

{callstack}

Scaling teams with Federated Super Apps and React Native

{callstack}

P R E S E N T E D B Y

Michał Pierzchała

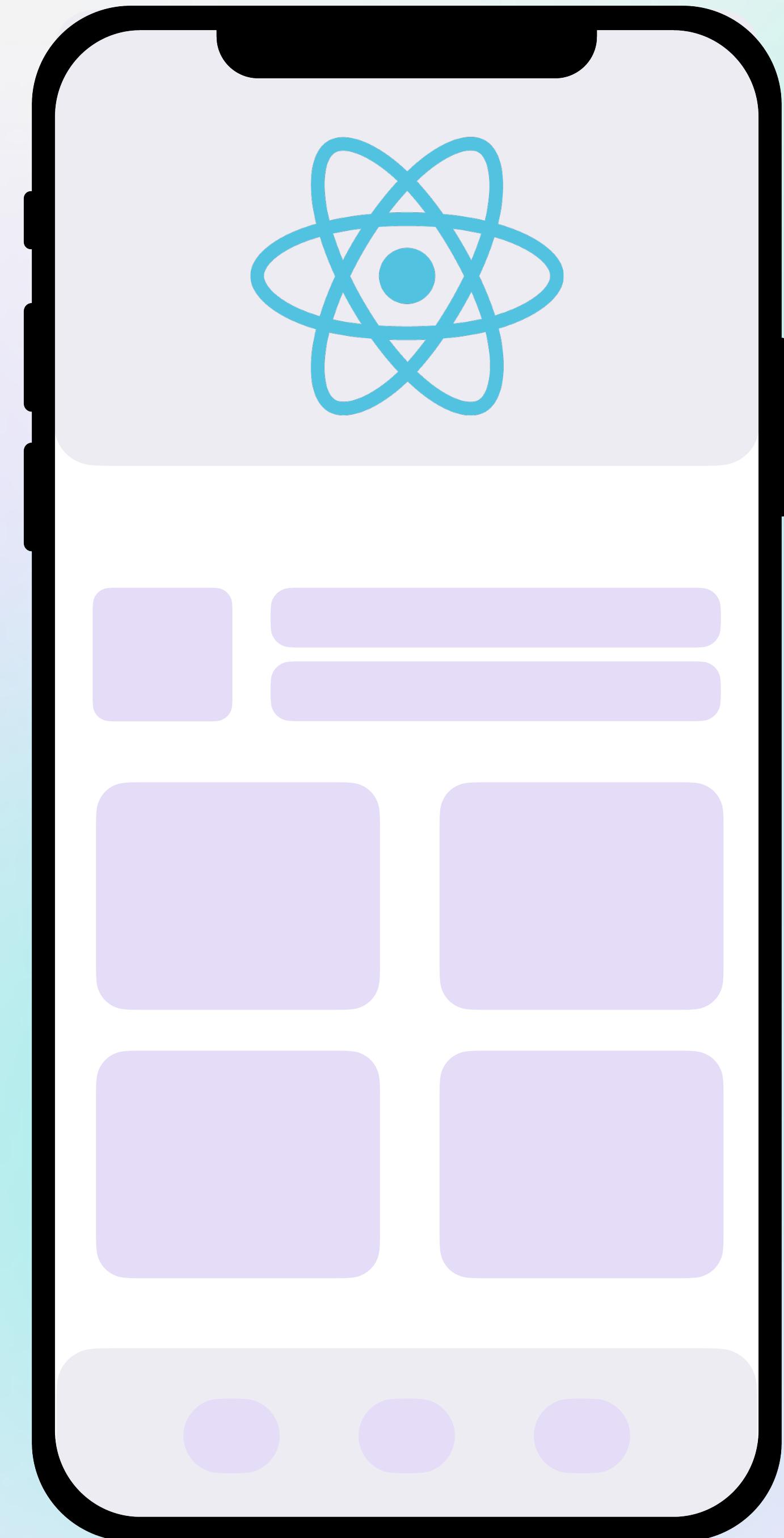
@thymikee

Head of Technology at Callstack

Core Contributor: Jest, React Native Testing Library, React Native CLI



8-10 JUNE 2022, KRAKÓW
app is a



T I M E T O S H I P





You're a super app , Harry.

{callstack}

 **Tzvetan Mikov**  · Apr 19, 2023 
@tmikov · [Follow](#)

Replies to @thymikee
What is a super app?

 **Michał Pierzchała**
@thymikee · [Follow](#)

Nobody knows really

6:50 PM · Apr 19, 2023 

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Super apps

multipurpose platforms that integrate a wide range of services and features to fulfill various user needs, all within a single interface

