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Mobile apps & Internet of Things

Agenda

1. IoT Components
2. Mobile Platform
3. IoT App Architecture
4. Demos : Mobile App and Web Application

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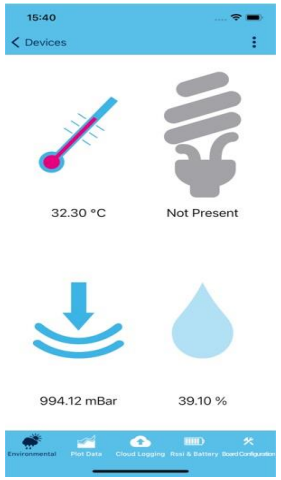
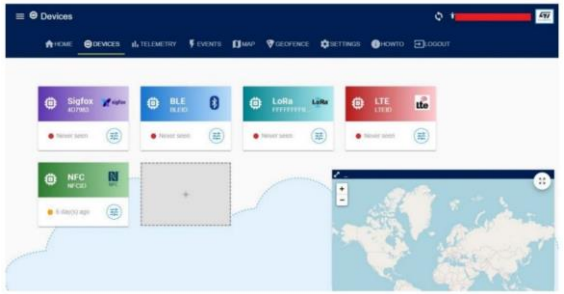
IoT Components

- Hardware comprises of computation, sensing and connectivity at board level

