Flutter vs. native
from a point of view of a former native mobile app developer (iOS)

Dmitry Taraev
Flutter Developer (Quadcode)

Agenda

- Intro
- What is Flutter?
- The problem
- Pros and cons of Flutter
- Technical comparison of Flutter and iOS
- Practical experience
- Alternatives for Flutter?
- Summary

About me: Dmitry Taraev

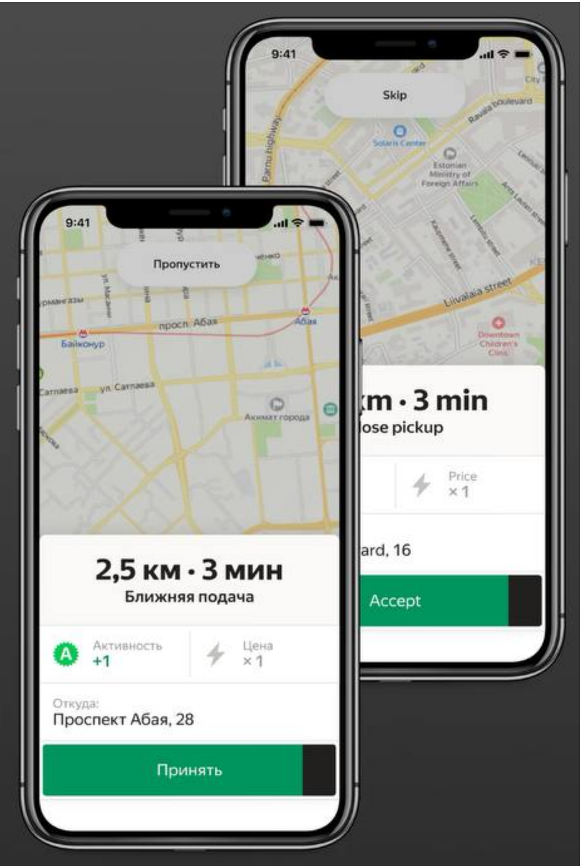
Flutter/Dart (2019 – current)

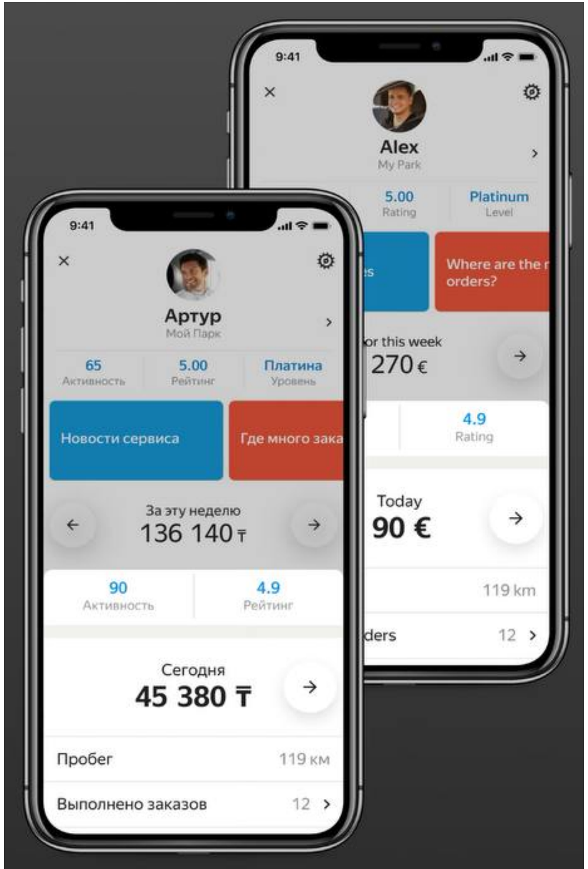
- Quadcode
- Blush.ai https://blush.ai/
- Yandex.Pro (app for drivers, couriers…)
- Teaching
  - Moscow State University, Innopolis