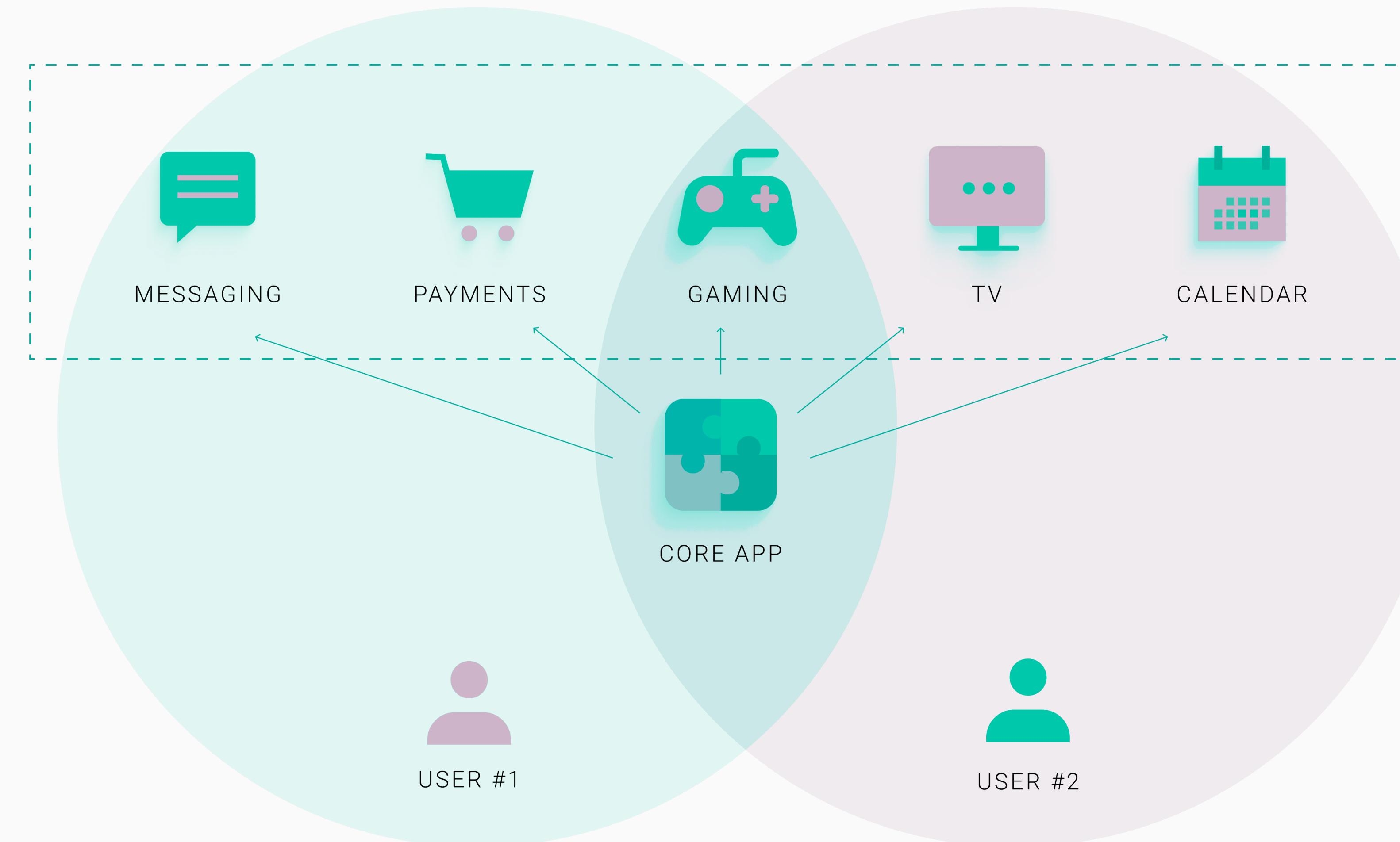
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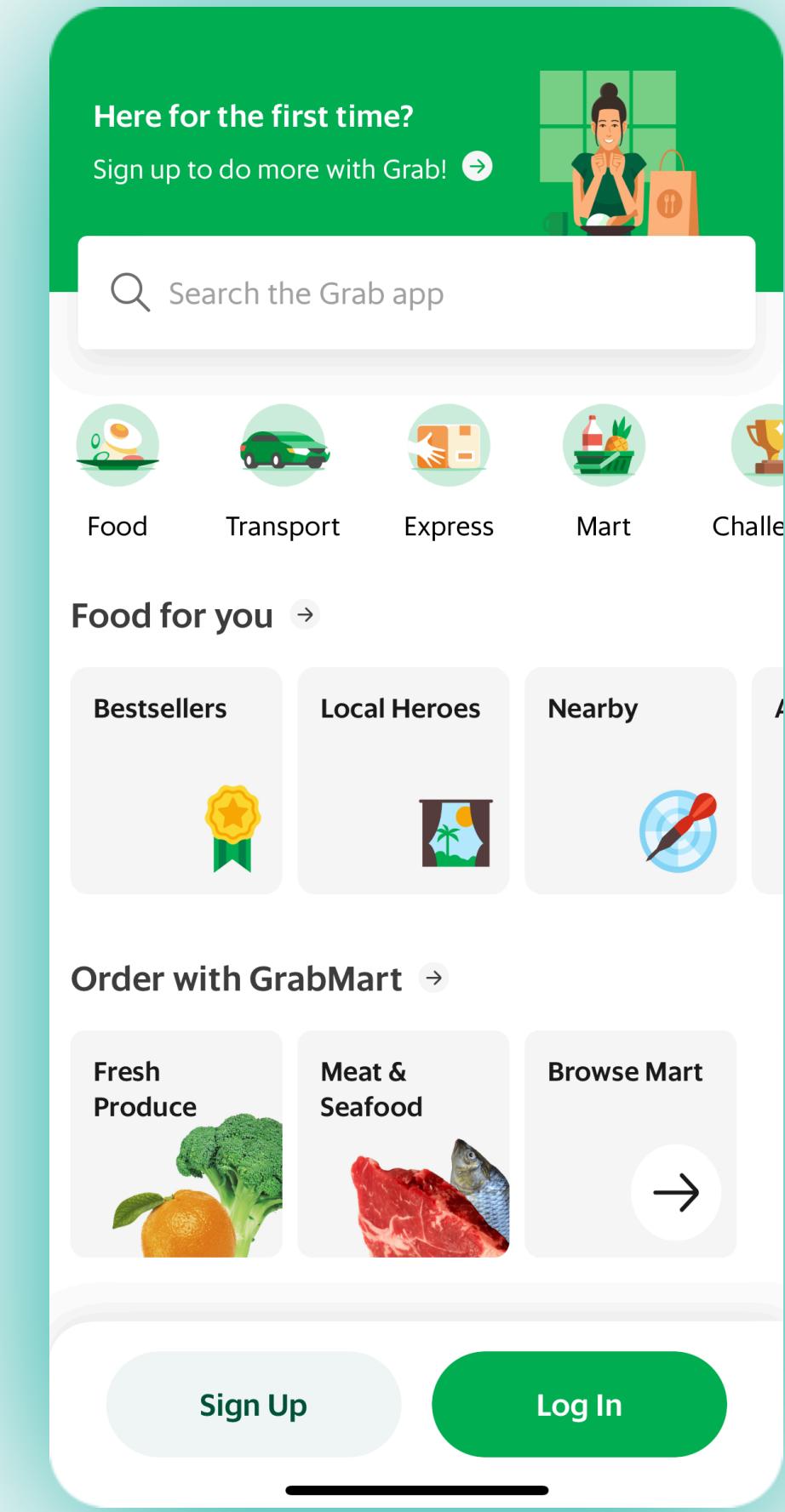
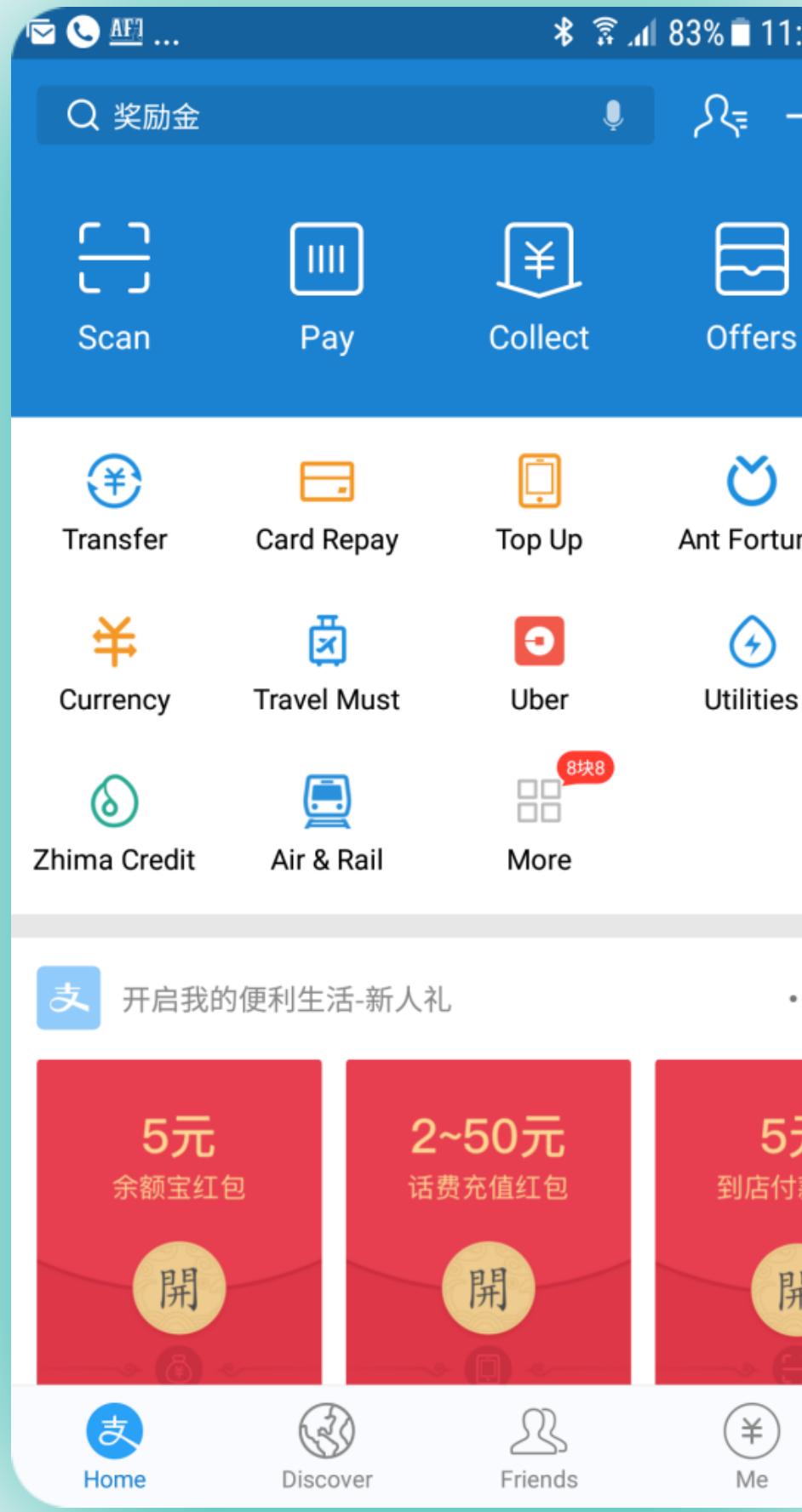
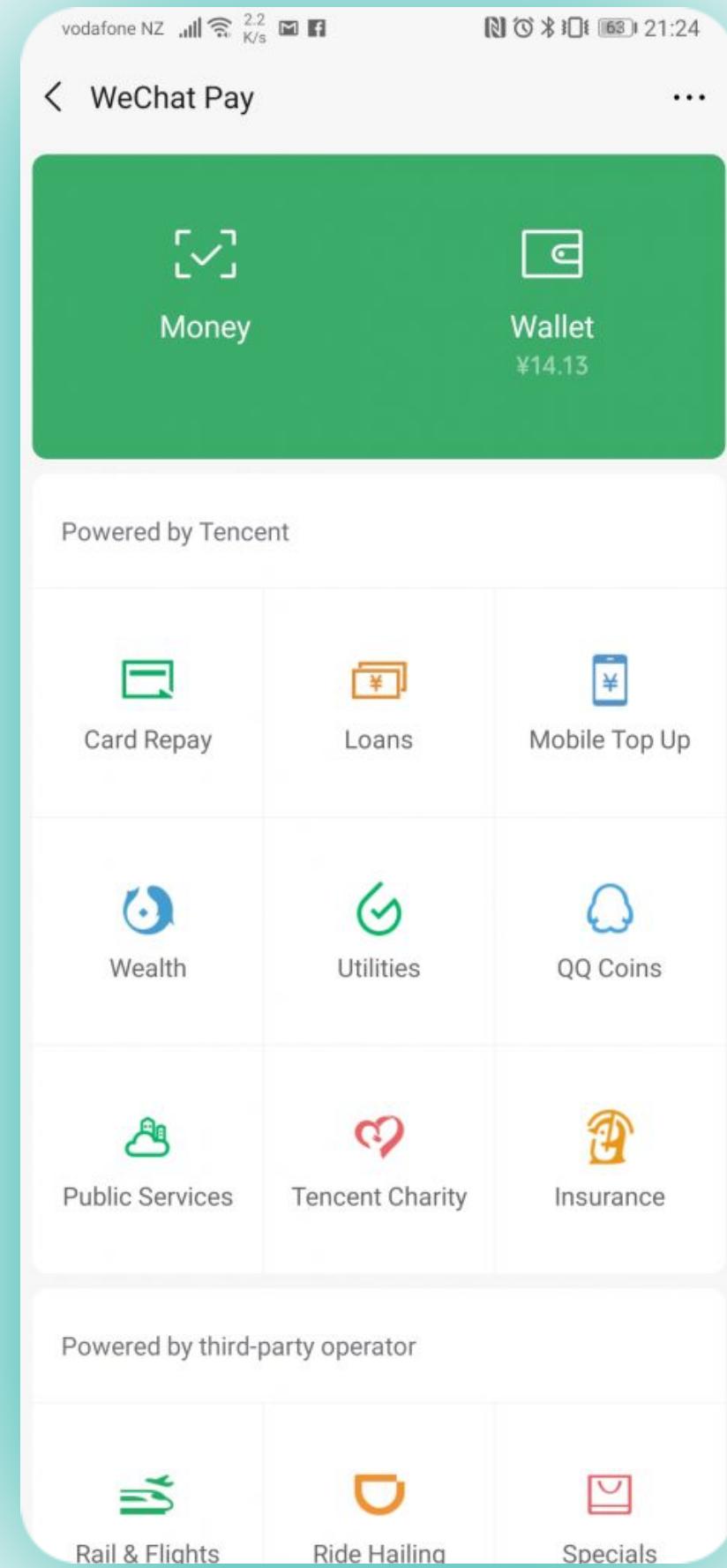
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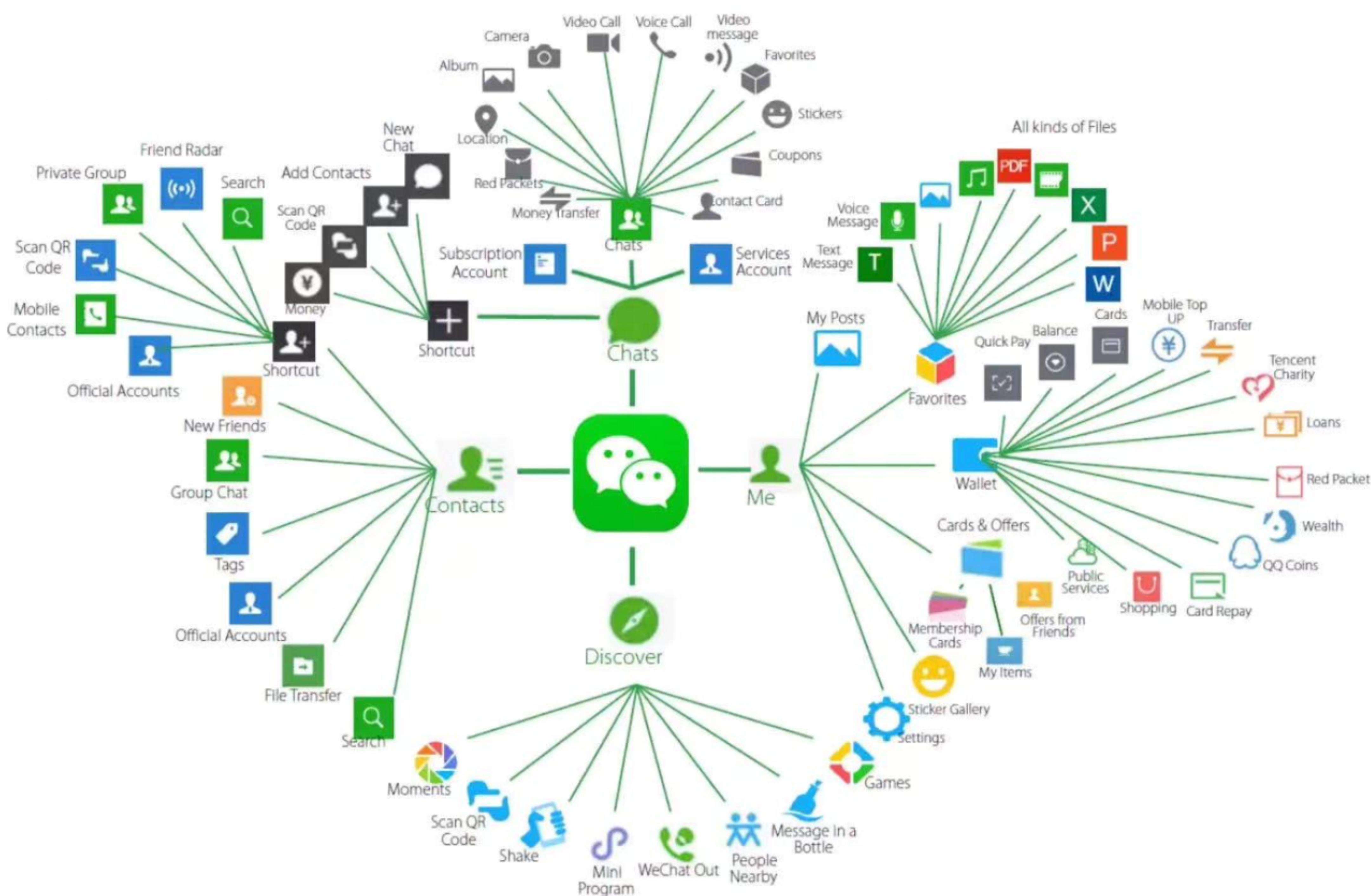


