

# ZansModern React Native App - Migration & Fix Guide

## Overview

This document details all the issues encountered and fixes applied to get the ZansModern React Native Android app running successfully. The app required significant updates due to deprecated dependencies, build configuration issues, and API migrations.

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## 1. Build Configuration Issues

### Issue: Namespace Mismatch

Error:

```
Unresolved reference: BuildConfig
```

**Root Cause:** The `android/app/build.gradle` namespace and `applicationId` didn't match the package name in `MainApplication.kt`.

Files Affected:

- `android/app/build.gradle`
- `android/app/src/main/java/com/zansmodern/MainApplication.kt`

Fix:

```
// android/app/build.gradle
android {
    namespace "com.zansmodern" // Changed from "com.zansshootingsimulator"
    defaultConfig {
        applicationId "com.zansmodern" // Changed from "com.zansshootingsimulator"
        minSdkVersion rootProject.ext.minSdkVersion
        targetSdkVersion rootProject.ext.targetSdkVersion
        versionCode 1
        versionName "1.0"
        missingDimensionStrategy 'store', 'play'
    }
}
```

## 2. Kotlin Version Compatibility

### Issue: Kotlin Version Conflict

Error:

```
Incompatible classes were found in dependencies. Class 'kotlinx.coroutines.CoroutineDispatcher'
was compiled with an incompatible version of Kotlin. The binary version of its metadata is 2.0.0,
expected version is 1.8.0
```

**Root Cause:** `react-native-vision-camera` requires Kotlin 1.9+ but the project was using Kotlin 1.8.0. Upgrading to Kotlin 2.0.0 broke `react-native-gesture-handler` due to strict null-safety checks.

**Solution:** Upgraded to Kotlin 1.9.24 (compatible with both libraries)

#### Files Changed:

```
// android/build.gradle
buildscript {
  ext {
    buildToolsVersion = "34.0.0"
    minSdkVersion = 21
    compileSdkVersion = 34
    targetSdkVersion = 34
    ndkVersion = "25.1.8937393"
    kotlinVersion = "1.9.24" // Changed from "1.8.0"
  }
  dependencies {
    classpath("com.android.tools.build:gradle")
    classpath("com.facebook.react:react-native-gradle-plugin")
    classpath("org.jetbrains.kotlin:kotlin-gradle-plugin:$kotlinVersion") // Added explicit version
  }
}
```

## 3. Camera Library Migration

### Issue: Deprecated react-native-camera

#### Error:

```
Unable to resolve module react-native-camera
```

**Root Cause:** The app was using the deprecated `react-native-camera` library but had `react-native-vision-camera` installed.

**Migration Required:** Complete code refactor from RNCamera API to Vision Camera hooks API.

#### Before (react-native-camera):

```
import { RNCamera } from 'react-native-camera';

<RNCamera
  style={styles.preview}
  type={RNCamera.Constants.Type.back}
  onBarcodeRead={(e) => {
    if (e.type === 'QR_CODE') {
      onSuccess(e);
    }
  }}
  barcodeTypes={[RNCamera.Constants.BarCodeType.qr]}
>
  {/* content */}
</RNCamera>
```

#### After (react-native-vision-camera):

```
import { Camera, useCameraDevice, useCodeScanner } from "react-native-vision-camera";

export default function ScanQR({ route, navigation }) {
  const device = useCameraDevice('back');

  const codeScanner = useCodeScanner({
    codeTypes: ['qr'],
    onCodeScanned: (codes) => {
      if (codes.length > 0) {
        const code = codes[0];
        if (code.type === 'qr') {
          onSuccess(code);
        }
      }
    }
  });

  function onSuccess(code) {
    navigation.navigate('ConfigureTarget', { device: code.value });
  }

  if (device == null) {
    return (
      <View style={styles.root}>
        <Text style={{ color: "white" }}>Loading camera...</Text>
      </View>
    );
  }

  return (
    <Camera
      style={styles.camera}
      device={device}
      isActive={true}
      codeScanner={codeScanner}
    >
      {/* content */}
    </Camera>
  );
}
```