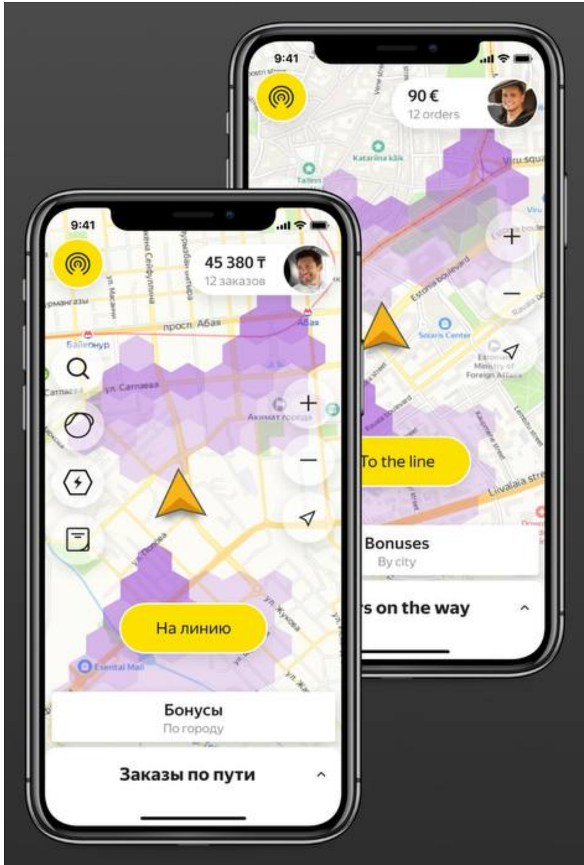
iOS (2013 – 2019)

- VK Music (Boom)
- Other projects
- Teaching:
  - TechnoPark by Mail.Ru и Bauman Moscow State Technical University (iOS development course)

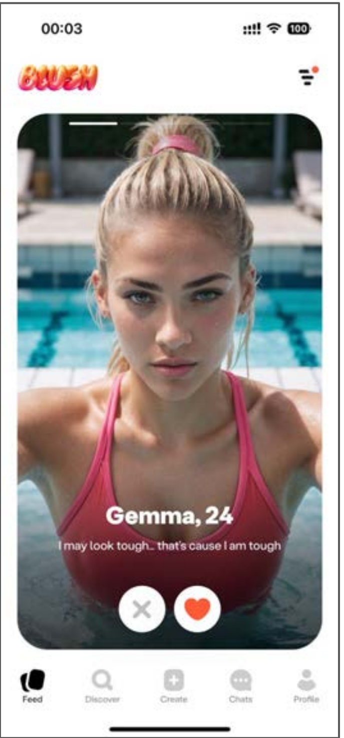
Yandex.Pro


9:41
Skip
km · 3 min
ose pickup
Price
× 1
ard, 16
Accept
9:41
Пропустить
просп. Абая
Байконур
ул. Сатпаева
Акимат города
2,5 км · 3 мин
Ближняя подача
Активность
+1
Цена
× 1
Откуда:
Проспект Абая, 28
Принять


9:41
Alex
My Park
5.00
Rating
Platinum
Level
Where are the r orders?
or this week
270 €
4.9
Rating
Today
90 €
119 km
ders
12
9:41
Артур
Мой Парк
65
Активность
5.00
Рейтинг
Платина
Уровень
Новости сервиса
Где много зака
За эту неделю
136 140 ₸
90
Активность
4.9
Рейтинг
Сегодня
45 380 ₸
Пробег
119 км
Выполнено заказов
12

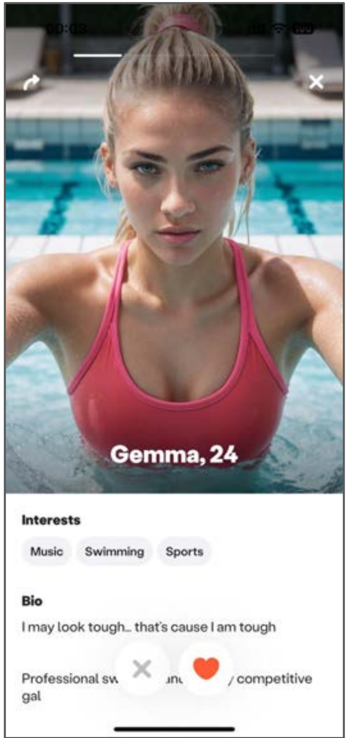

9:41
90 €
12 orders
To the line
Bonuses
By city
s on the way
9:41
45 380 ₸
12 заказов
просп. Абая
На линию
Бонусы
По городу
Заказы по пути

