Povio Academy Conference

From Web to Mobile: Exploring New Horizons

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tretton37

About Me

- Full-stack developer by 💙
- Lead Software Engineer @ tretton37
- Cross-platform mobile developer

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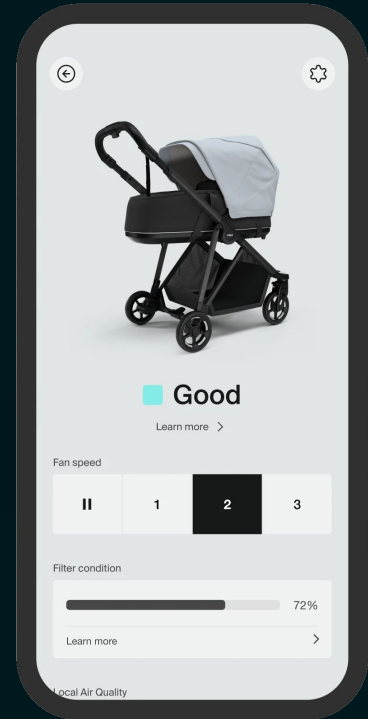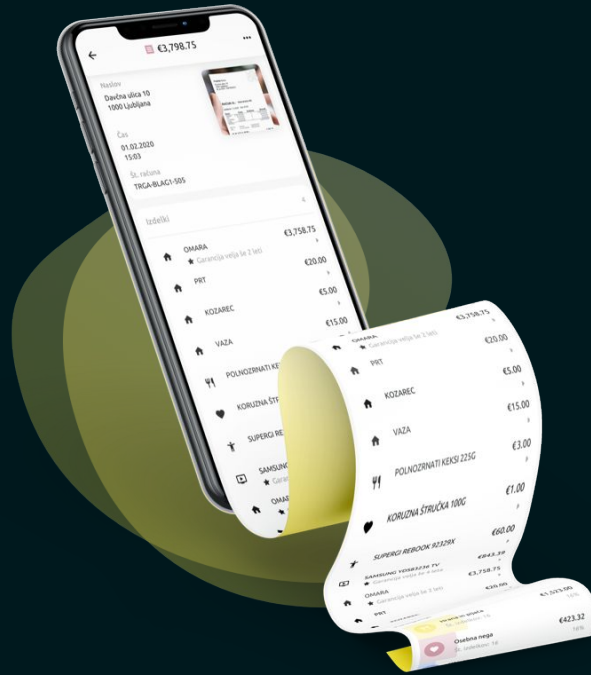
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Swedish technology consultancy with knowledge in our DNA

With our **unique knowledge sharing and empathic approach to mentorship**, we make sure our clients and our employees grow beyond their aspirations.

How I started

A startup company with three teams working together on a mobile banking app in 2018.

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The Challenge

14
Days

Rapidly prototype MVP with a team of three web developers under tight deadlines.

3
Frameworks

Evaluate technical capabilities using most popular cross-platform frameworks.

1
Codebase

Single codebase for iOS & Android platform with minimal platform-specific code.

4
Screens

Prioritize implementation of most business critical screens.

0
Differences

Ensure seamless user experience indistinguishable from existing native apps.

The Result?

The Result?

Framework	NativeScript	React Native	Flutter
Custom layout	★★☆☆☆	★★☆☆☆	★★★★☆
Plugins	★★★☆☆	★★★☆☆	★★☆☆☆
Performance	★★☆☆☆	★★☆☆☆	★★☆☆☆
Documentation & Community	★☆☆☆☆	★★★☆☆	★★☆☆☆
Developer Experience	★★☆☆☆	★★☆☆☆	★★★☆☆

Takeaways?