- Mobile App on iOS / Android Platform for small sets of data / alarm
  - The purpose is consumption of data



- Web Application to monitor large sets of data and do some deep / complex computation of data
  - The purpose is both consumption and computation of data



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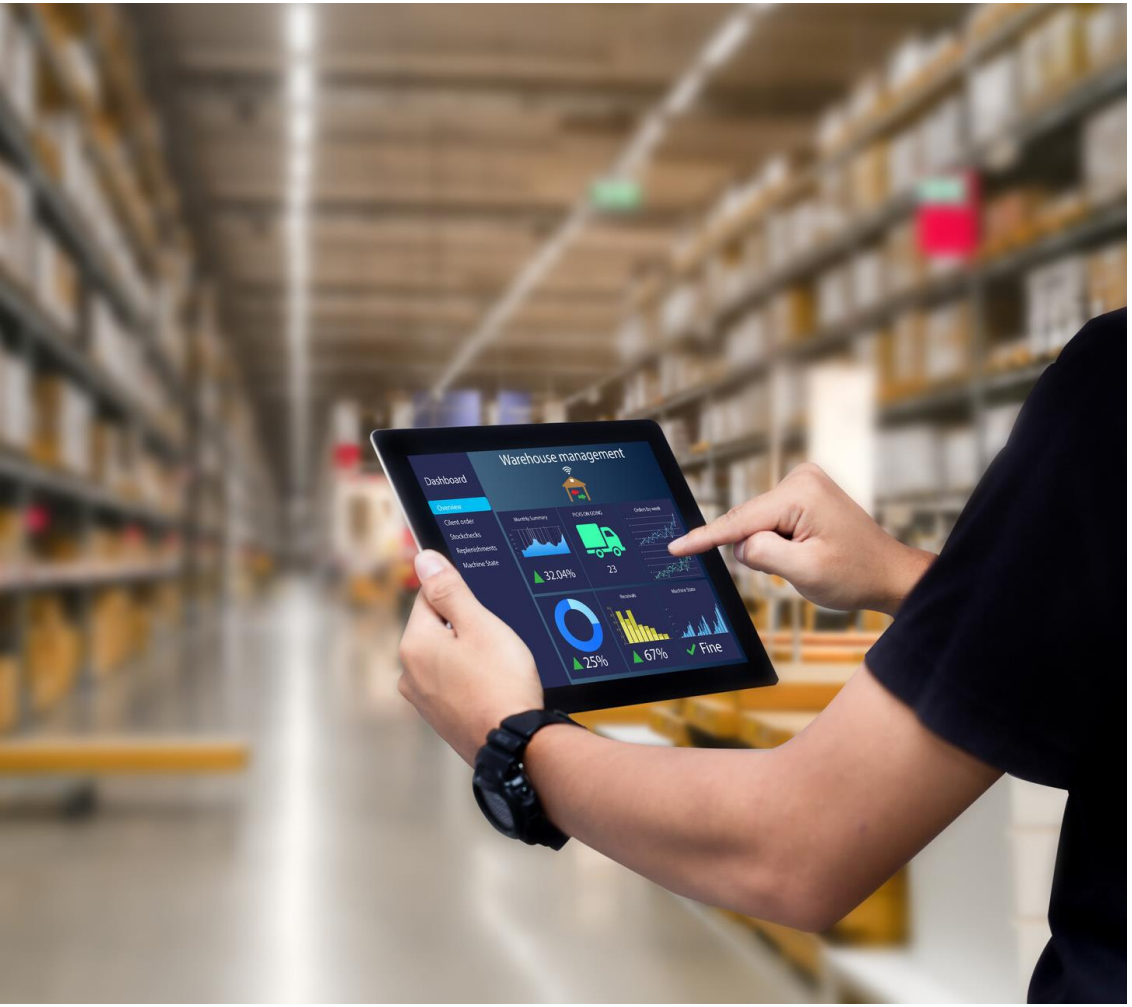
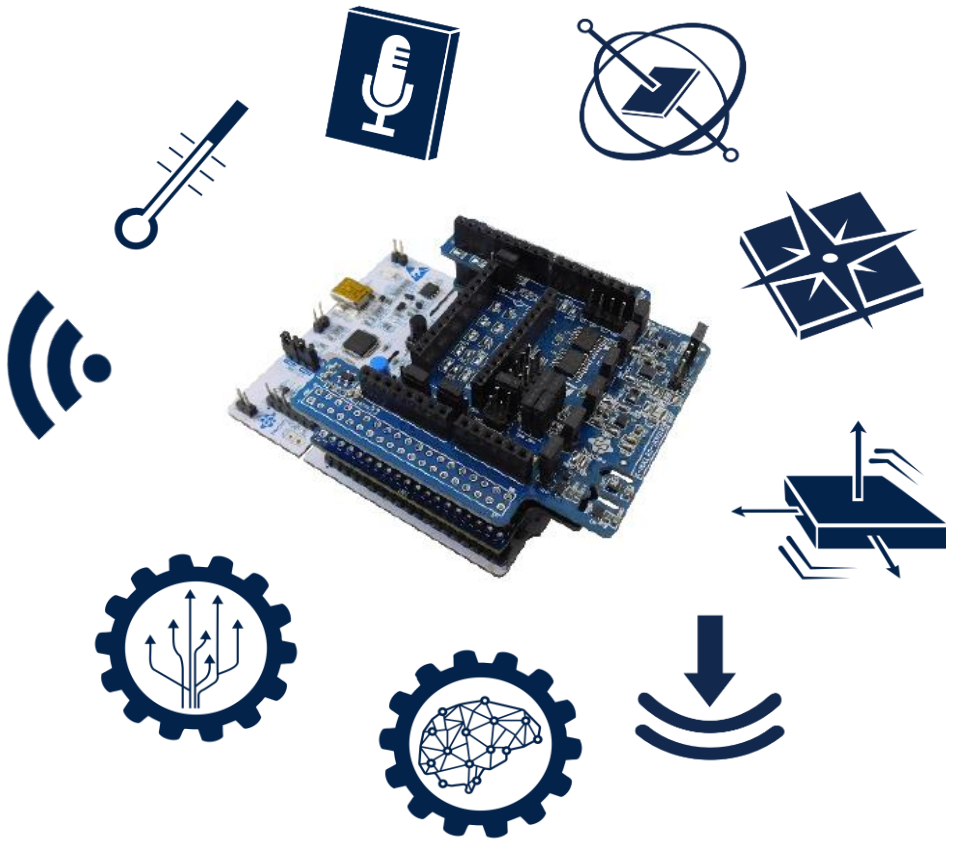
Mobile applications