#### Key Changes:

- `RNCamera` → `Camera` component
- `onBarcodeRead` → `useCodeScanner` hook
- `e.data` → `code.value` for QR data
- Added device selection with `useCameraDevice`
- Null check for device before rendering

#### File Modified:

- `src/screens/ScanQR.js`

## 4. Firebase SDK Migration

### Issue: Incompatible Firebase Imports

#### Error:

```
Error: While trying to resolve module `firebase` from file, the package was successfully found.
However, this package itself specifies a `main` module field that could not be resolved
```

**Root Cause:** Using old Firebase imports incompatible with React Native. Required migration to Firebase compat build.

#### Before:

```
import * as firebase from 'firebase';

const Firebase = firebase.default.initializeApp(config);
```

#### After:

```
import firebase from 'firebase/compat/app';
import 'firebase/compat/auth';
import 'firebase/compat/database';

const Firebase = firebase.initializeApp(config);
```

#### Files Modified:

- `src/providers/FirebaseProvider.js`
- `src/services/FirebaseSocialAuth.js`

**Additional Fix:** Removed circular dependency by removing unused `FirebaseManager` import from `FirebaseProvider.js`.

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## 5. React Native Paper Theme Update

### Issue: Undefined Theme Colors

#### Error:

```
TypeError: Cannot read property 'colors' of undefined
```

**Root Cause:** React Native Paper v5 uses Material Design 3 with different theme exports. `DarkTheme` was deprecated.

#### Before:

```
import { DefaultTheme, DarkTheme, Provider as PaperProvider } from 'react-native-paper';

const theme = {
  ...DarkTheme,
  colors: {
    ...DarkTheme.colors,
    primary: '#F2F2F2',
    accent: '#F25757',
  },
};
```

#### After:

```
import { MD3DarkTheme, Provider as PaperProvider } from 'react-native-paper';

const theme = {
  ...MD3DarkTheme,
  colors: {
    ...MD3DarkTheme.colors,
    primary: '#F2F2F2',
    accent: '#F25757',
  },
};
```

#### File Modified:

- `src/navigation/index.js`

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## 6. Missing Dependencies

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## Packages Installed

The following packages were missing and needed installation:

```
npm install react-native-view-shot@3.8.0 --legacy-peer-deps
npm install @react-native-community/google-signin --legacy-peer-deps
npm install react-native-image-marker --legacy-peer-deps
npm install react-native-mail --legacy-peer-deps
npm install react-native-chart-kit --legacy-peer-deps
npm install react-native-bluetooth-serial --legacy-peer-deps
npm install react-native-sound-player --legacy-peer-deps
```

**Note:** `--legacy-peer-deps` flag was required due to peer dependency conflicts with React Native 0.73.6.

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## 7. Deprecated Package Fixes

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### Issue: react-native-bluetooth-serial Build Failures

#### Problem 1: Deprecated Gradle Syntax

**Error:**

```
Could not find method compile() for arguments [com.facebook.react:react-native:+]
```

**Fix:**

```
// node_modules/react-native-bluetooth-serial/android/build.gradle
// Before:
dependencies {
    compile 'com.facebook.react:react-native:+'
}

// After:
dependencies {
    implementation 'com.facebook.react:react-native:+'
}
```

#### Problem 2: Deprecated createJSModules Method

**Error:**

```
error: method does not override or implement a method from a supertype
@Override
```

**Fix:**

```
// node_modules/react-native-bluetooth-serial/android/src/main/java/com/rusel/RCTBluetoothSerial/RCTBluetoothSerialPackage.java

// Removed deprecated method:
// @Override
// public List<Class<? extends JavaScriptModule>> createJSModules() {
//     return Collections.emptyList();
// }
```

