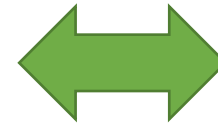
What do we want

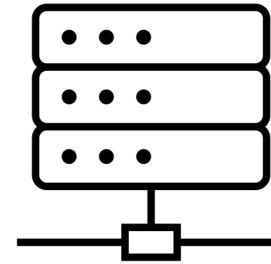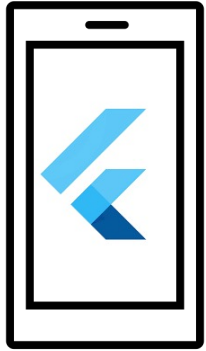**Front-End**   **Back-End**

What do we want

Front-End
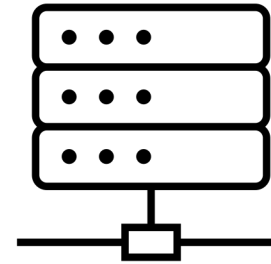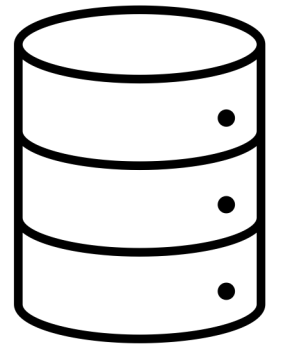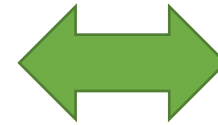
Back-End