- Wi-Fi
- Bluetooth
- NFC
- GPS
- Sensors



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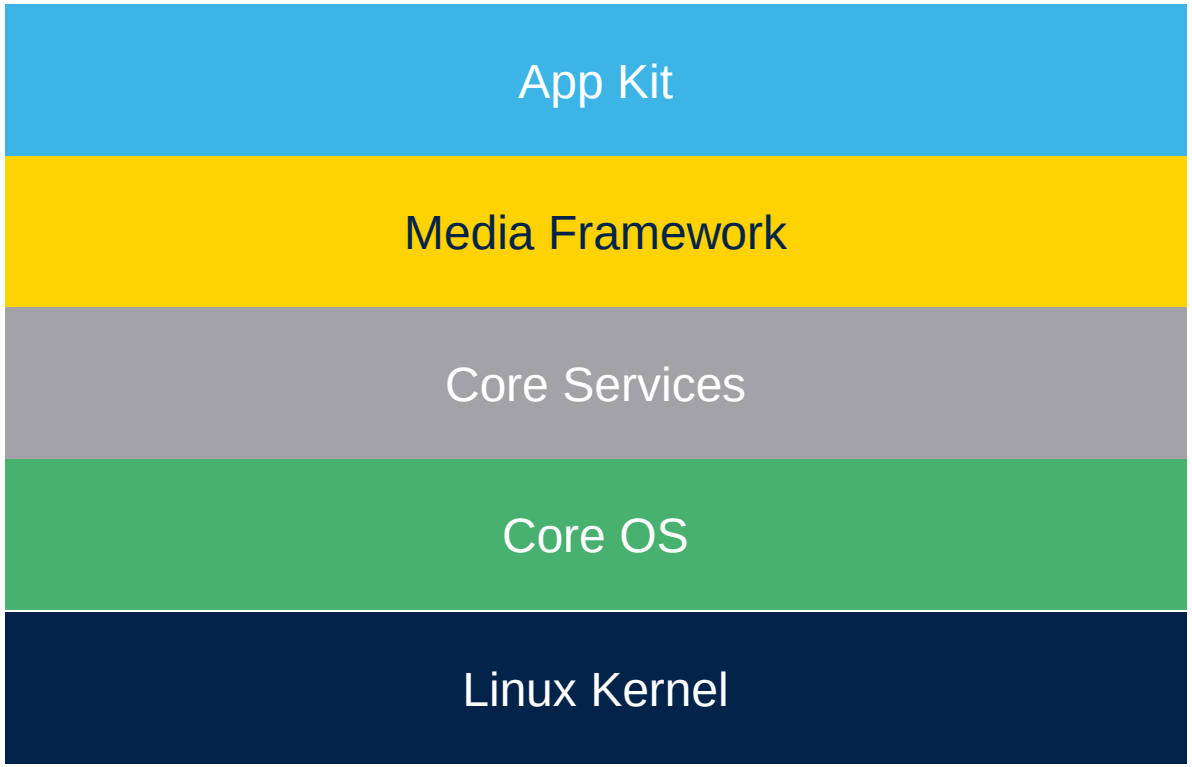
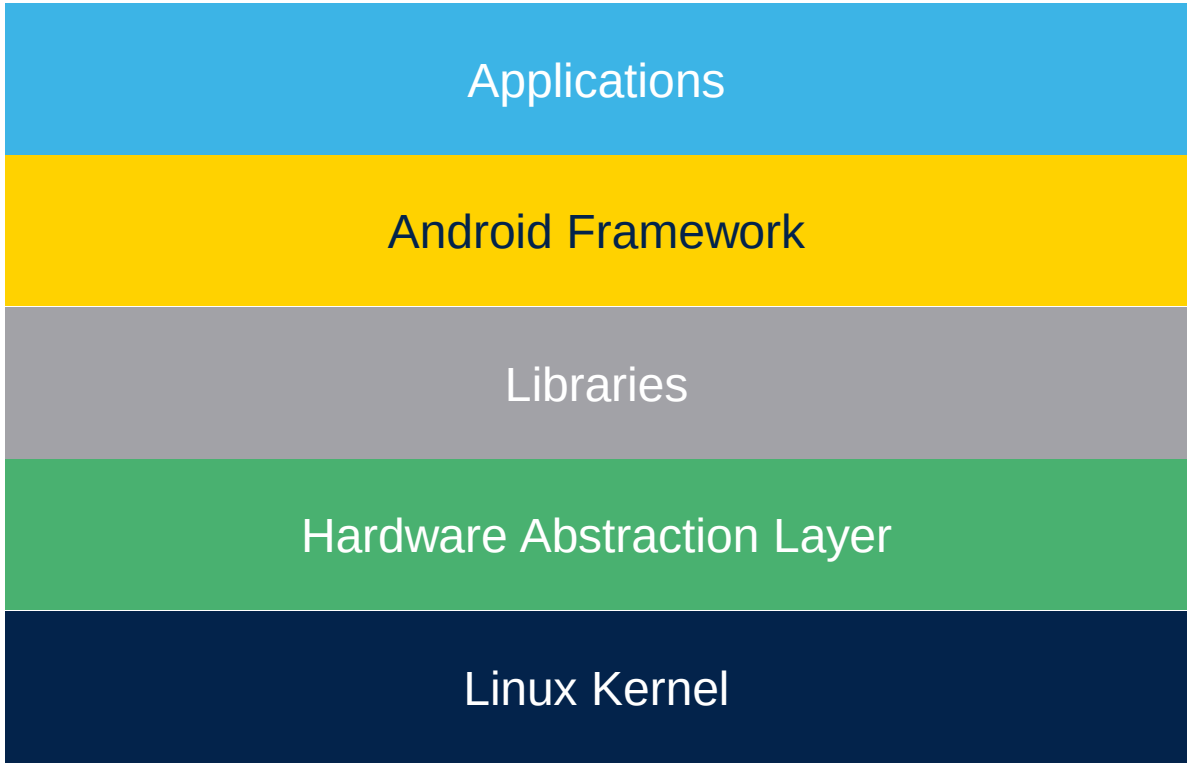
Mobile OS architecture



iOS



Android

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Hardware support in Mobile Phones