**Complete Updated File:**

```
// node_modules/react-native-bluetooth-serial/android/build.gradle
apply plugin: 'com.android.library'

android {
    compileSdkVersion rootProject.ext.compileSdkVersion

    defaultConfig {
        minSdkVersion rootProject.ext.minSdkVersion
        targetSdkVersion rootProject.ext.targetSdkVersion
        versionCode 1
        versionName "1.0"
    }
}

repositories {
    mavenCentral()
    google()
}

dependencies {
    implementation 'com.facebook.react:react-native:+'
}
```

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## 8. Asset Path Corrections

### Issue: Asset Not Found

#### Error:

```
Error: Unable to resolve module ../assets/images/shooting-target.png
```

**Root Cause:** Assets folder is at project root, not under `src/`.

#### Fix:

```
// src/screens/SessionDetail.js
// Before:
import TargetImage from "../assets/images/shooting-target.png"

// After:
import TargetImage from "../../assets/images/shooting-target.png"
```

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## Summary of File Changes

### Configuration Files

1. `android/build.gradle` - Kotlin version update, explicit plugin versioning
2. `android/app/build.gradle` - Namespace and applicationId fix
3. `node_modules/react-native-bluetooth-serial/android/build.gradle` - Complete rewrite

### Source Code Files

1. `src/screens/ScanQR.js` - Complete camera migration
  2. `src/providers/FirebaseProvider.js` - Firebase compat imports, removed circular dependency
  3. `src/services/FirebaseSocialAuth.js` - Firebase compat imports
  4. `src/navigation/index.js` - React Native Paper v5 theme
  5. `src/screens/SessionDetail.js` - Asset path fix
  6. `node_modules/react-native-bluetooth-serial/.../RCTBluetoothSerialPackage.java` - Removed deprecated method
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# Build Commands Used

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## Clean and Rebuild

```
cd android
.\gradlew clean
cd ..
npx react-native run-android
```

## Clear Metro Cache

```
npx react-native start --reset-cache
```

## Clear Gradle Cache (when needed)

```
Remove-Item -Path "$env:USERPROFILE\.gradle\caches" -Recurse -Force
```

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# Lessons Learned

1. **Version Compatibility is Critical:** Kotlin version must be compatible with all native dependencies
  2. **Read Migration Guides:** react-native-camera → react-native-vision-camera required complete API changes
  3. **Firebase Compat Layer:** React Native projects should use firebase/compat imports
  4. **React Native Paper v5:** Major breaking changes from v4, different theme structure
  5. **Node Modules May Need Patches:** Older packages like react-native-bluetooth-serial need manual fixes
  6. **Circular Dependencies:** Watch for require cycles, especially in service/provider patterns
  7. **Cache Clearing:** Metro and Gradle caches can hold old configurations
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# Final Working Configuration

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## Versions

- React Native: 0.73.6
- Kotlin: 1.9.24
- Gradle: 8.3
- Android Gradle Plugin: 8.1.1
- React Native Paper: 5.14.5
- React Native Vision Camera: 4.x
- Firebase: compat build

## Project Structure

```
ZansModern/
├─ android/
│   └─ app/
│       └─ build.gradle (namespace: com.zansmodern)
│   └─ build.gradle (kotlinVersion: 1.9.24)
├─ src/
│   └─ navigation/
│       └─ index.js (MD3DarkTheme)
│   └─ providers/
│       └─ FirebaseProvider.js (firebase/compat)
│   └─ screens/
│       └─ ScanQR.js (react-native-vision-camera)
│   └─ services/
│       └─ FirebaseSocialAuth.js (firebase/compat)
└─ assets/
    └─ images/
```

# Troubleshooting Tips

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## If the app fails to register:

1. Check Metro bundler for JavaScript errors
2. Look for circular dependency warnings
3. Verify all imports are correct
4. Clear Metro cache: `npx react-native start --reset-cache`

## If native build fails:

1. Clear Gradle cache
2. Run `.\gradlew clean` in android folder
3. Check Kotlin version compatibility
4. Verify all native dependencies are properly linked

## If camera doesn't work:

1. Ensure `react-native-vision-camera` is properly installed
2. Check Android permissions in `AndroidManifest.xml`
3. Verify device has back camera
4. Test on physical device (emulator cameras can be unreliable)

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