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Many ways to build an app

- Native
    - iOS
    - Android
- Cross-Platform frameworks
    - React Native
    - Flutter
    - and many others
- PWA

Mobile screen

Welcome to

Povio Academy
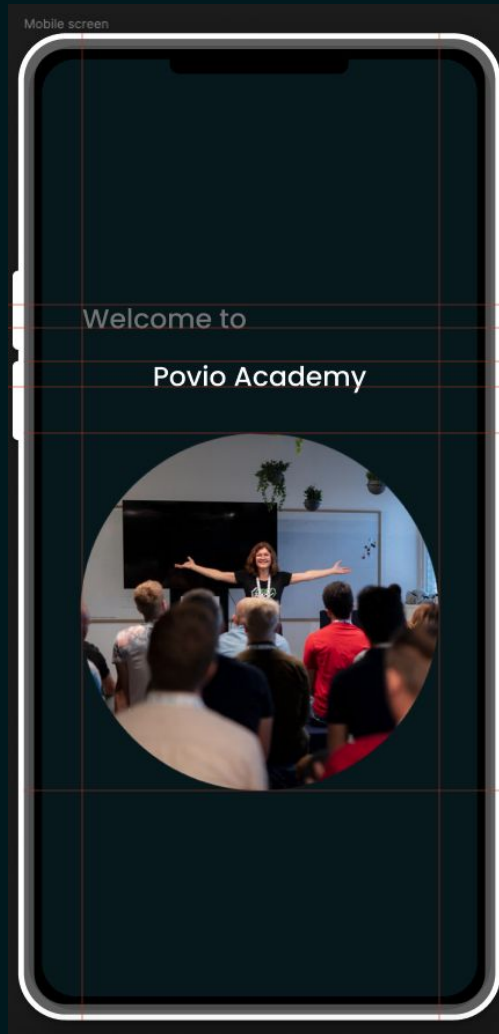
Native App Development

- New programming language
- Great performance
- Plenty of native API
- Built-in support for Simulators, Emulators
- Debugging resources

When to choose it:

- Extensive integration with native APIs
- Performance is crucial
- App size matters
- Existing team of app developers
- Comfortable budget

iOS with Swift

- Language: Swift
- UI framework: SwiftUI
- Backed by: Apple

- Xcode with macOS required
- Native APIs not open-sourced

```swift
poviocademy.swift

import SwiftUI

struct ContentView: View {
    var body: some View {
        VStack {
            Text("Welcome to")
                .foregroundColor(Color.gray)
                .padding(.bottom, 16)

            Text("Povio Academy")
                .foregroundColor(Color.white)
                .padding(.bottom, 32)

            Image("povio-academy")
                .resizable()
                .aspectRatio(contentMode: .fit)
                .padding(32)
        }
        .background(Color(hex: "#03191f"))
    }
}
```
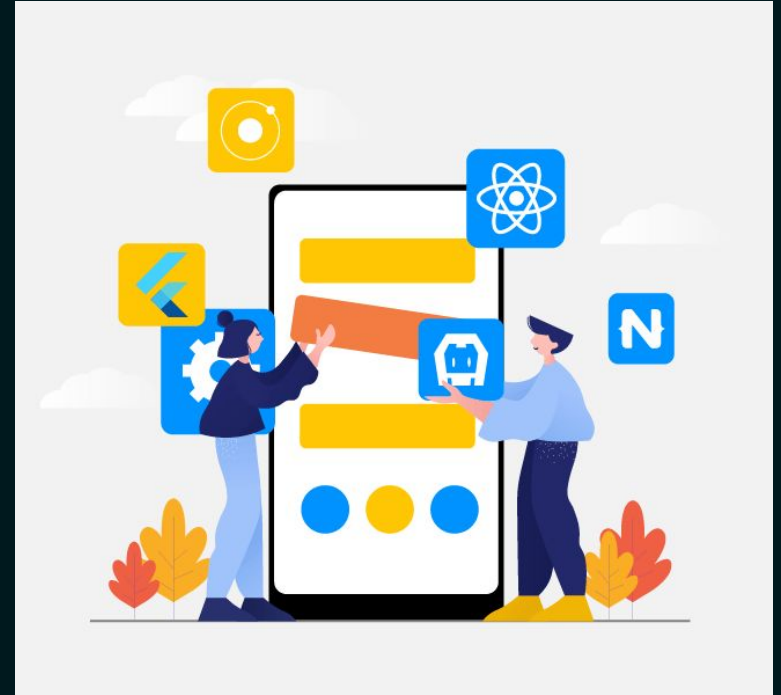
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Android with Kotlin