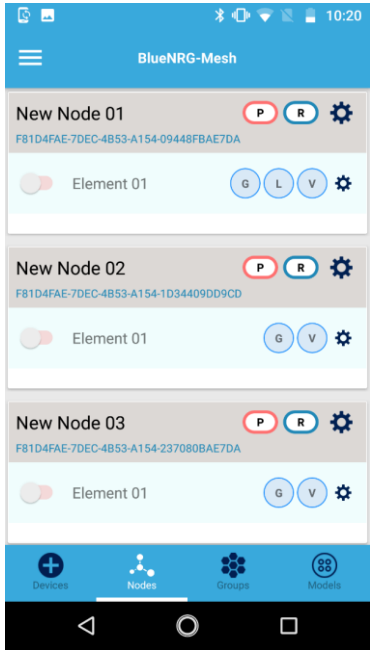
- Near Field Communication
- Bluetooth
- Motion Sensors
- Ambient Light Sensors
- Touchscreen
- GPS
- Fingerprint detection
- ….

Activity Recognition

Vertical context detection
Stair count / Man fall down
Pose & Fitness monitoring

Vertical Detection

Altitude monitoring
Indoor V position for E911
Ambient pressure monitor



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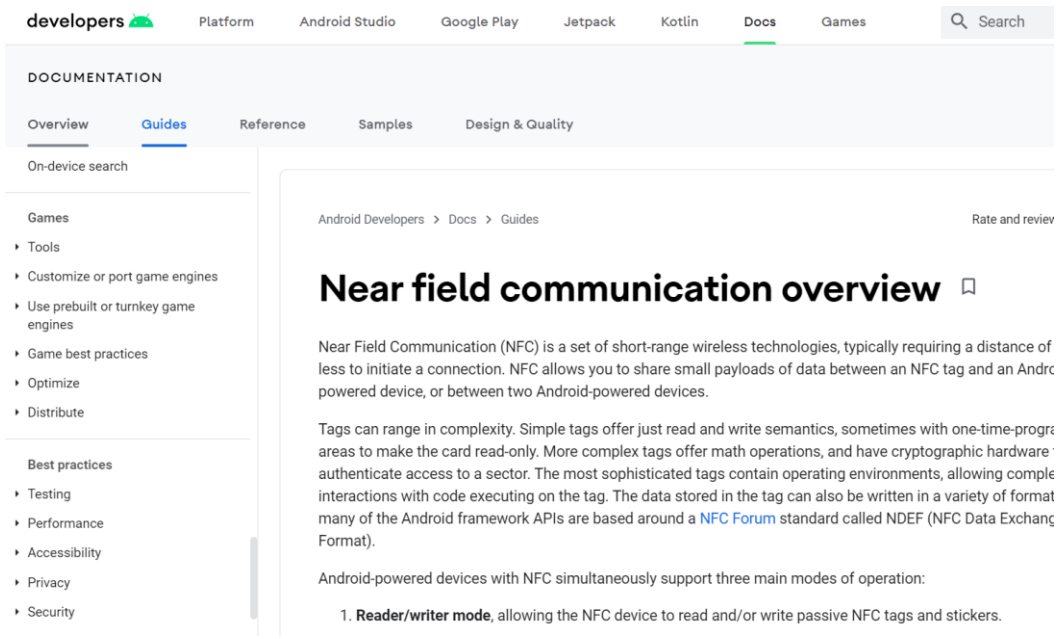
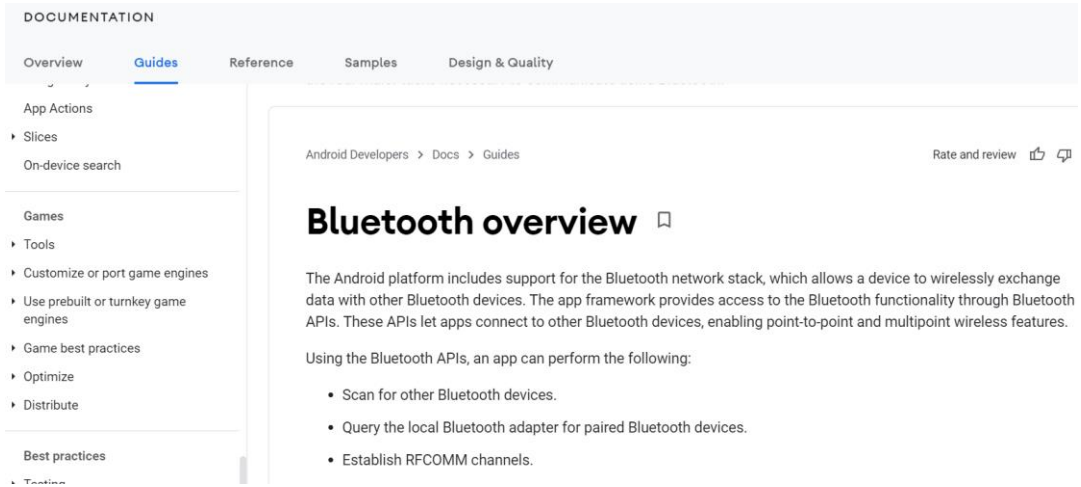
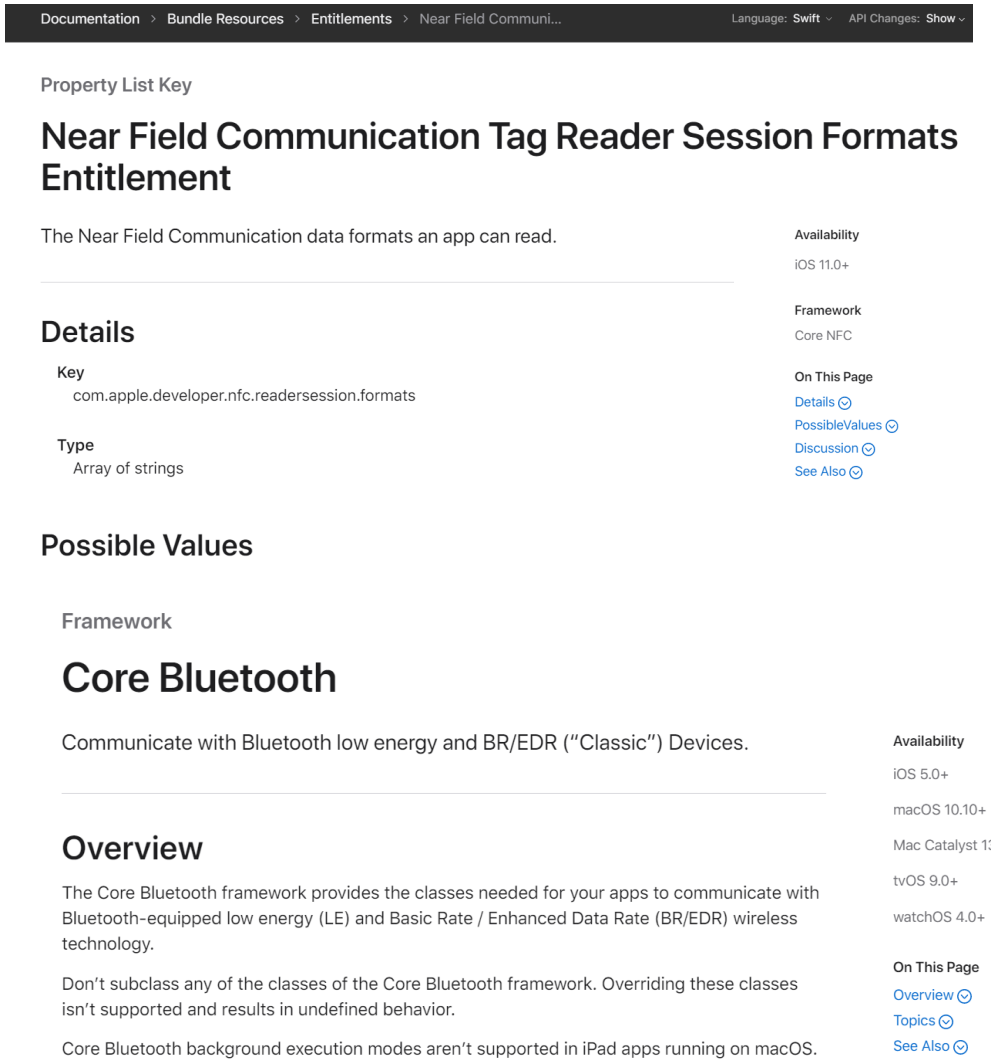
Software APIs support