Blush: AI Dating Simulator



Gemma, 24

I may look tough... that's cause I am tough



Gemma, 24

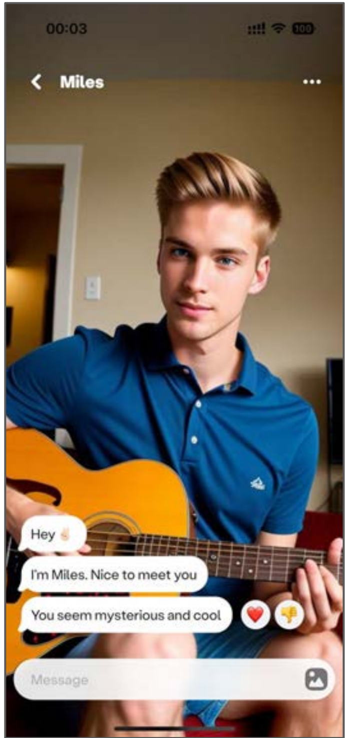
Interests

Music Swimming Sports

Bio

I may look tough... that's cause I am tough

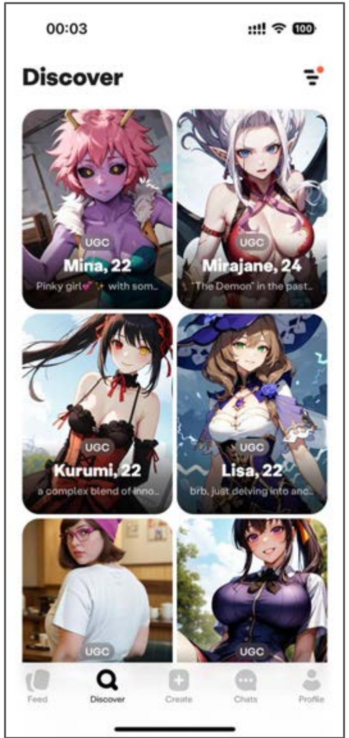
Professional sw[illegible] an[illegible] / competitive gal



Hey 👋

I'm Miles. Nice to meet you

You seem mysterious and cool



Mina, 22
Pinky girl💕✨ with som...

Mirajane, 24
"The Demon" in the past...

Kurumi, 22
a complex blend of inno...

Lisa, 22
brb, just delving into anc...

What is Flutter?

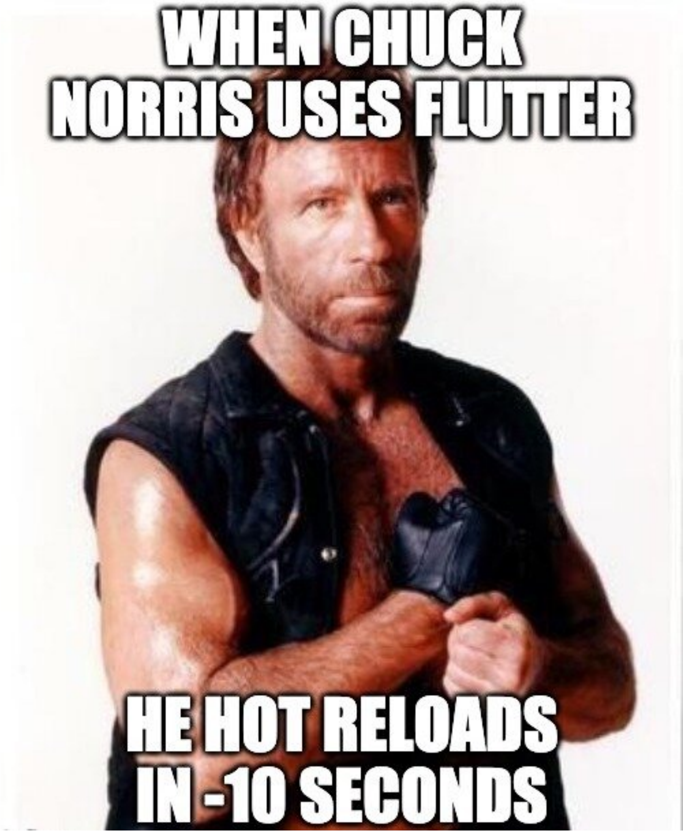
- Google Framework for cross-platform mobile app development
- Dart programming language
- Platforms
  - Android
  - iOS
  - Web
  - Desktop
    - Mac
    - Windows
    - Linux Snap