- Language: Kotlin
- UI framework: Jetpack Compose
- Backed by: Google, Jetbrains


- Compatibility with Java
- Tooling support

```kotlin
PovioAcademy.kt

import androidx.compose.foundation.Image
import androidx.compose.foundation.layout.*
import androidx.compose.foundation.text.BasicText
import androidx.compose.material.MaterialTheme
import androidx.compose.material.Surface
import androidx.compose.runtime.Composable
import androidx.compose.ui.Alignment
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.layout.ContentScale
import androidx.compose.ui.res.painterResource
import androidx.compose.ui.unit.dp

@Composable
fun MyScreen() {
    Surface(color = Color(0xFF03191F)) {
        Column(
            modifier = Modifier
                .padding(32.dp)
                .fillMaxSize(),
            verticalArrangement = Arrangement.Center,
            horizontalAlignment = Alignment.CenterHorizontally
        ) {
            BasicText(
                text = "Welcome to",
                color = Color(0xFF808080),
                style = MaterialTheme.typography.body1,
                modifier = Modifier.padding(bottom = 16.dp)
            )
            BasicText(
                text = "Povio Academy",
                color = Color.White,
                style = MaterialTheme.typography.h5,
                modifier = Modifier.padding(bottom = 32.dp)
            )
            Image(
                painter = painterResource(id = R.drawable.povio_academy),
                contentDescription = null,
                contentScale = ContentScale.Fit,
                modifier = Modifier.fillMaxWidth().padding(top = 32.dp)
            )
        }
    }
}
```

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Cross-Platform Development

- Single codebase
- Quicker development process (50-80 %)
- Reusable code (> 90 %)
- Unified look & feel
- Reduce development cost
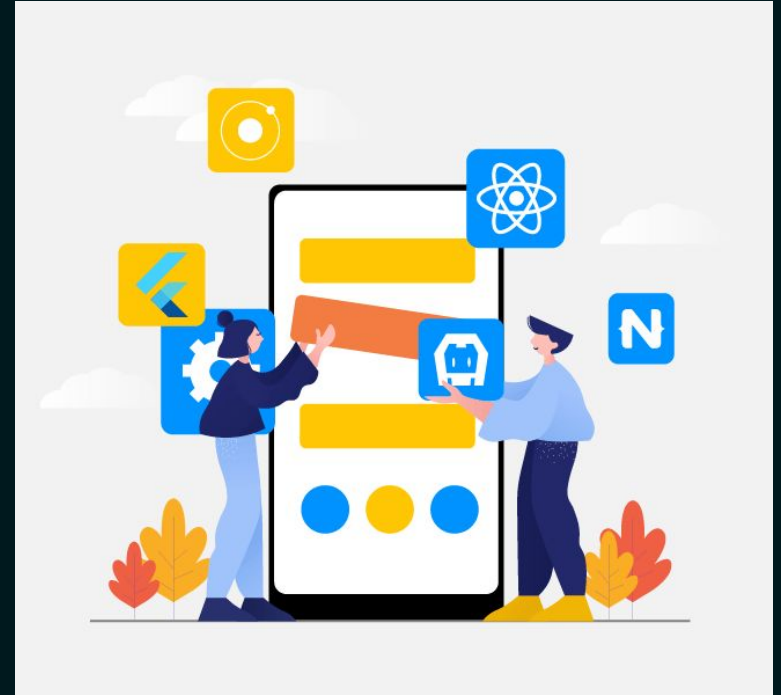
React Native with JavaScript