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{callstack}

Billions of users



WeChat

1.29B globally



800M in China



gojek

29M in Indonesia



350M in India

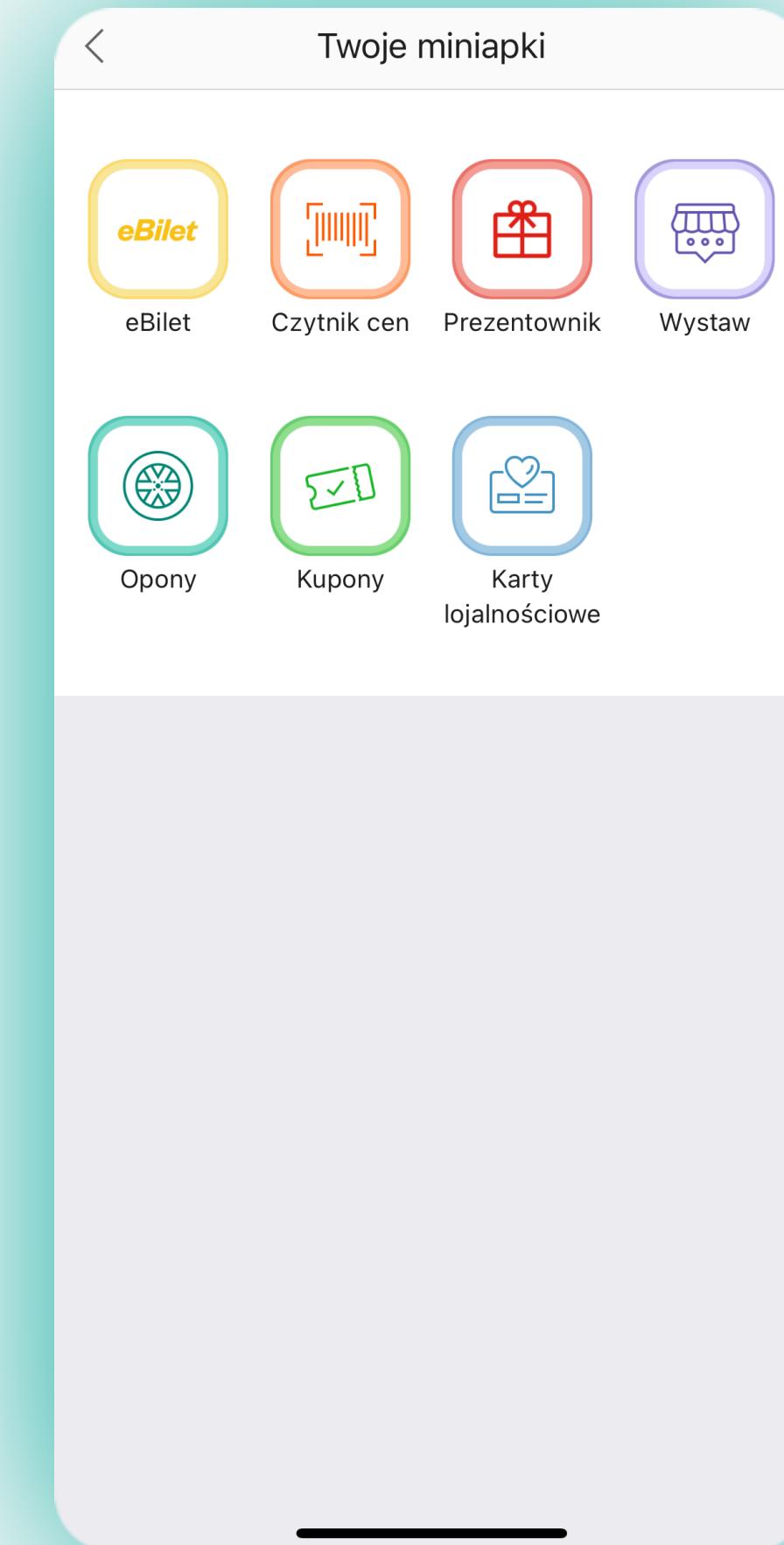
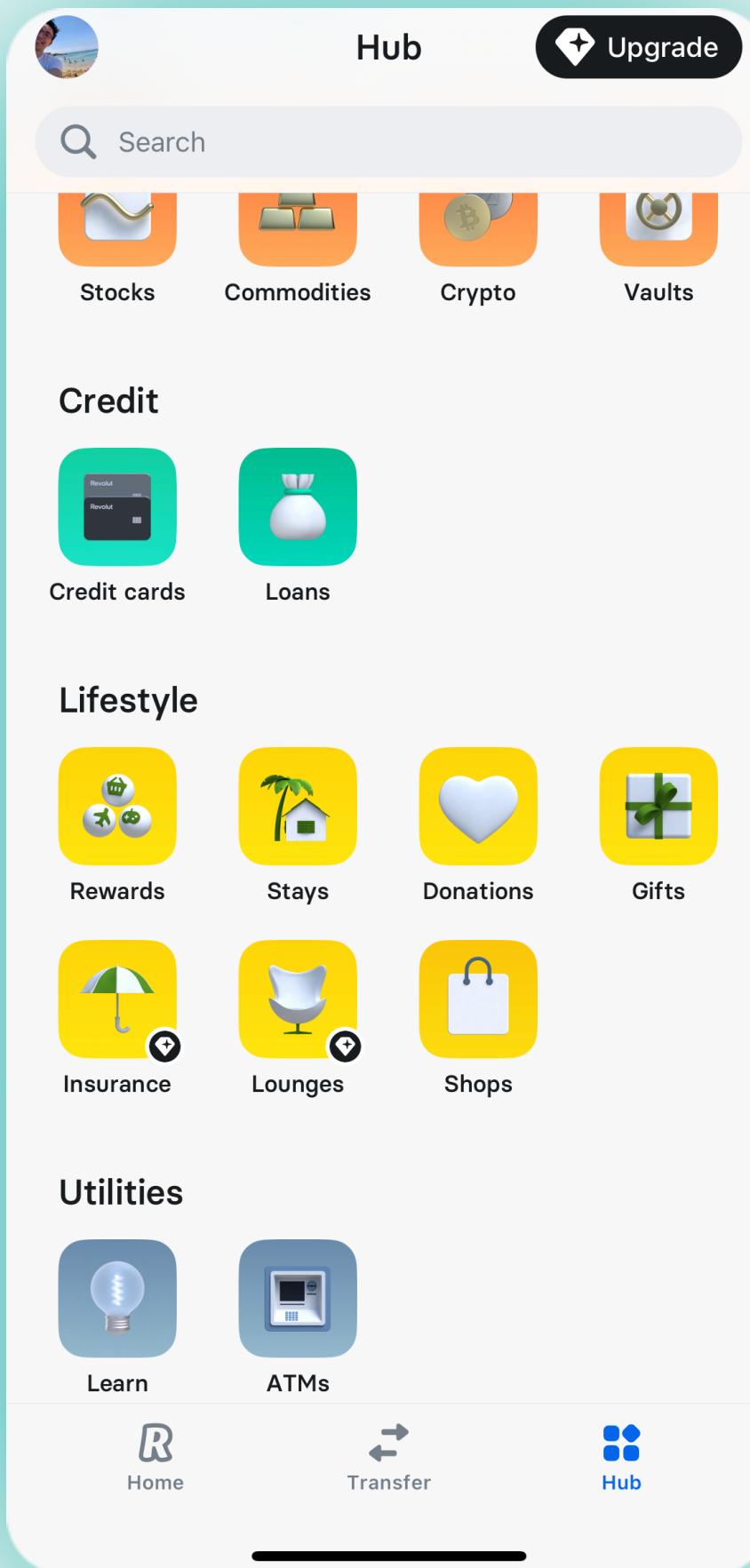
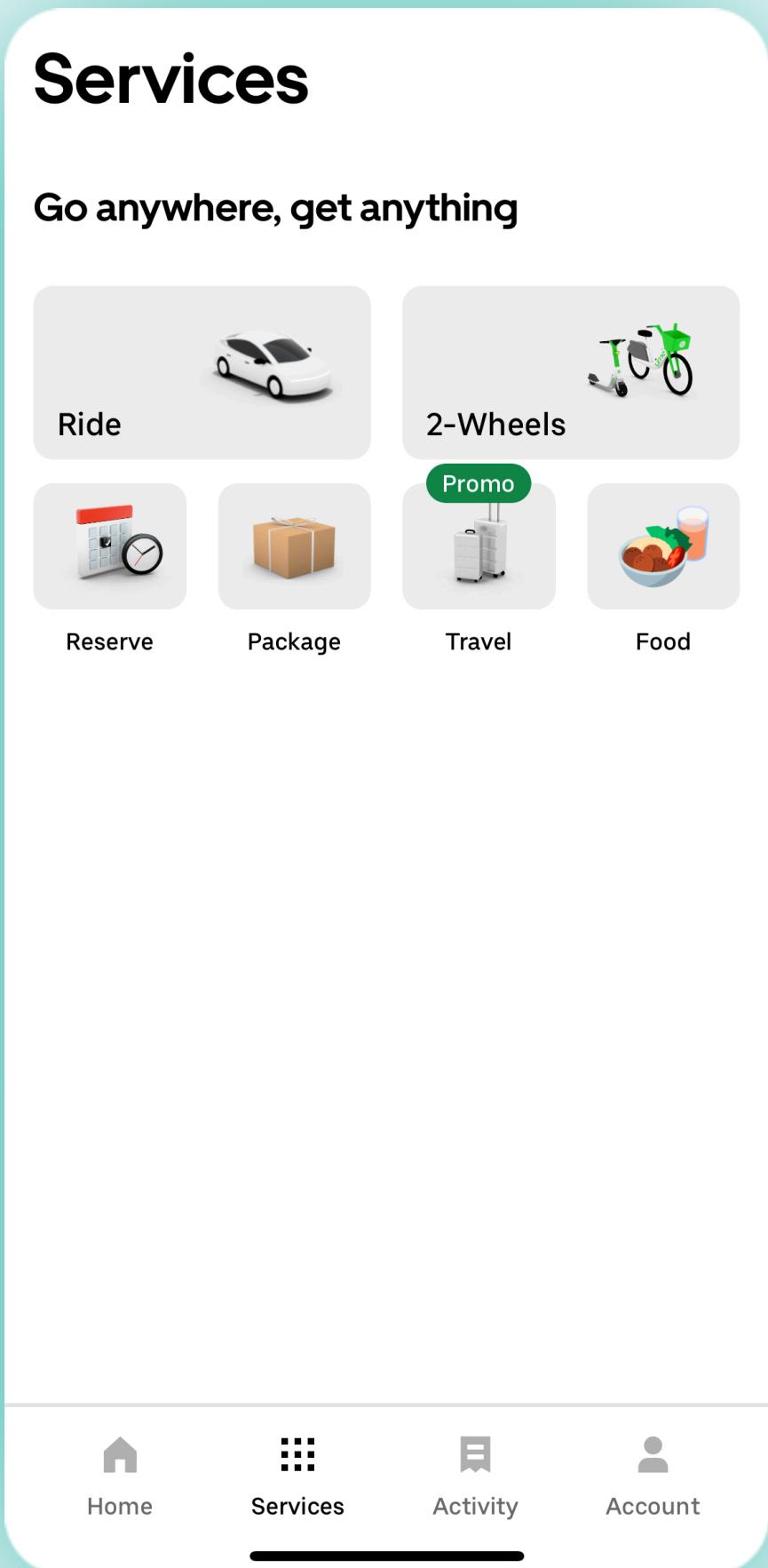


Careem

114M globally

1.26B globally

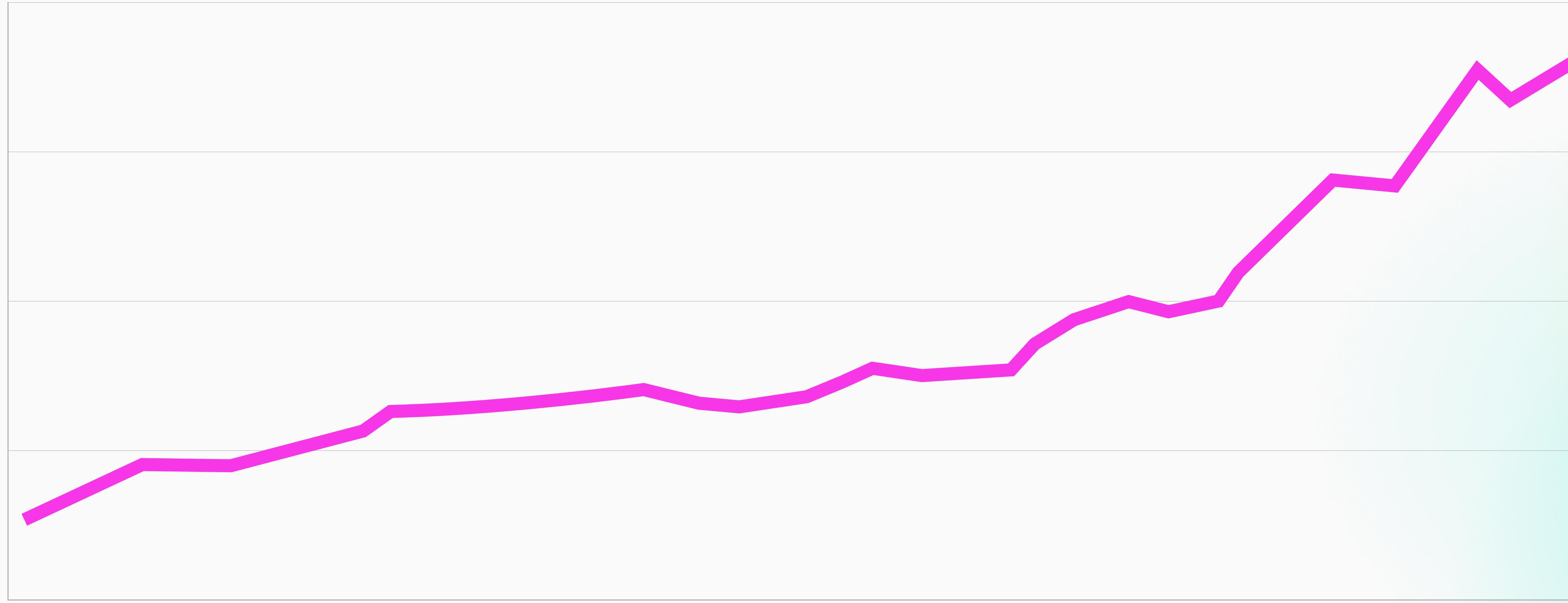
{callstack}



{callstack}

How to ship fast again

TIME TO SHIP



LOWER IS BETTER



{callstack}

We're dealing with organizational issues

- ◆ teams interdependent on each other's release schedules
- ◆ shared build system
- ◆ longer onboarding
- ◆ git conflicts
- ◆ ownership