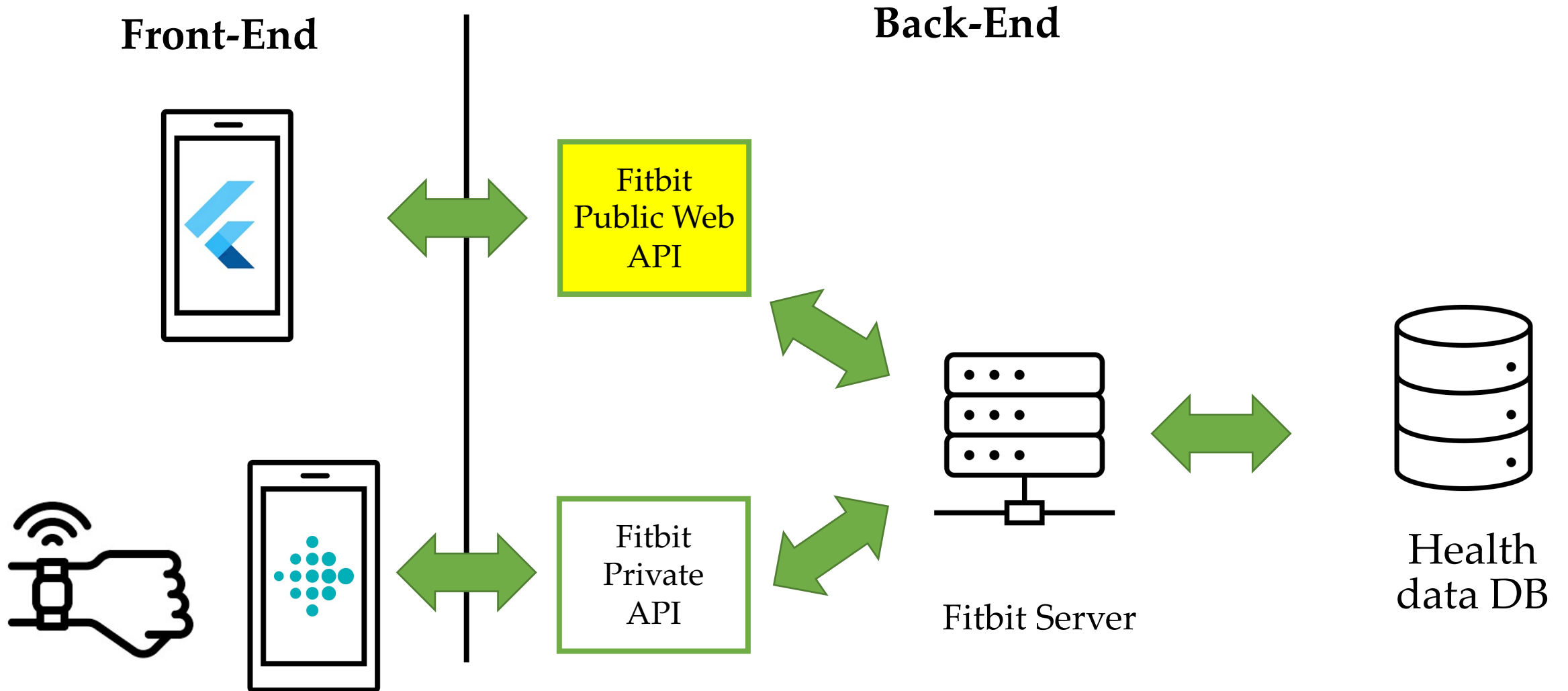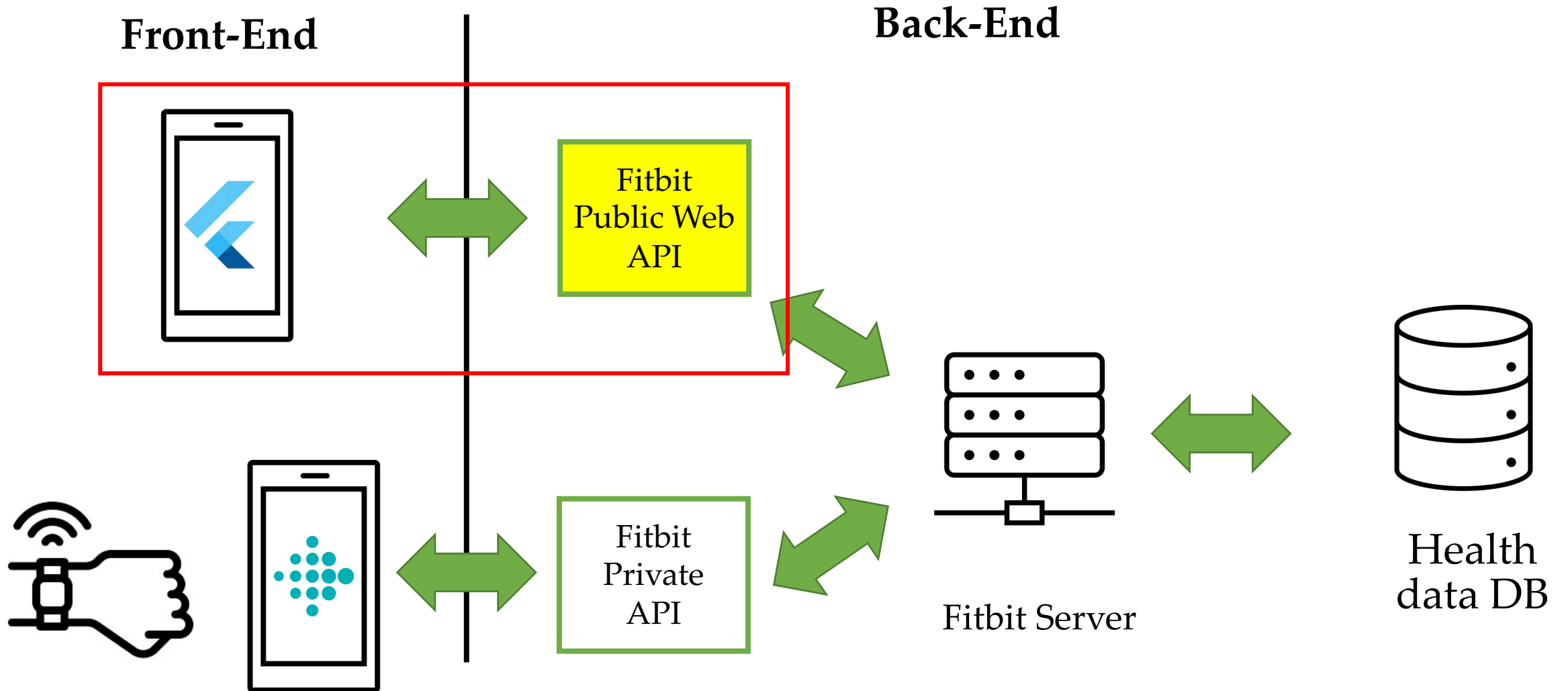RESTful API

Server

Health data DB

The idea

➤ In this course, we will leverage data generated by a Fitbit smartwatch, i.e., a Fitbit Versa 2