- Everything is a component
- JavaScript is compiled to native code

Web Browser	React Native JSX	Native Android	Native iOS
<div>	<View>	android.View	UIView
<input>	<TextInput>	EditText	UITextField
…	…	…	…

- Platform-specific look & feel
- Hot reload, Live Reload
- Supports iOS, Android, Desktop*, Web*

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* experimental

```javascript
import React from 'react';
import { View, Text, Image, StyleSheet } from 'react-native';

const App = () => {
  return (
    <View style={styles.container}>
      <Text style={[styles.text, styles.grayText]}>Welcome to</Text>
      <Text style={[styles.text, styles.whiteText]}>Povio Academy</Text>
      <Image source={require('./povio-academy.png')} style={styles.image} />
    </View>
  );
};

const styles = StyleSheet.create({
  container: {
    flex: 1,
    backgroundColor: '#03191f',
    padding: 32,
    justifyContent: 'center',
    alignItems: 'center',
  },
  text: {
    marginBottom: 16,
    textAlign: 'center',
  },
  grayText: {
    color: '#808080',
  },
  whiteText: {
    color: '#FFFFFF',
    marginBottom: 32,
  },
  image: {
    width: '100%',
    aspectRatio: 1,
  },
});

export default App;
```

PovioAcademy.js

React Native with JavaScript

Pros:

- Large community
- Leverage web skills
- Expo platform wrapper
  (UI components, SDK, Client, OTA updates)

Cons:

- Dependency on 3rd-party libraries
- Bridge might be performance bottleneck


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import { View, Text, Image, StyleSheet } from 'react-native';

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    textAlign: 'center',
  },
  grayText: {
    color: '#808080',
  },
  whiteText: {
    color: '#FFFFFF',
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  },
  image: {
    width: '100%',
    aspectRatio: 1,
  },
});

export default App;
```

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React Native with JavaScript

When to choose it:

- Rapid development & MVP delivery
- Team with web background
- Existing React.js codebase
- Frequent updates (code push)
- Limited budget

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```javascript
                                              PovioAcademy.js

import React from 'react';
import { View, Text, Image, StyleSheet } from 'react-native';

const App = () => {
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    textAlign: 'center',
  },
  grayText: {
    color: '#808080',
  },
  whiteText: {
    color: '#FFFFFF',
    marginBottom: 32,
  },
  image: {
    width: '100%',
    aspectRatio: 1,
  },
});

export default App;
```

Flutter with Dart

- Everything is a widget
- Own rendering engine
- Consistent UI across platforms
- Supports iOS, Android, Web, Desktop (Windows, macOS, Linux) & embedded devices

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

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        body: Container(
          color: Color(0xFF03191F),
          padding: EdgeInsets.all(32),
          child: Center(
            child: Column(
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                Text(
                  'Welcome to',
                  style: TextStyle(color: Colors.grey),
                ),
                SizedBox(height: 16),
                Text(
                  'Povio Academy',
                  style: TextStyle(color: Colors.white),
                ),
                SizedBox(height: 32),
                Image.asset(
                  'assets/povio-academy.png',
                  width: double.infinity,
                  fit: BoxFit.fitWidth,
                ),
              ],
            ),
          ),
        ),
      ),
    );
  }
}
```

Flutter with Dart

Pros:

- Smaller but strong community
- High-performance animations and custom UI designs
- Dart (Null-safety)

Cons:

- New language: Dart
- Fewer developers
- Material UI is the dominant design system
- No out-of-the-box OTA updates

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

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        body: Container(
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          padding: EdgeInsets.all(32),
          child: Center(
            child: Column(
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                Text(
                  'Welcome to',
                  style: TextStyle(color: Colors.grey),
                ),
                SizedBox(height: 16),
                Text(
                  'Povio Academy',
                  style: TextStyle(color: Colors.white),
                ),
                SizedBox(height: 32),
                Image.asset(
                  'assets/povio-academy.png',
                  width: double.infinity,
                  fit: BoxFit.fitWidth,
                ),
              ],
            ),
          ),
        ),
      ),
    );
  }
}
```