{callstack}

Organize & decentralize

{callstack}

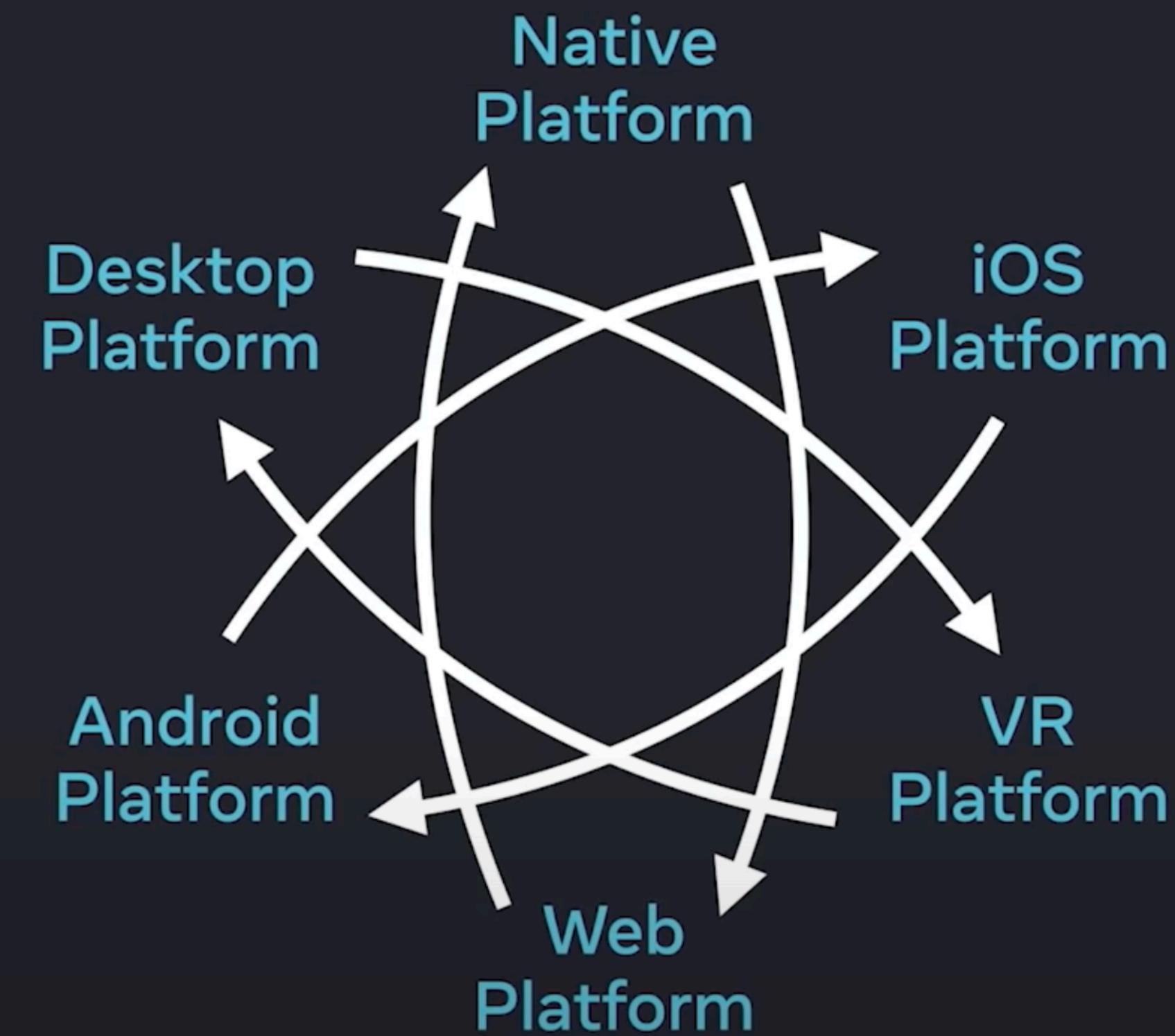
Solved on the server
with microservices

{callstack}

Solved on the web
with microfrontends

{callstack}

React 18 Keynote



Rick Hanlon
@rickhanlonii



 React Conf 2021

{callstack}



Solved on the native
with microfrontends?

{callstack}

DYNAMIC CODE DELIVERY ON MOBILE



{callstack}

ASYNC BUNDLE LOADING

Metro



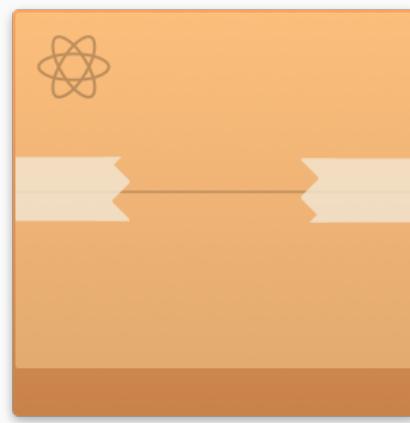
Webpack



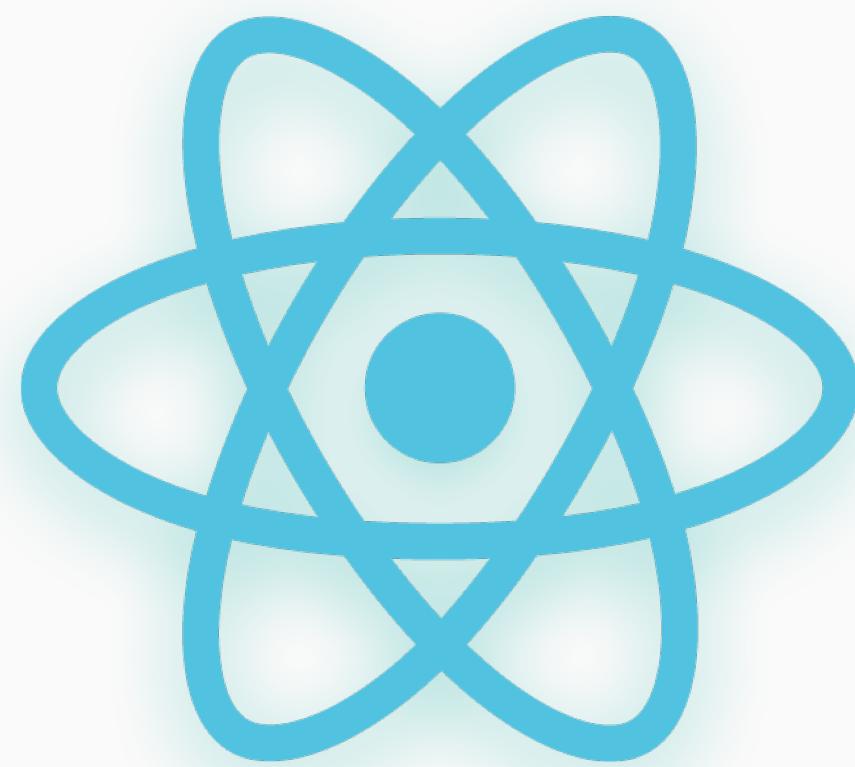
Kinda

First class

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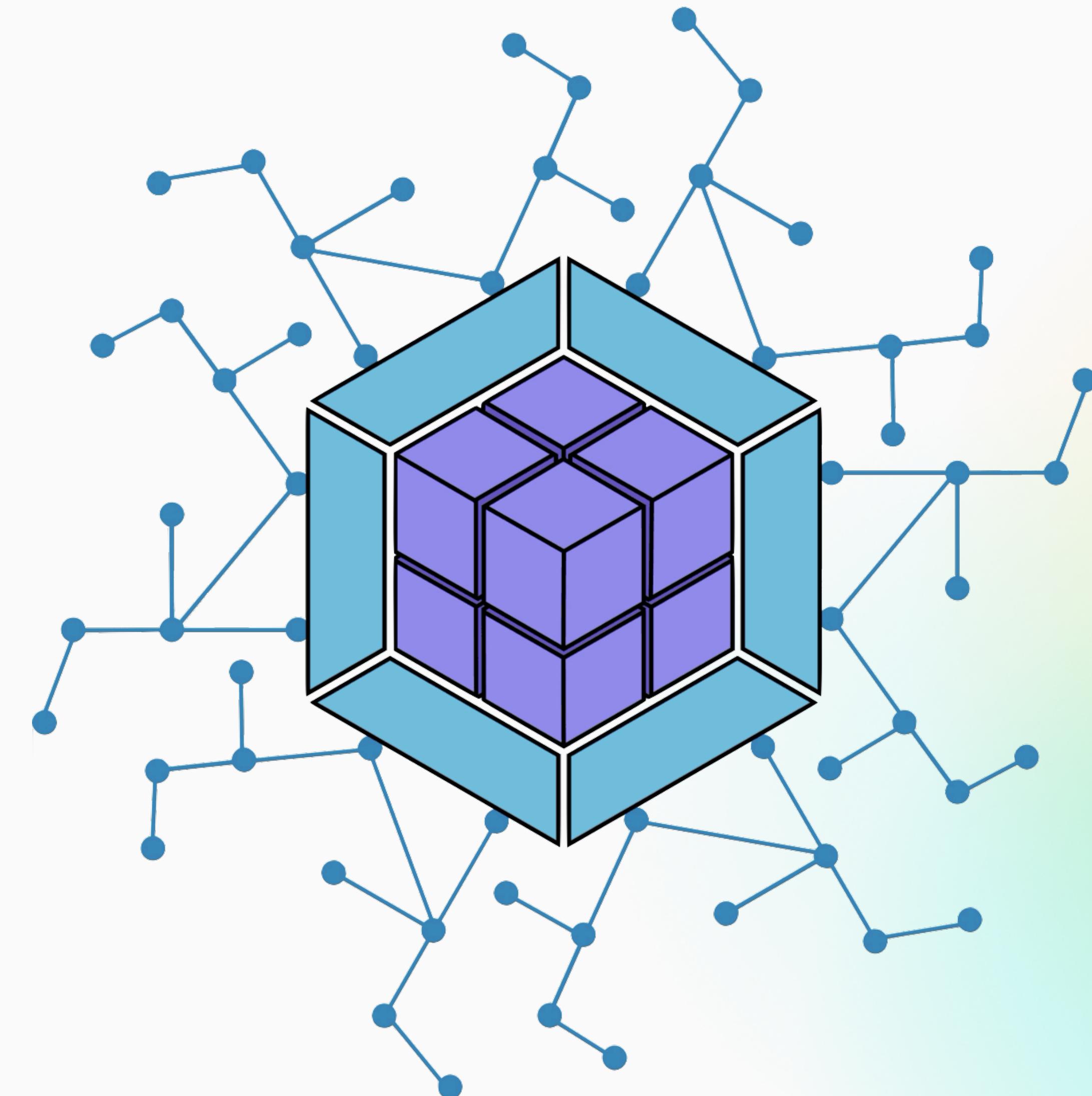
HAUL



{callstack}

Module Federation

- ◆ separate module builds, same app
- ◆ independent teams and deployments
- ◆ semver versioning of remote apps
- ◆ shared build infra
- ◆ code sharing between independent apps
- ◆ no npm publishing



"The bigger an organization gets, the slower engineering tends to move. Module Federation is an answer to the organizational agility problems."



Zack Jackson

Webpack maintainer & Module Federation creator



{callstack}

Re.Pack

- ◆ Webpack toolkit for React Native
- ◆ Successor of Haul
- ◆ For advanced use-cases
- ◆ When can I need it
 - on-demand feature delivery
 - heavy assets
 - shared modules for different flavors
 - build isolation