➤ Data will be collected by me using my Fitbit

➤ These data include:
- Activity data
- Heart data
- Calories data
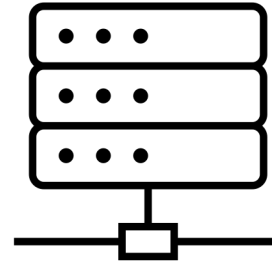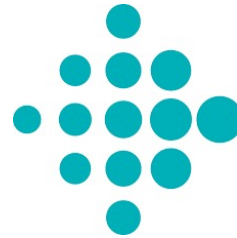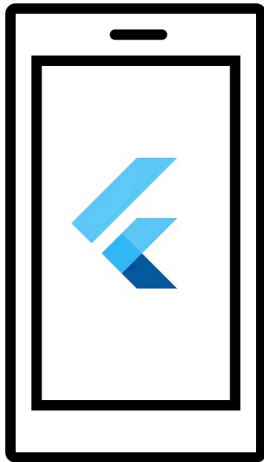- Sleep data
- Device data
- User data

Fitbit data flow

Front-End

Back-End

Fitbit
Public Web
API

Fitbit
Private
API

Fitbit Server

Health
data DB

Fitbit data flow

Front-End

Back-End

Fitbit
Public Web
API

Fitbit
Private
API

Fitbit Server

Health
data DB

How to use them? Three steps

Front-End

Fitbit
Server

1. Authorize your app via OAuth2 protocol using my Fitbit credentials

2. Store the authorization credentials

3. Use those credentials to make requests

How to use them? Docs

➢ https://dev.fitbit.com/build/reference/web-api/

• developer   Getting Started   Build ⌄   Manage ⌄   Community ⌄   🔍

Reference

Device API

Companion API

Settings API

Web API

Developer Guide

Activity

Web API Reference

Fitbit provides a set of public Web APIs that developers may use to retrieve Fitbit user data collected by the Fitbit trackers & smartwatches, Aria & Aria 2 scales, and manually entered log data. Anyone may use the Web APIs to build integrations with the Fitbit data services, so long as their application complies with the **Fitbit Platform Terms of Service** and the Fitbit user consents to share their data with the developer's application.

Here are some resources to help you get started.

- **Developer Guide** contains information such as how to get started using the Web APIs, tips for designing your application, best practices and sample code.
- **Troubleshooting Guide** helps you debug common problems and errors, and tells you where to find some tools to help test and troubleshoot the endpoints.

Outline

➢ Recap
➢ The network flow
➢ Health data from the Web
➢ Fitbit Web API
➢ **Fitbitter**

➢ Homework
➢ Resources

How to use them? Fitbitter

➢ To make your life easier, I developed a dedicated package: Fitbitter

➢ It exposes simple client-side APIs to make those "three steps" easy.

➢ Pub.dev
https://pub.dev/packages/fitbitter

➢ Repository:
https://github.com/gcappon/fitbitter

➢ Docs & Guides:
https://gcappon.github.io/fitbitter/

How to use them? Fitbitter

How to use them? Fitbitter

➢ In the "Get Started" page of the docs you will find all the necessary info to start working with fitbitter and access to my Fitbit-generated data: https://gcappon.github.io/fitbitter/getstarted

➢ In this lesson, I won't guide you with a case study.

➢ Try to follow the guide I prepared for you to fetch yesterday's step count. This will teach you how to reuse others' (documented) code, i.e., 99% of the scenarios you will face in the real world.

Fitbitter

Fitbitter is a Flutter package that makes your life easier when dealing with Fitbit Web APIs.

Get Started →

Ad-Hoc Data Types

Fitbitter comes with ad-hoc types to manage Fitbit data.

Easy-to-Use

Fitbitter can be easily integrated in you app flow.

Open-Source

Fitbitter is fully open source. Also, you are encouraged to contact me if you are willing to collaborate with the project.

Made by Giacomo Cappon with ❤️

Don't want to use my data for your project?

➢ I provide you with the possibility of fetching my data to have some health-related stuff to work on during the project preparation.

➢ What if you do not want to use my data? For the sake of freedom, you have other choices:

  ▪ If you have your own Fitbit, feel free to use fitbitter to connect to your device

  ▪ If you have another smartwatch (Garmin, Apple Watch,…) that sync data to Apple Health or Google Fit you can try to use the health package
    https://pub.dev/packages/health

Outline

Homework

➢ Get familiar with the fitbitter package capabilities

➢ Read the docs of the Fitbit Web API
  ▪ https://dev.fitbit.com/build/reference/web-api/

➢ Take a look the health package
  ▪ https://pub.dev/packages/health

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- Fitbitter

- Exercise
- Homework
- **Resources**

Resources

- ➢ Fitbit Web API
  - ▪ https://dev.fitbit.com/build/reference/web-api/

- ➢ Fitbitter package
  - ▪ https://pub.dev/packages/fitbitter

- ➢ Health package
  - ▪ https://pub.dev/packages/health