Flutter with Dart

When to choose it:

- Rapid development & MVP delivery
- Highly customized UI/UX
- Consistent UI across platforms
- Multiple platforms (Mobile + Web, Desktop, embedded)
- Limited budget

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

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        body: Container(
          color: Color(0xFF03191F),
          padding: EdgeInsets.all(32),
          child: Center(
            child: Column(
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                Text(
                  'Welcome to',
                  style: TextStyle(color: Colors.grey),
                ),
                SizedBox(height: 16),
                Text(
                  'Povio Academy',
                  style: TextStyle(color: Colors.white),
                ),
                SizedBox(height: 32),
                Image.asset(
                  'assets/povio-academy.png',
                  width: double.infinity,
                  fit: BoxFit.fitWidth,
                ),
              ],
            ),
          ),
        ),
      ),
    );
  }
}
```

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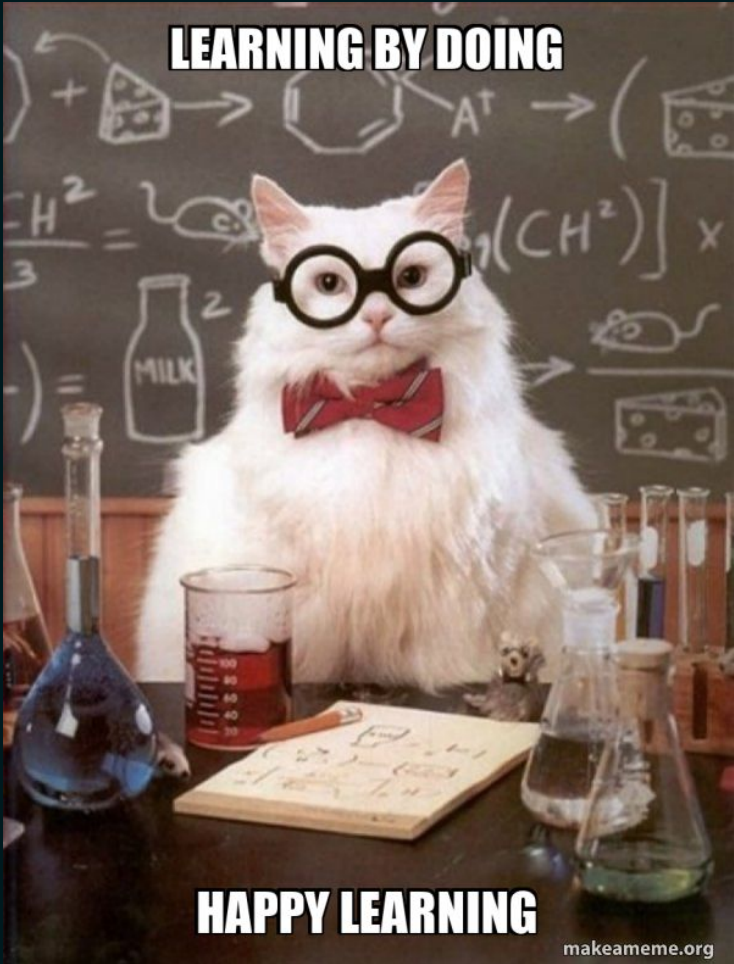Conference

Other cross-platform solutions

- .NET MAUI
- Kotlin Multiplatform
- Ionic
- NativeScript
- Apache Cordova (PhoneGap)

How to start?

- Online video courses
- Official documentation
- ChatGPT, Copilot, etc.
- Code repositories

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Thank you

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