RE.PACK

Powered by {callstack}



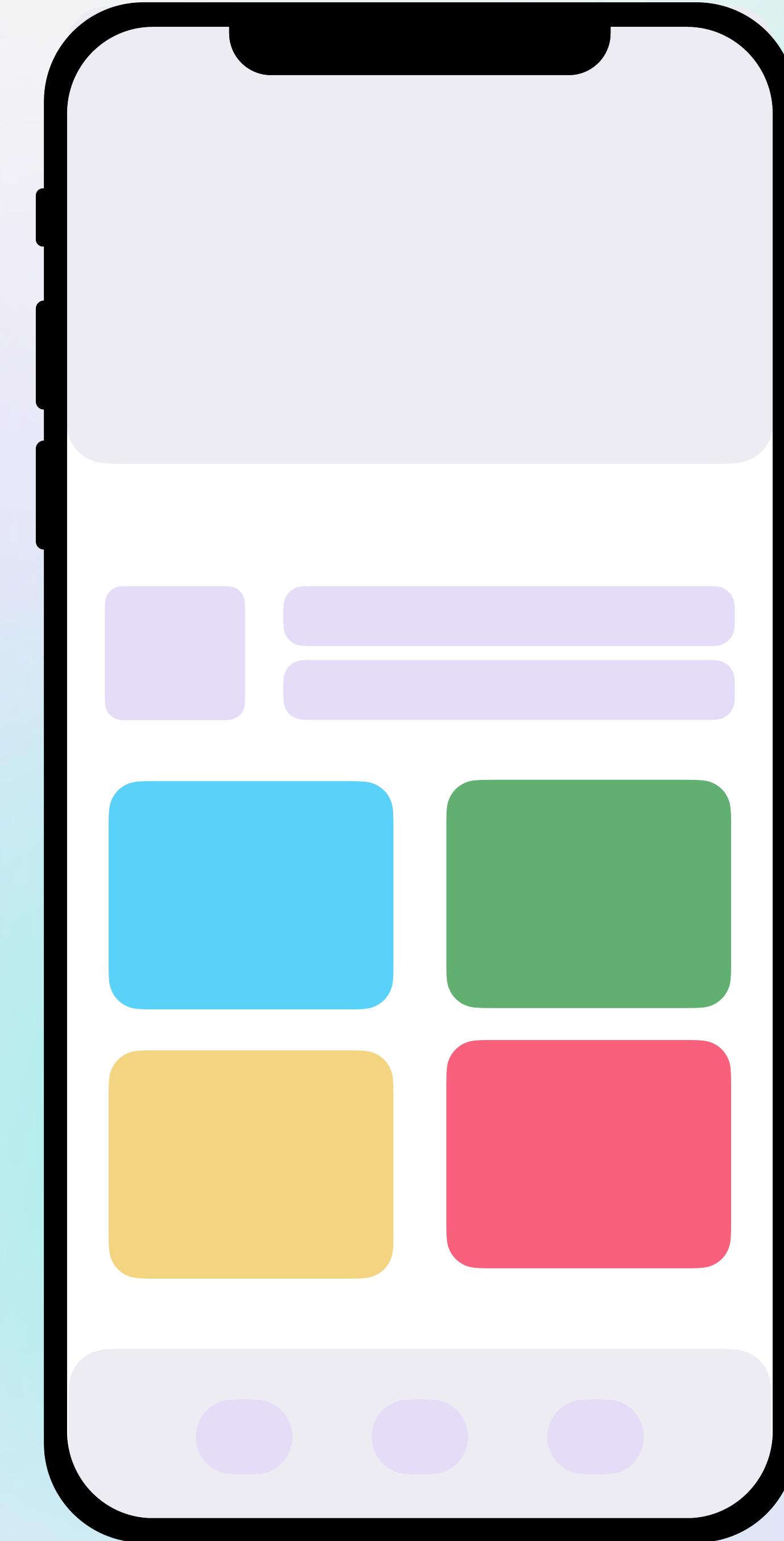
callstack / repack

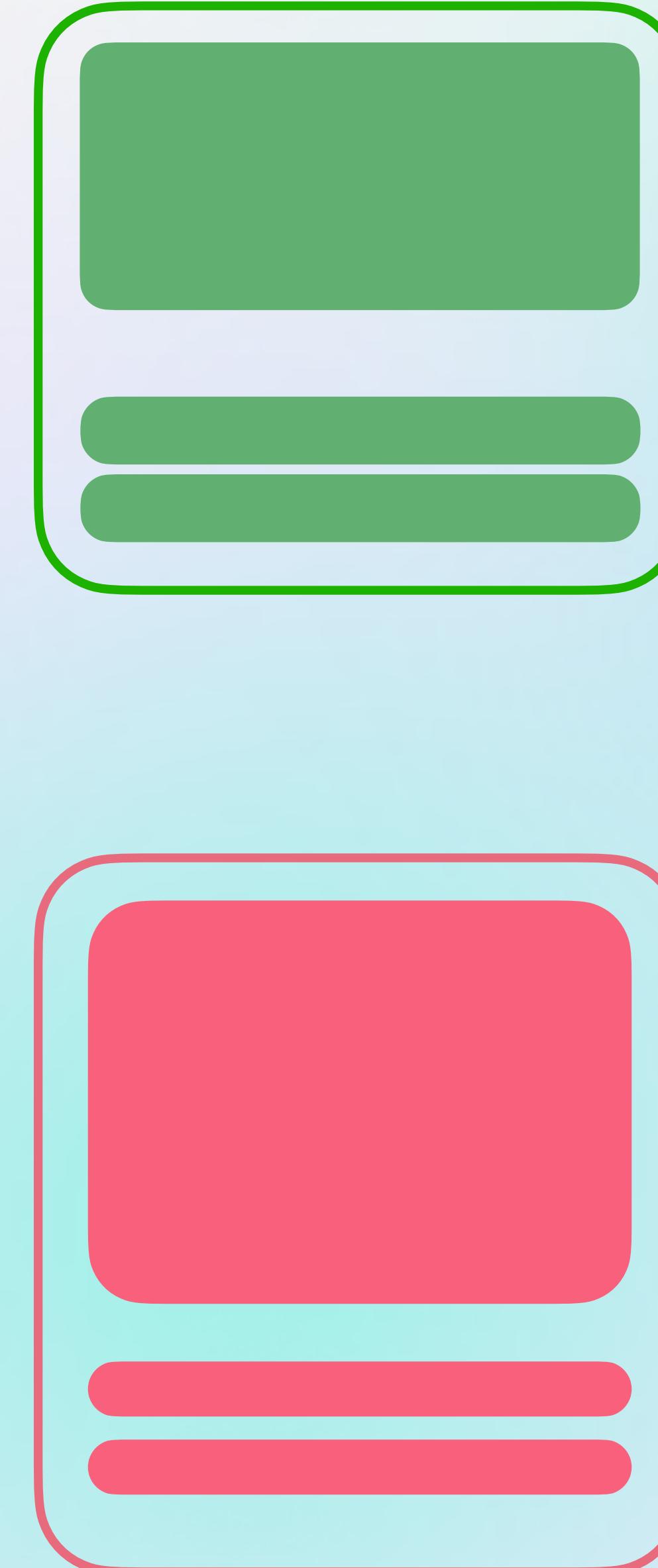
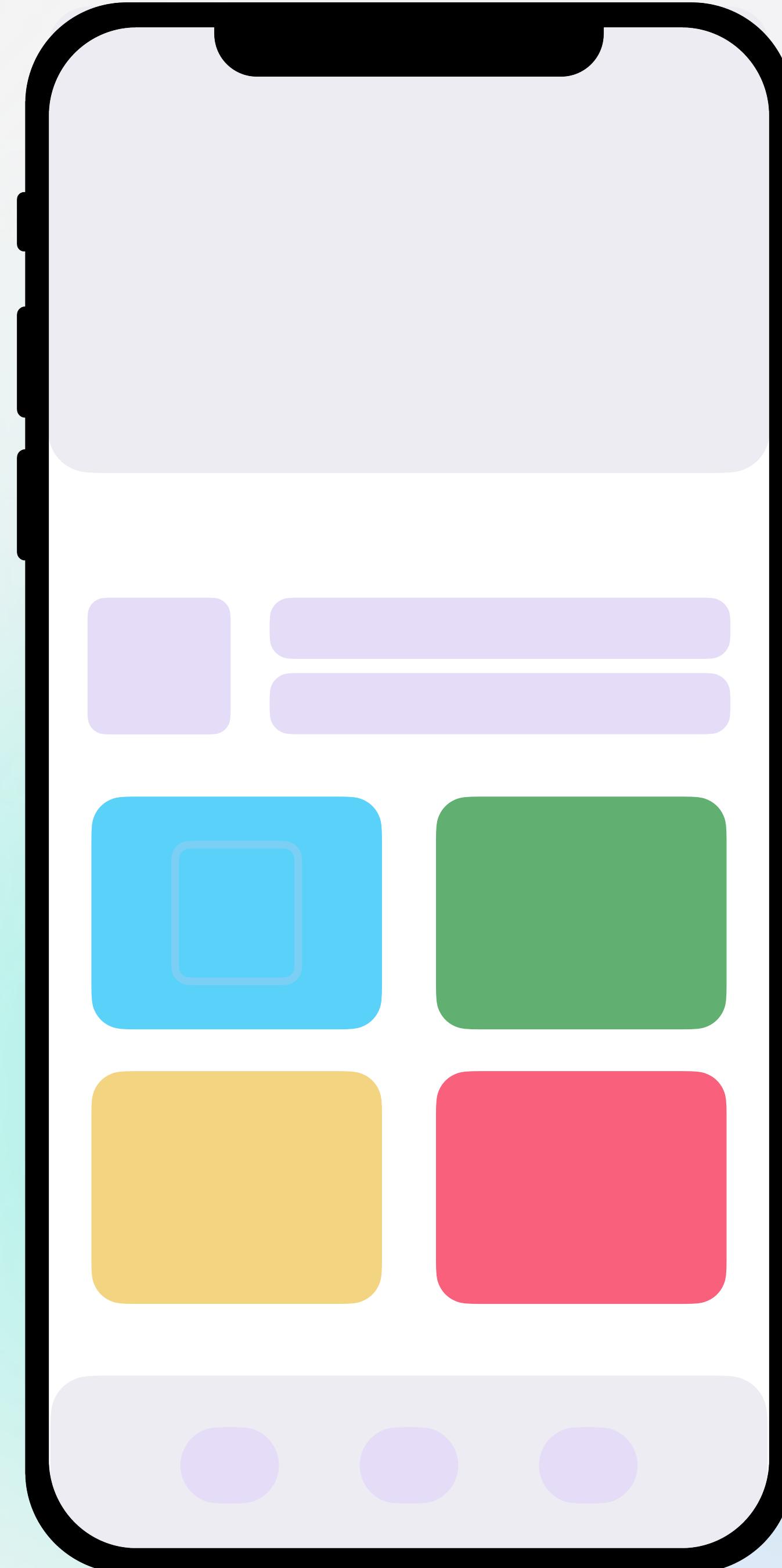
{callstack}