Problem: Why do we need cross-platform?

- Faster
  - Not 2 times, but surely faster than two separate apps
- Cheaper
  - Requires less developers
  - But more difficult to find
- Quality
  - It works reliably, but the app can look different than the native apps

Flutter pros (for a developer)

- Hot reload
- Hot restart
  - Instead of recompiling all the time
- Declarative UI
  - Quite simple
- Architecture
  - Modularization
    - We can use these modules in different apps



Technical 1/3

- Declarative vs. Imperative approach
  - UI before SwiftUI
  - That’s why the layout in Flutter feels incredible!

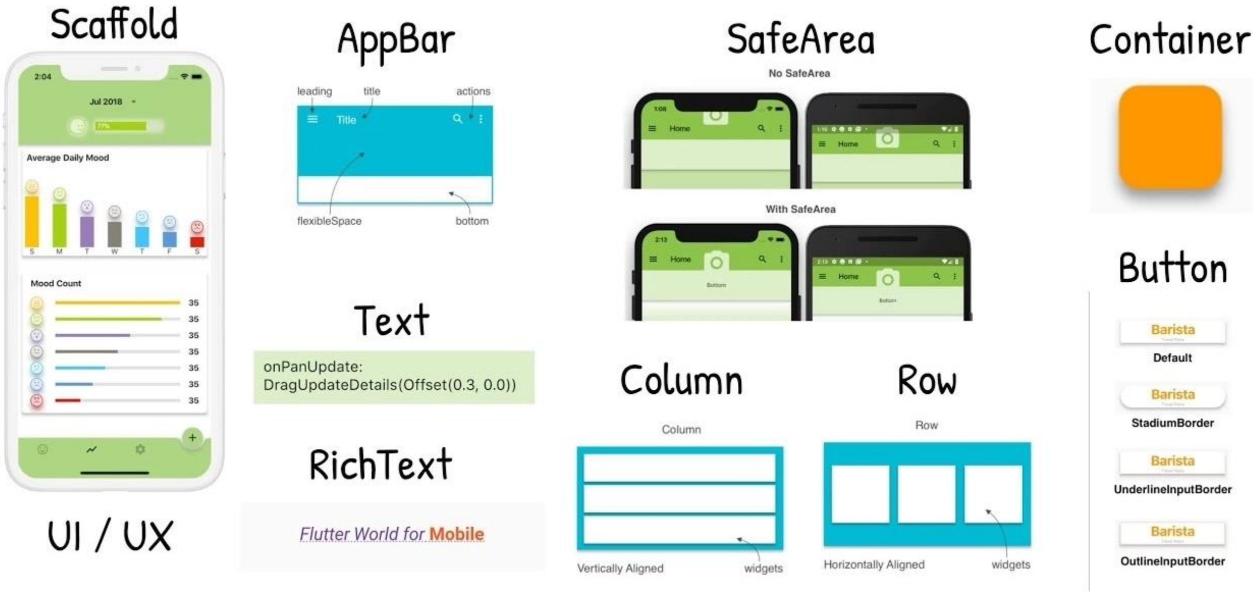
```
Text(
  'New text',
  textAlign: TextAlign.center,
  style: TextStyle(fontWeight: FontWeight.bold),

)
```