[Android Developers]



[Apple Developer]

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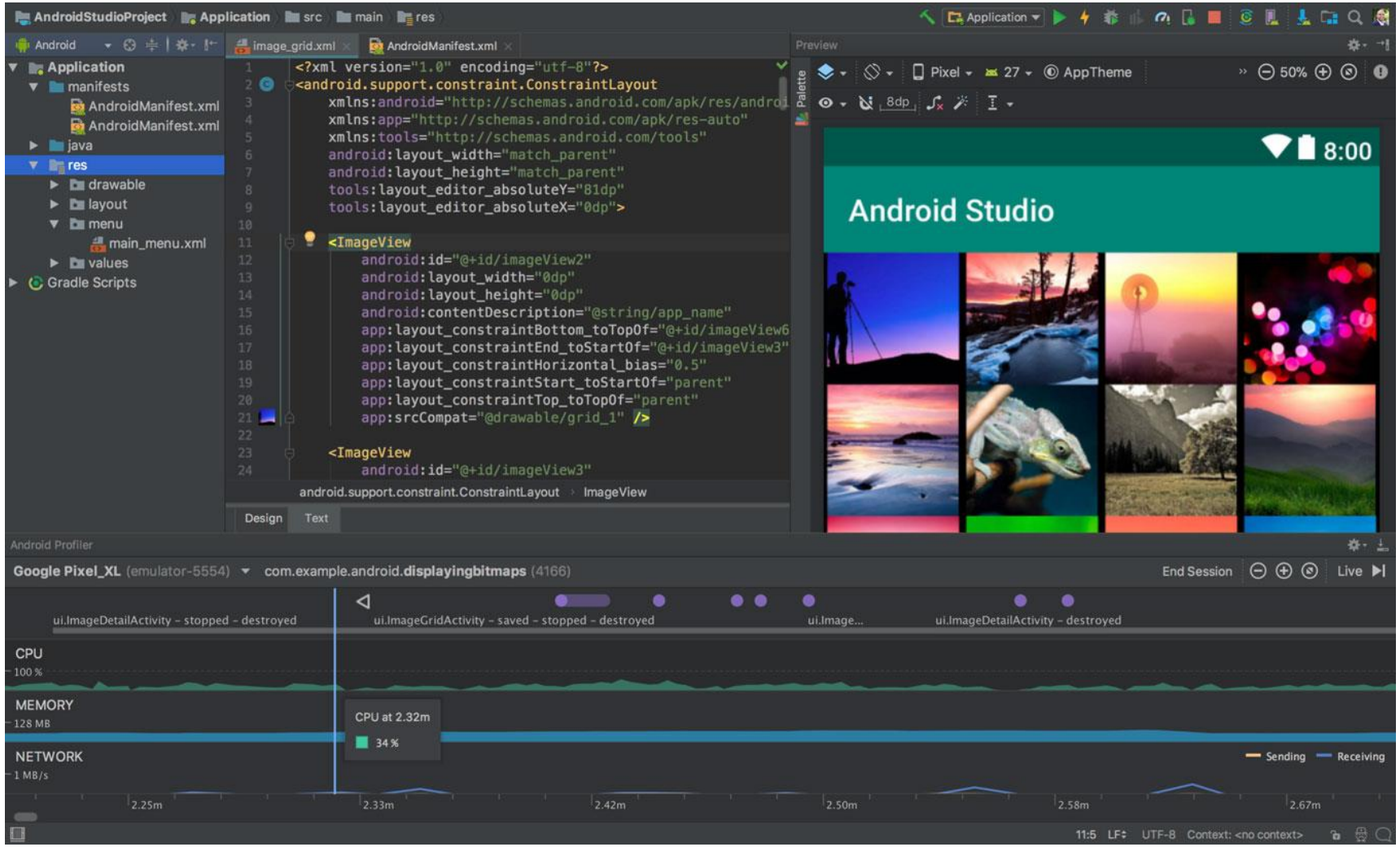
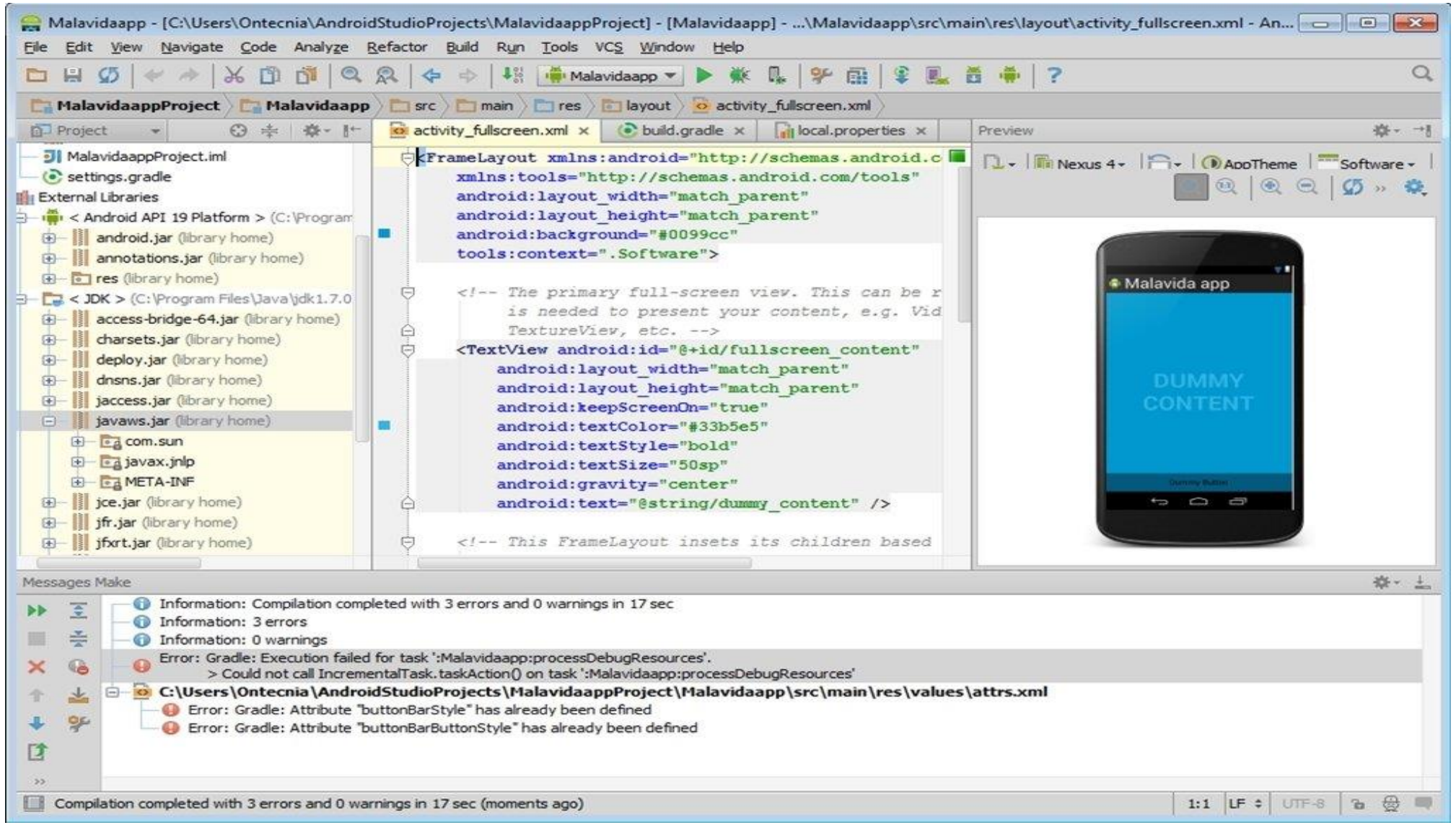
Android Studio (1/2)