Federated Super

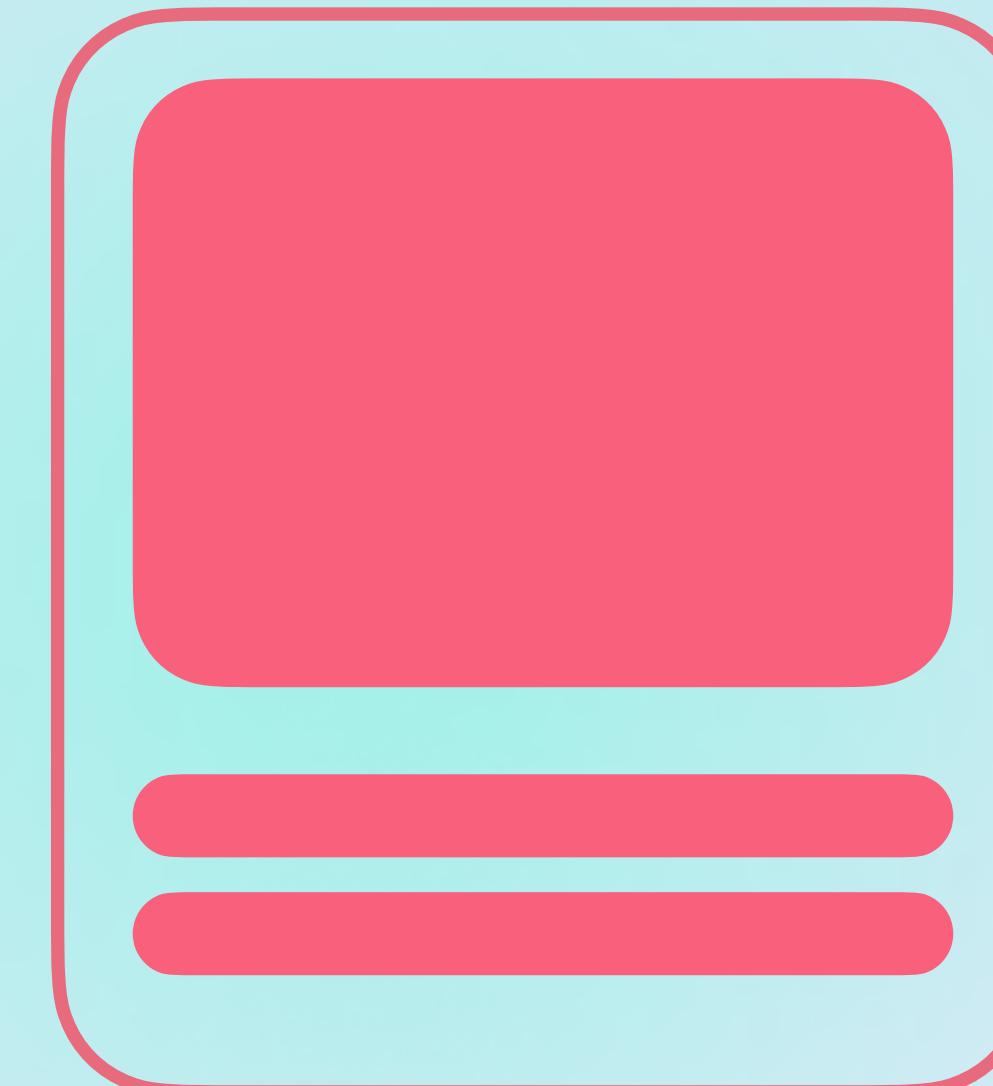
Powered by  Modular Federation

{callstack}

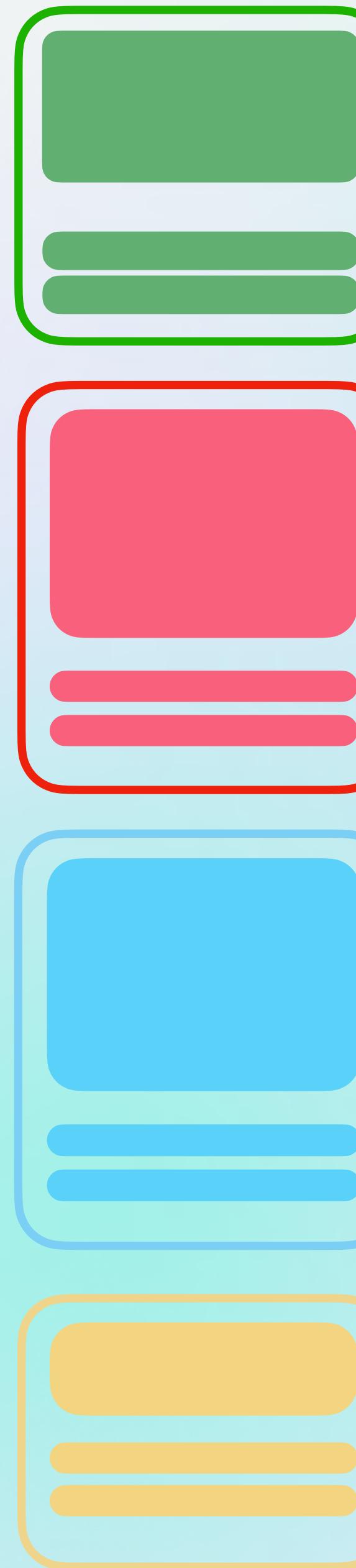
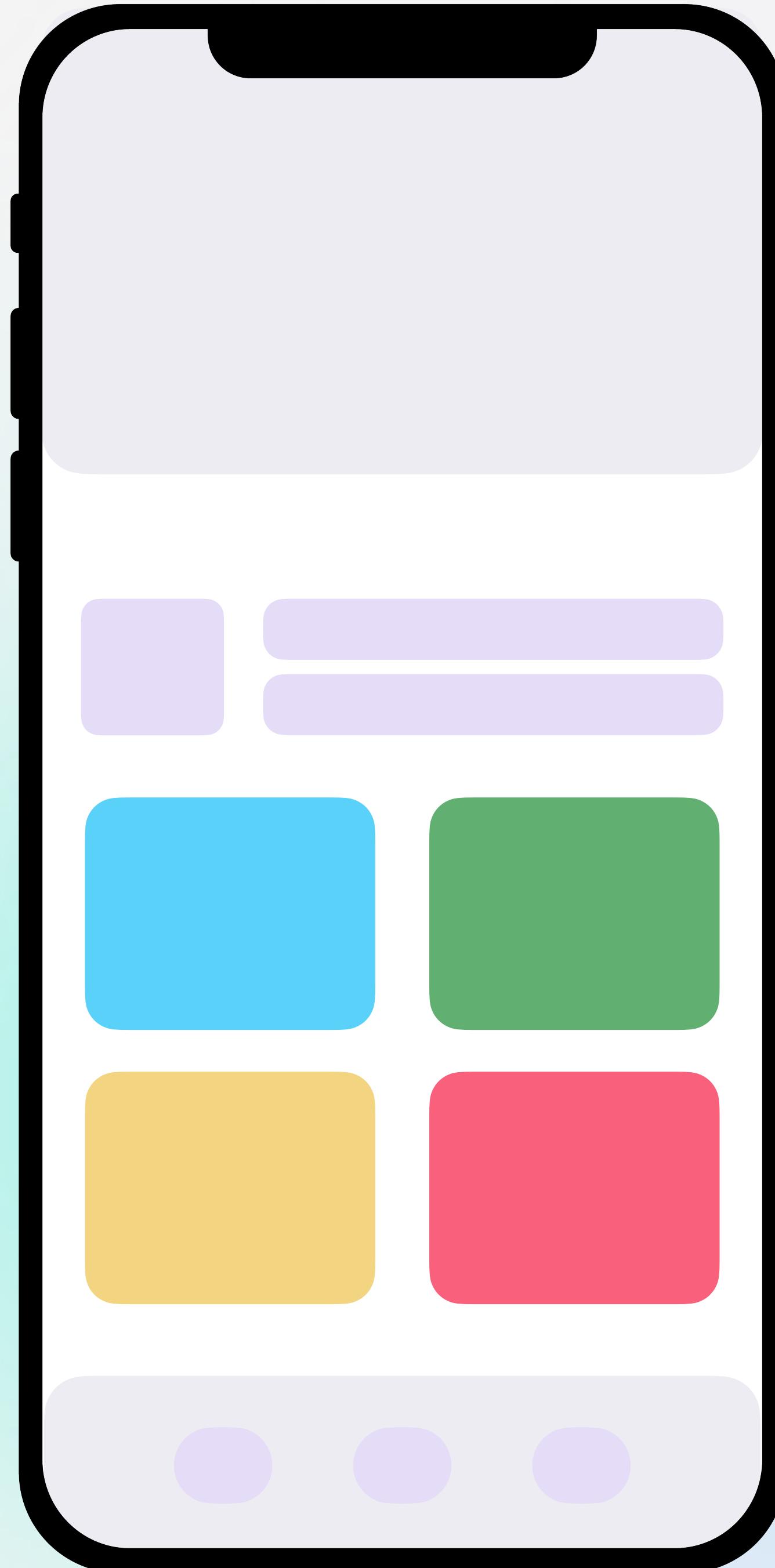




team-green.git



team-red.git



team-green.git



team-red.git



app.git

packages/

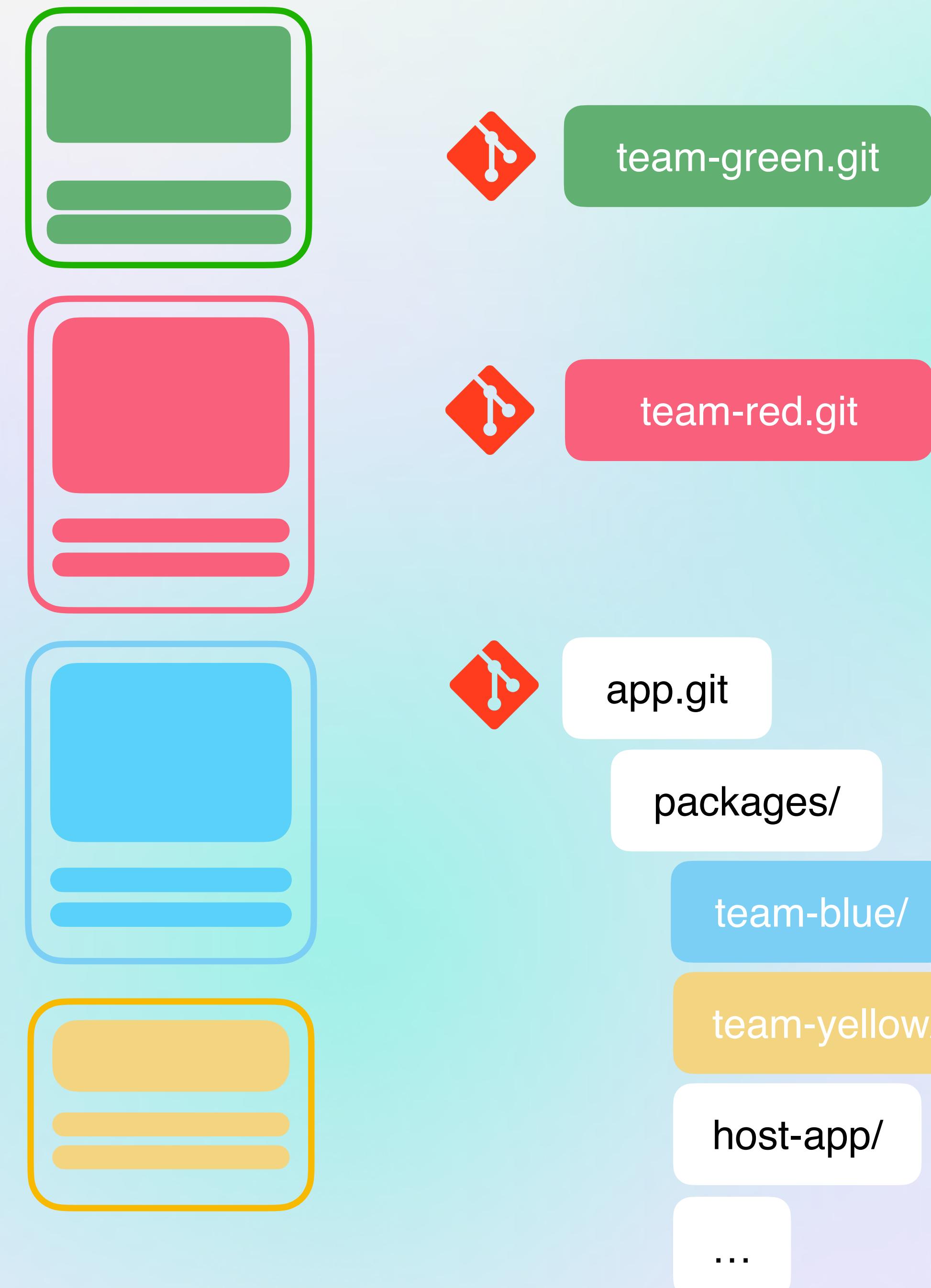
team-blue/

team-yellow/

host-app/

...

AVAILABLE RELEASES



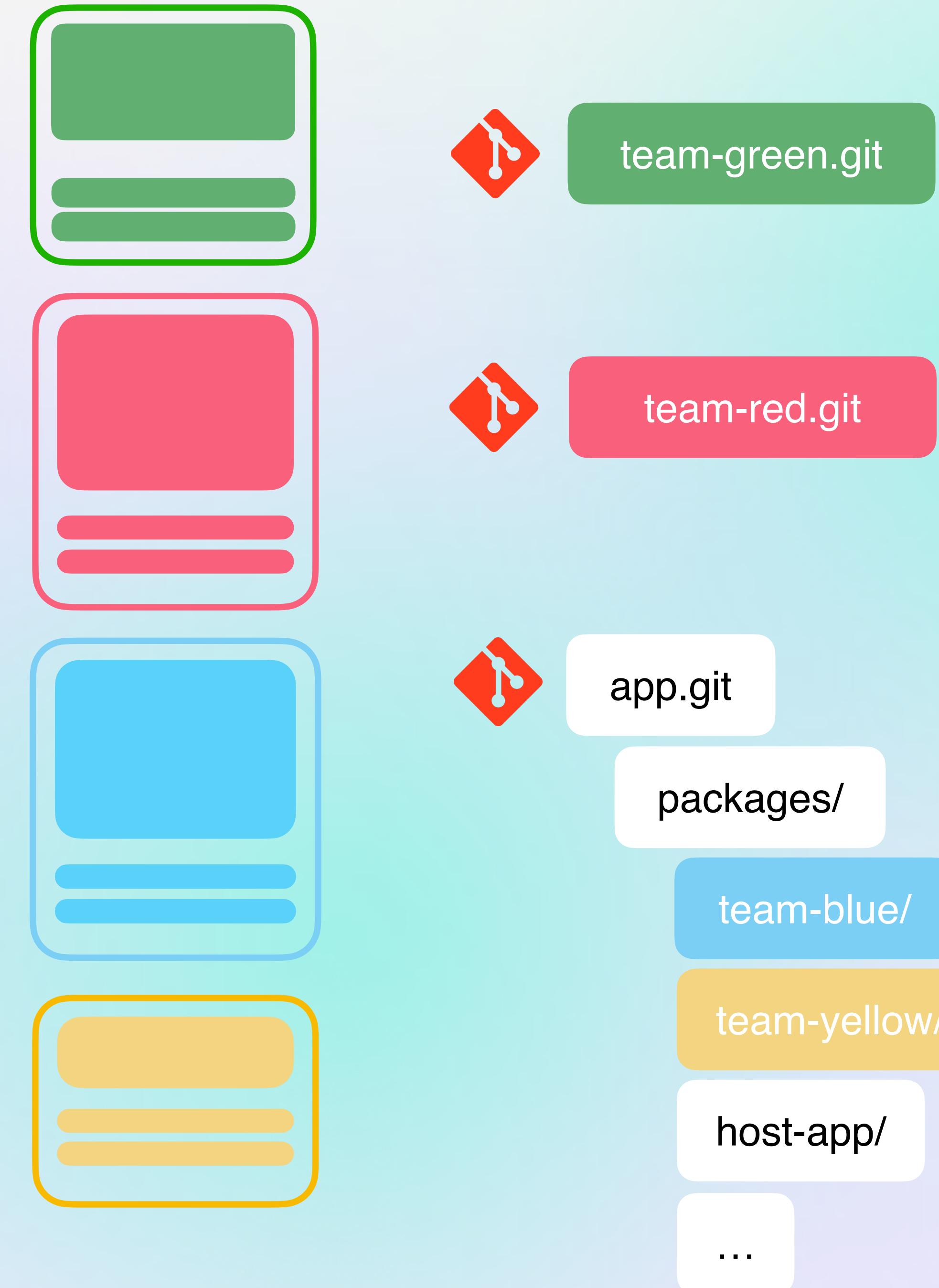
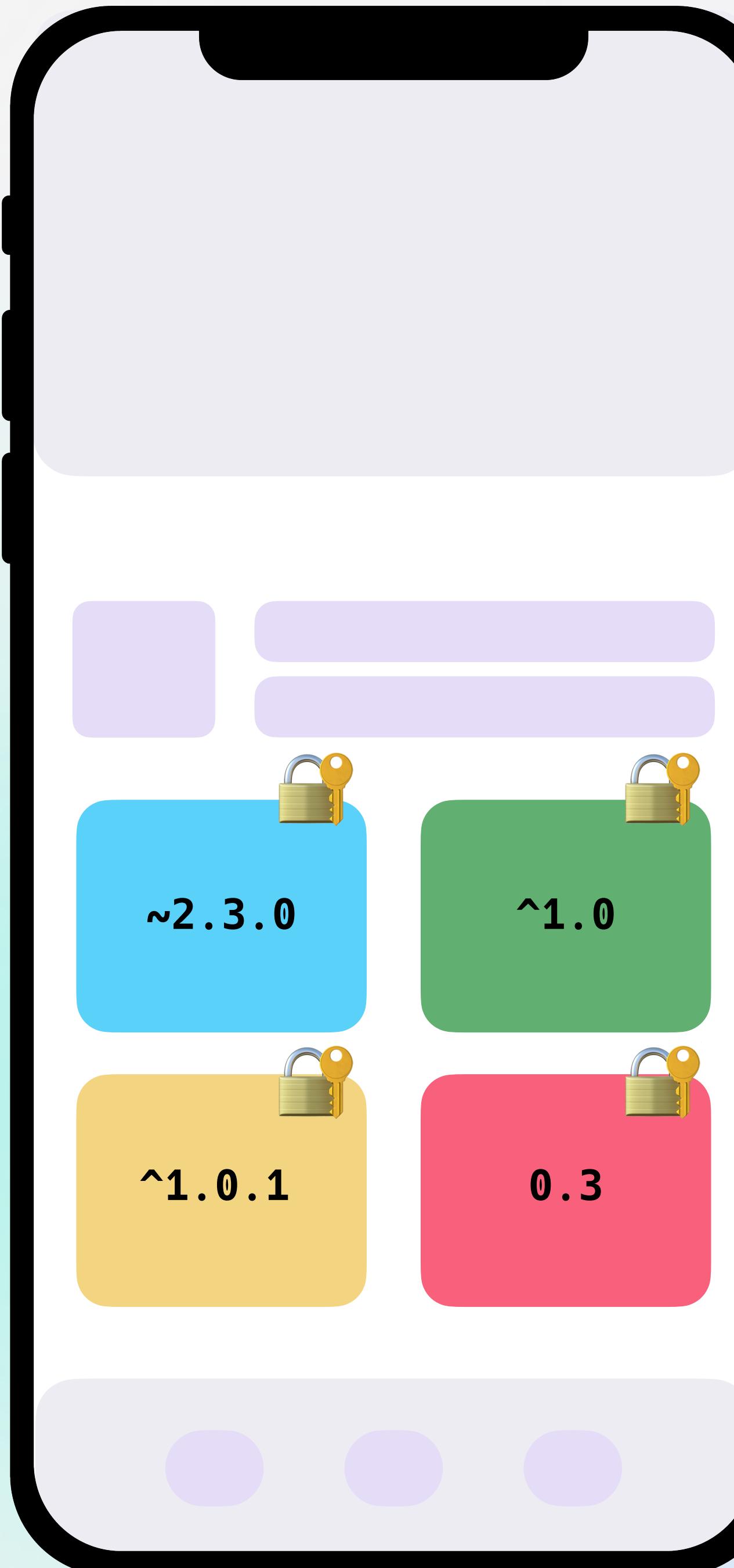
v2.0 **v1.2.1** **v1.1.0**