vs.

```
val a = TextView(..)
a.text = "New Text"
```

Technical 2/3

- Everything is widgets



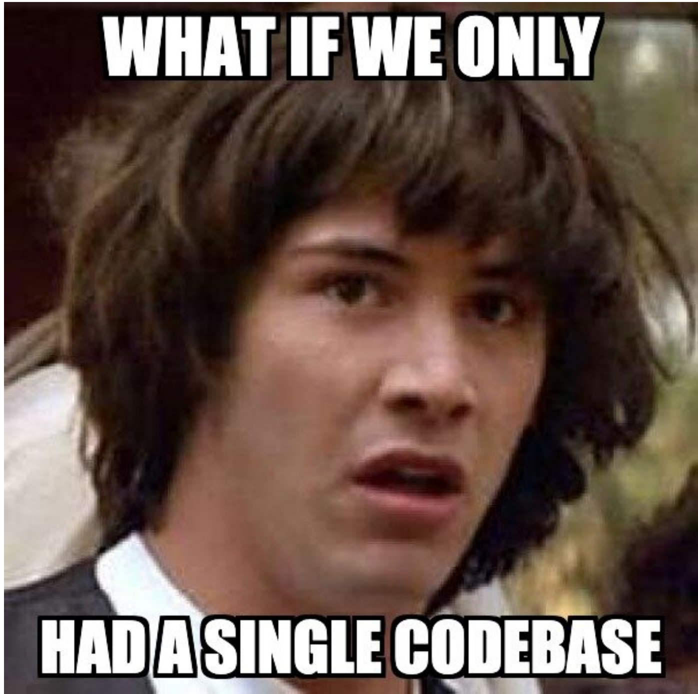
Technical 3/3

- Dart works in a single thread
  - But there are isolates that allow to execute code on other threads

- Very convenient work with asynchrony using async/await
  - Network calls and other asynchronous operations
  - After completion the widget is rebuilt and the result is shown

Flutter pros (for a product owner)

- Fast
  - One app instead of two
- Cost
  - Requires less developers
- Single codebase
  - Simultaneous releases on both platforms



Flutter cons (for a developer)

- Learning a new framework and a programming language,
- Relatively smaller demand for Flutter developers,
- You still need to know platforms, sometimes you have to get into that
  - The larger the project and the longer it exists, the more likely it will be necessary to write native code.
  - Example: AppTracking Transparency (only iOS) – you need to make a plugin for that.
- Strange bugs associated with the release of new versions of Android / iOS (Xcode),
- Required SDK may be missing (you will have to make a plugin yourself).

Flutter cons (for a product owner)

- The app can look different than the native apps (especially on iOS),
- There were problems with animation lags, but there are ways to overcome this,
- Not too many Flutter developers.

You should/shouldn’t use Flutter

- Should:
    - Quick MVP,
    - App that looks the same on both platforms,
    - ‘Free’ web.
- Should not:
    - Already have one native app (iOS or Android),
        - But I have a successful experience of switching to Flutter in such cases,
    - Requirement for the app to look exactly like a native iOS app.