Android Studio (2/2)



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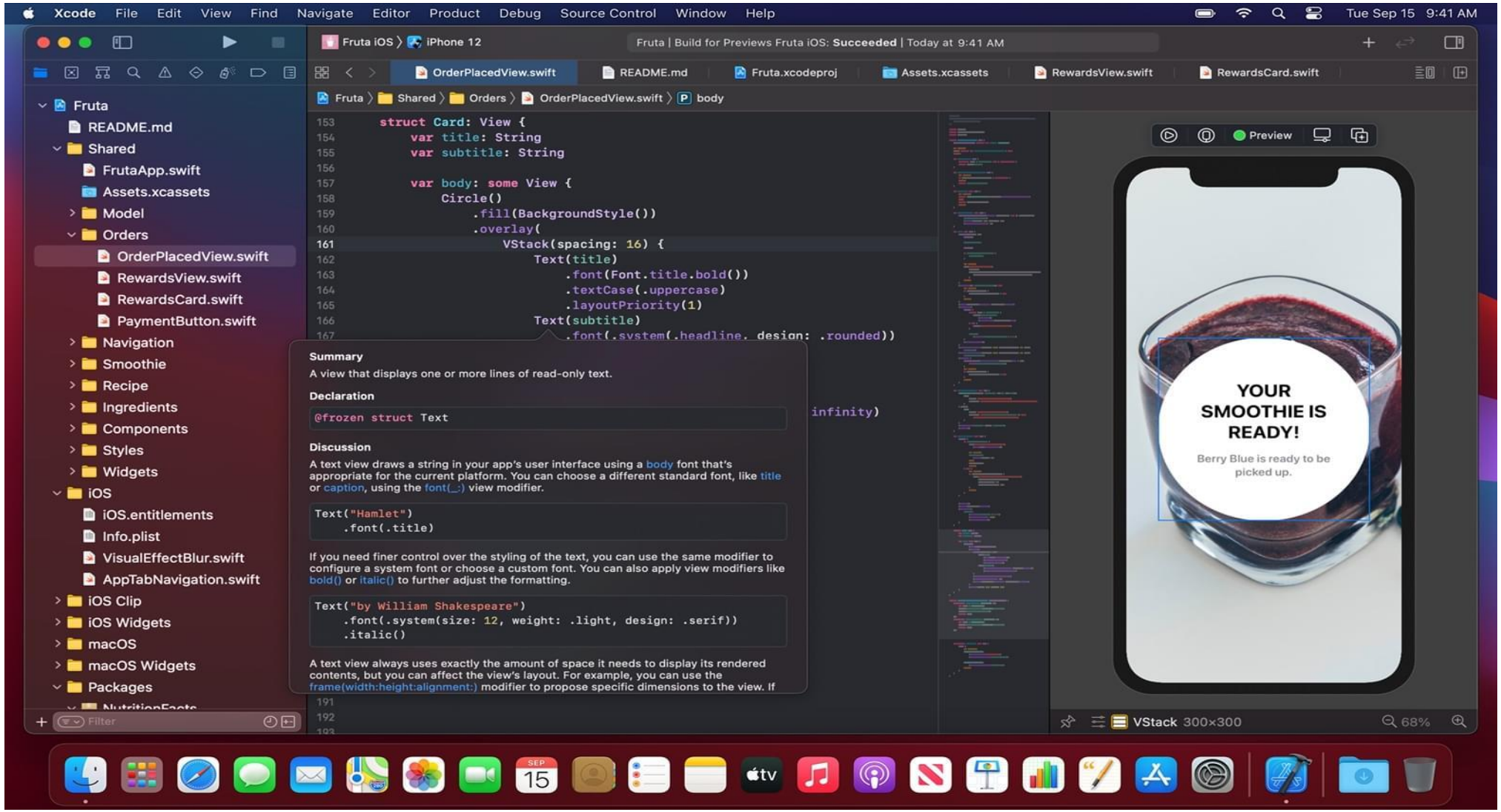