v0.5 **v0.3**

v2.3.0 **v2.2.0**

v2.0.0 **v1.0.1**

AVAILABLE RELEASES



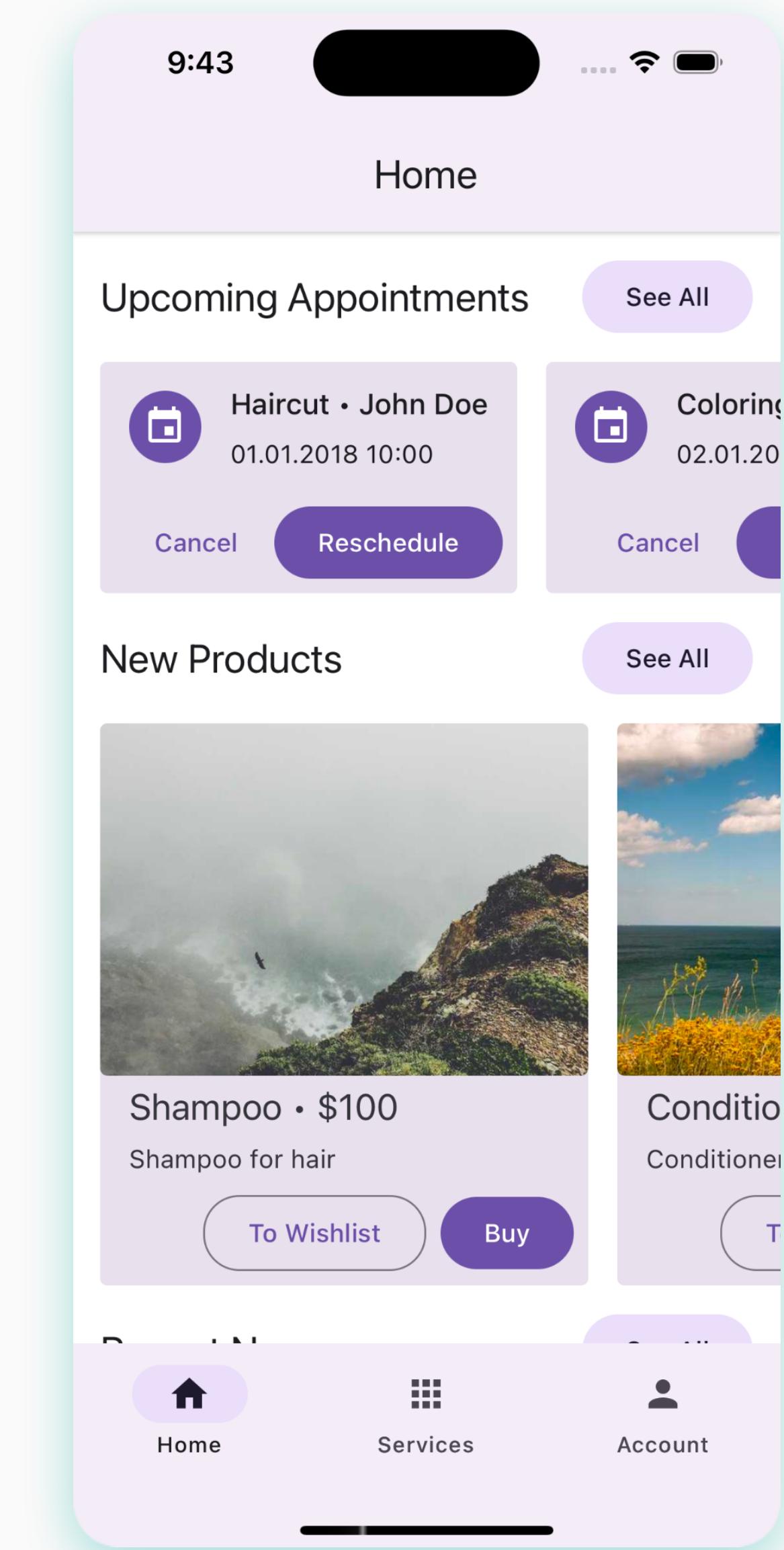
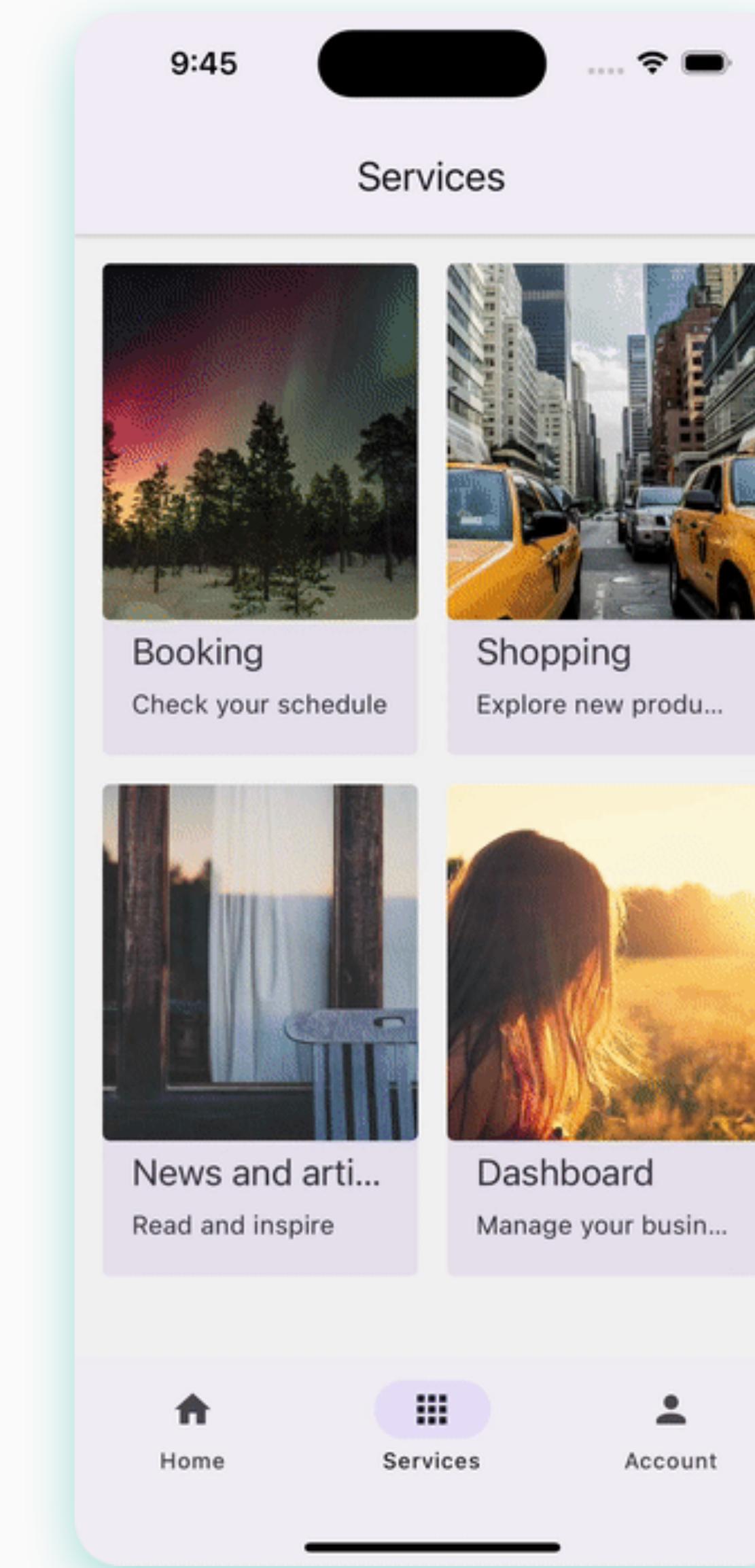
{callstack}

Super app Showcase

Prime example of a repository demonstrating how to structure a super app when working with Re.Pack



[callstack / super-app-showcase](#)



How to adopt it incrementally



› npx @callstack/repack-init

- ✓ Dependencies installed
- ✓ Created webpack.config.mjs from template
- ✓ Created react-native.config.js
- ✓ Added "webpack-bundle" as bundleCommand to android/app/build.gradle
- ✓ Added "webpack-bundle" as BUNDLE_COMMAND to build phase shellScript in ios/test1.xcodeproj/project.pbxproj



Setup complete. Thanks for using Re.Pack!