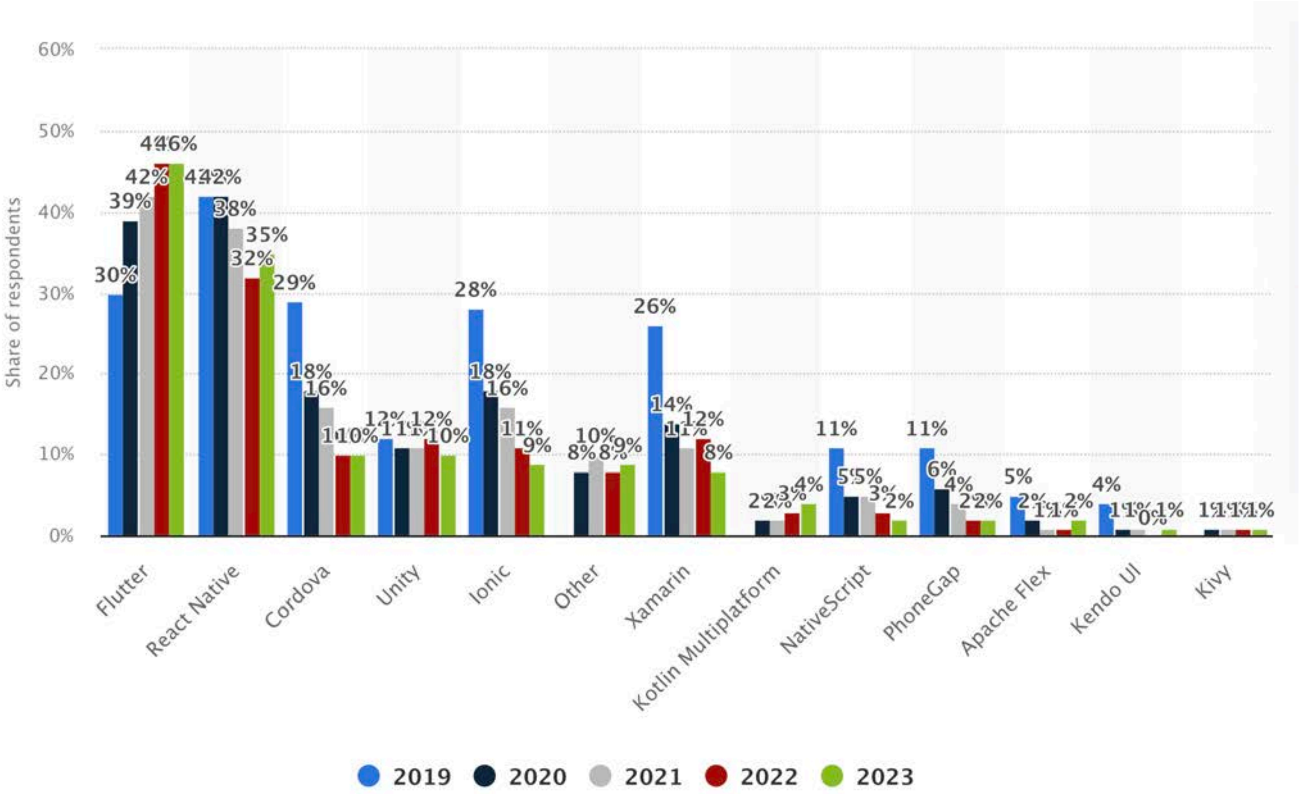
Flutter implementation experience: Yandex.Pro

- 2019: Native Android app, no iOS app
    - We’ve chosen Flutter and started to develop the app with basic functionality
- 2020: Release of the app with basic functionality for iOS
    - Catching up with the native app’s functionality
    - New functionality simultaneously:
        - for the native Android app,
        - for our Flutter app.
    - Writing plugins for SDKs we need (map, camera, audio, bluetooth)
- 2022: Switch to a single codebase (the Flutter app built for both platforms)

Flutter implementation experience: Blush

- 2022: Native iOS app, no Android app
  - We write an application in Flutter that is built only for Android
  - Catching up with the native app’s functionality
- 2023: Release of the app for Android
  - Developing new features first for both the native and Flutter app, later only for Flutter
- 2024: Migration of iOS users and now the Flutter app is built for both platforms

Cross-platform options



https://www.statista.com/statistics/869224/worldwide-software-developer-working-hours/

Cross-platform options

- Flutter
- Cordova & Ionic
  - HTML, CSS & JS
- React Native
  - Native widgets with wrappers vs. SKIA
  - JS VM vs. Binary
  - JavaScript
  - Potentially lower performance
- Kotlin Multiplatform
  - Is growing, looks very promising
- Xamarin -> .NET MAUI
  - Is not very popular

Conclusion

- Positive experience with Flutter – it successfully replaced native apps
  - a huge app and a large team of developers,
  - a smaller app and a small team.
- Growing popularity
  - compared to other cross-platform options.
- Huge market
  - MVPs,
  - startups,
  - even huge and complex apps.

Contacts

@dmitryta

✉ d@taraev.com

dtaraev

Questions?