{callstack}

Setup Webpack plugin



HOST APP WEBPACK CONFIG

```
new Repack.plugins.ModuleFederationPlugin({  
  name: "HostApp",  
  shared: {  
    react: {  
      singleton: true,  
      eager: true,  
      requiredVersion: "18.2.0",  
    },  
    "react-native": {  
      singleton: true,  
      eager: true,  
      requiredVersion: "0.71.3",  
    },  
    // ...more shared libraries  
  },  
});
```



MINI APP WEBPACK CONFIG

```
new Repack.plugins.ModuleFederationPlugin({  
  name: "MiniApp",  
  exposes: {  
    "./MiniApp": "./navigation/MainNavigator",  
  },  
  shared: {  
    // ...  
  },  
});
```

{callstack}

Tell where to get mini-apps from



HOST APP INDEX

```
ScriptManager.shared.addResolver(async (scriptId, caller) => {
  const resolveURL = Federated.createURLResolver({
    containers: {
      MiniApp: "address/[name][ext]",
    },
  });

  const url = resolveURL(scriptId, caller);
  if (url) {
    return {
      url,
      query: {
        platform: Platform.OS,
      },
    };
  }
});
```

{callstack}

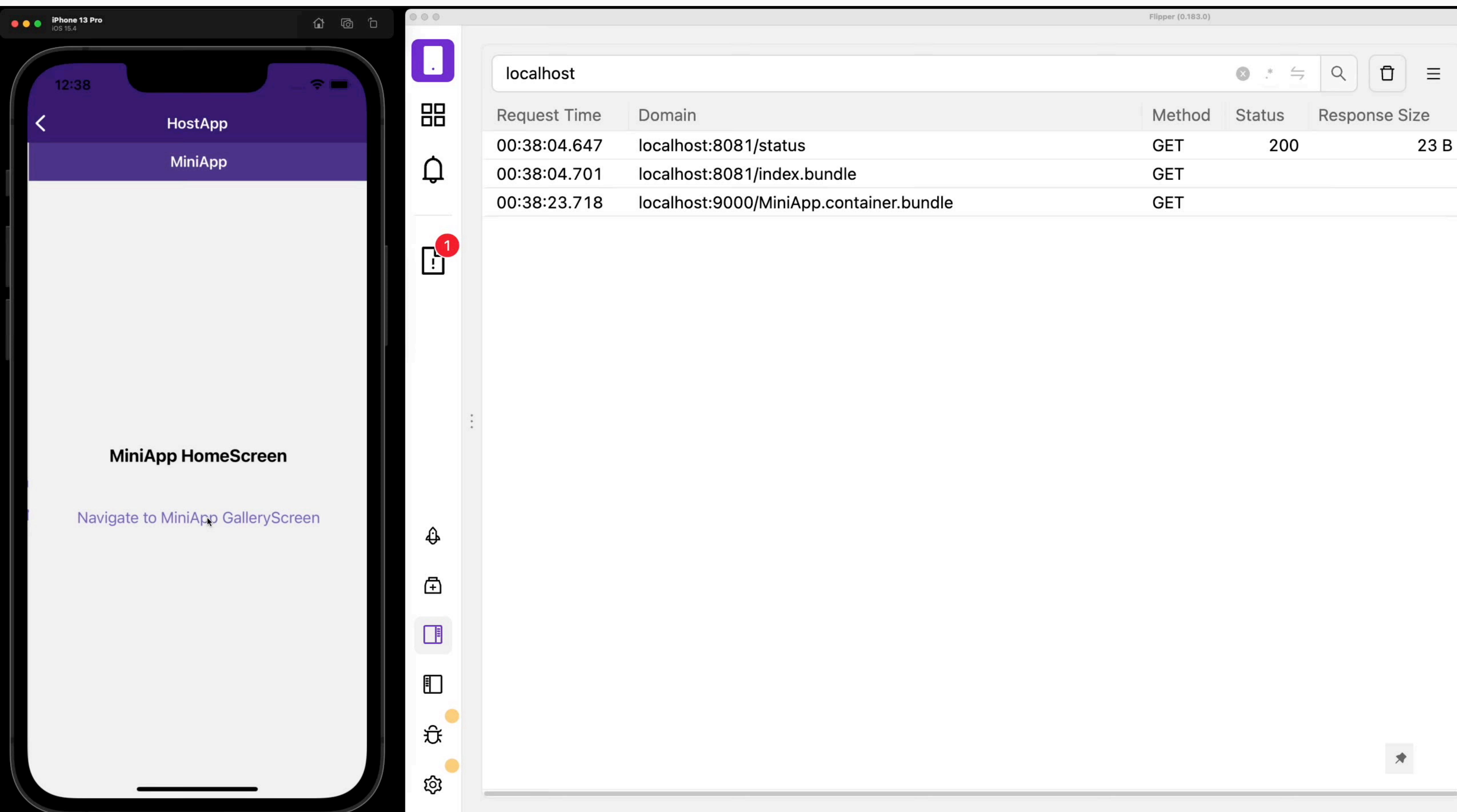
Lazy load with Suspense



HOST APP

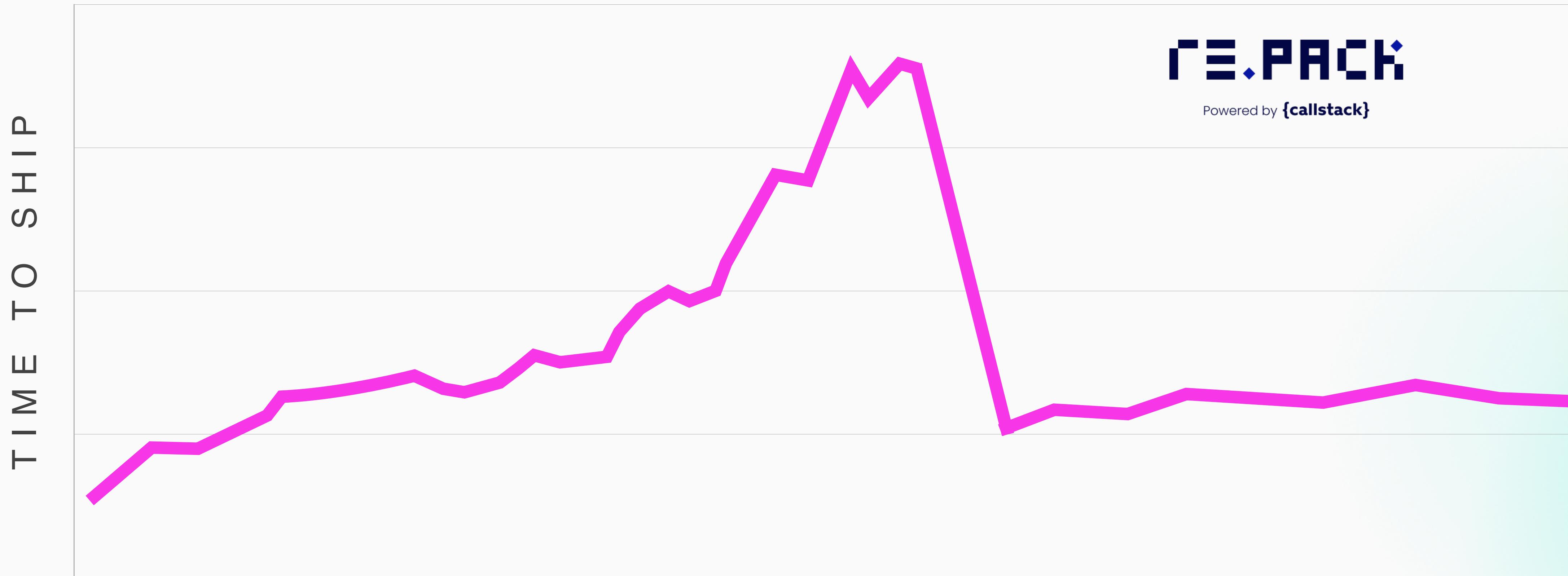
```
const MiniAppNavigator = React.lazy(() =>
  Federated.importModule("MiniApp", "./MiniAppNavigator")
);

const MiniAppScreen = () => {
  return (
    <React.Suspense fallback={<FallbackComponent />}>
      <MiniAppNavigator />
    </React.Suspense>
  );
};
```



{callstack}

Ship fast again



RE.PACK

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LOWER IS BETTER

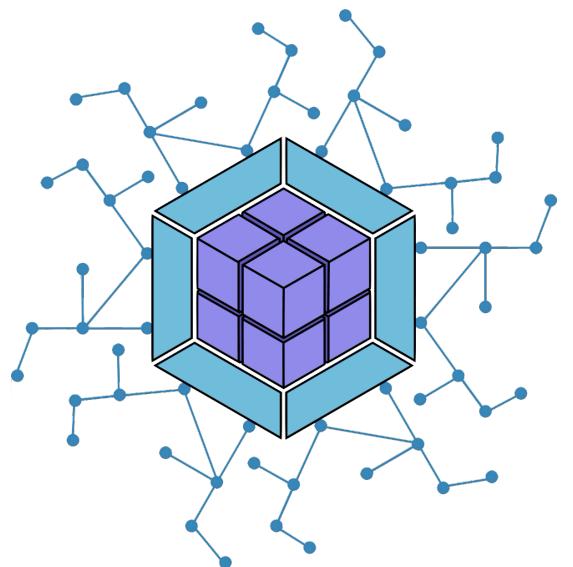
{callstack}

Gotchas

big teams only
need an infra team
release management
no lazy loading native code
AppStore



DYNAMIC CODE
DELIVERY



MODULE FEDERATION

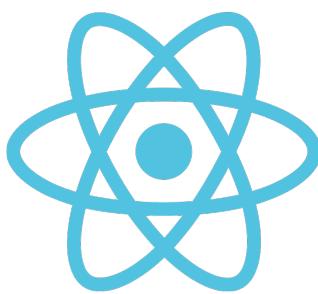


Grab



allegro

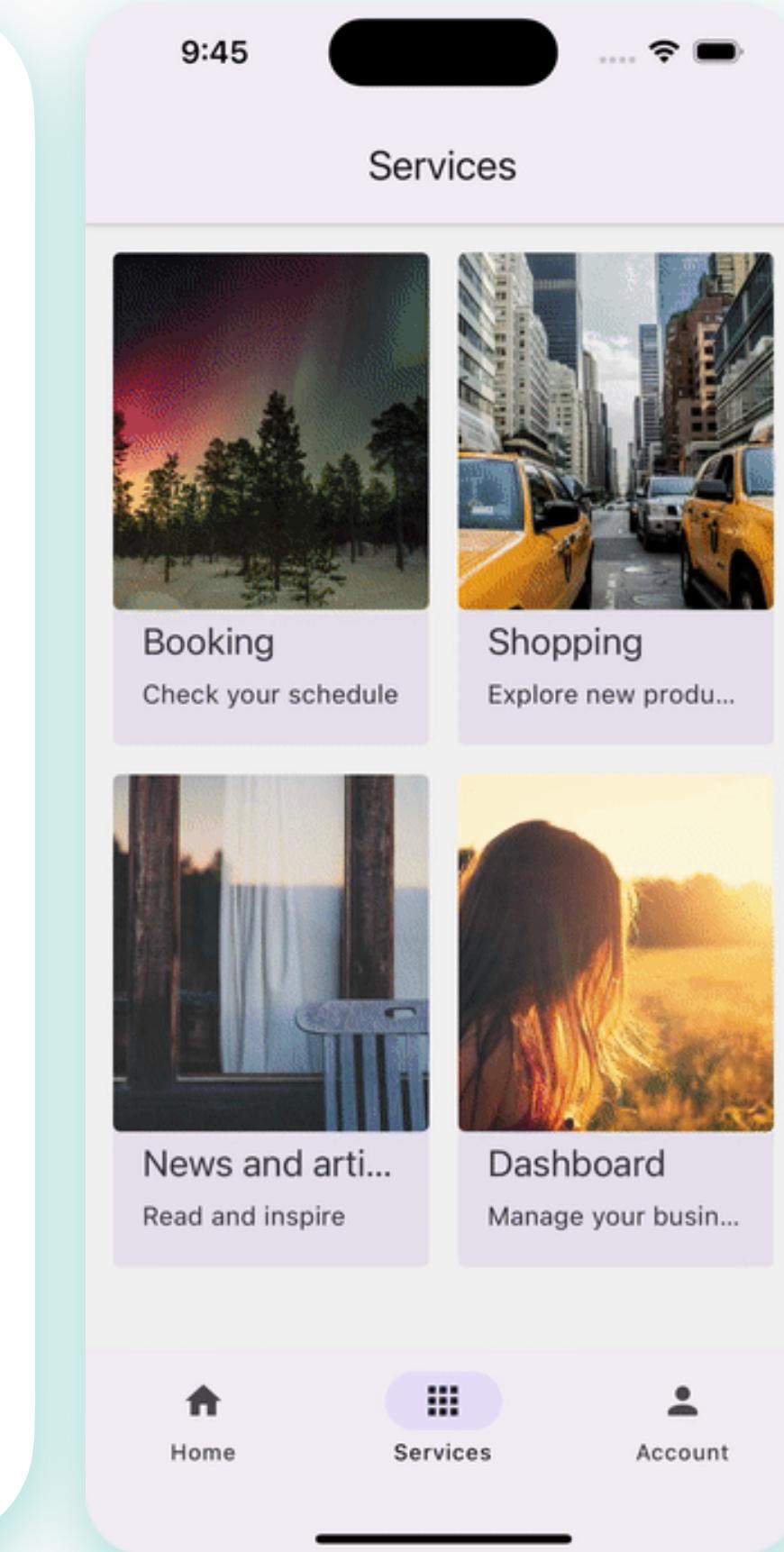
EXISTING SUPER APPS



RE.PACK

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Federated Super Apps



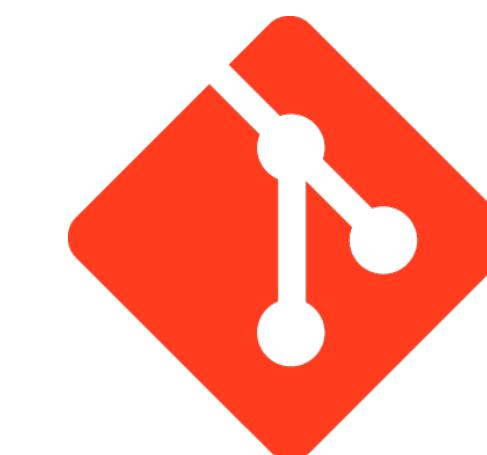
CODE SIGNING

@^2.1.3

SEMVER FOR APPS



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MONOREPOS AND POLYREPOS

{callstack}

Thank you