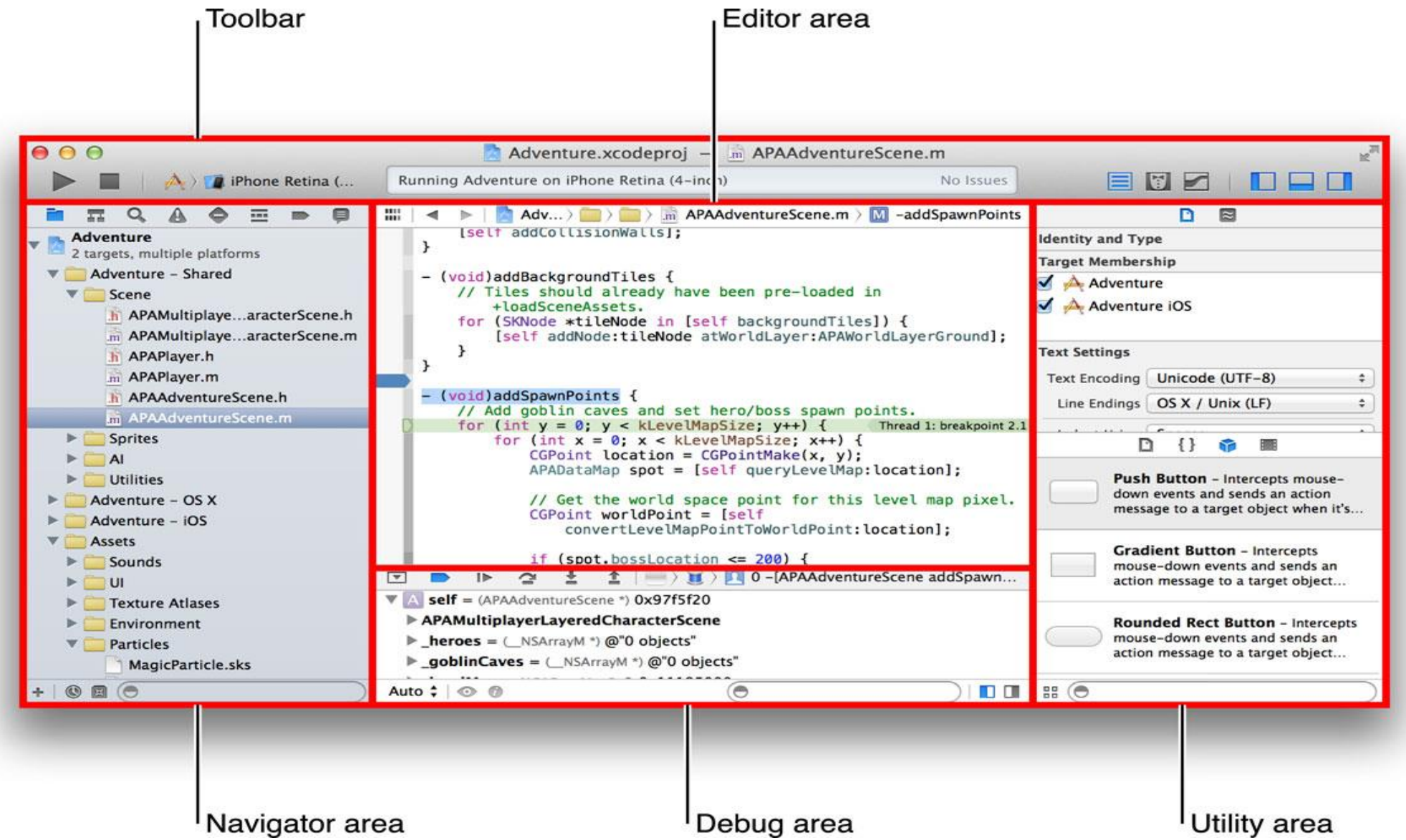
Xcode

Xcode IDE (1/2)



Xcode IDE (2/2)



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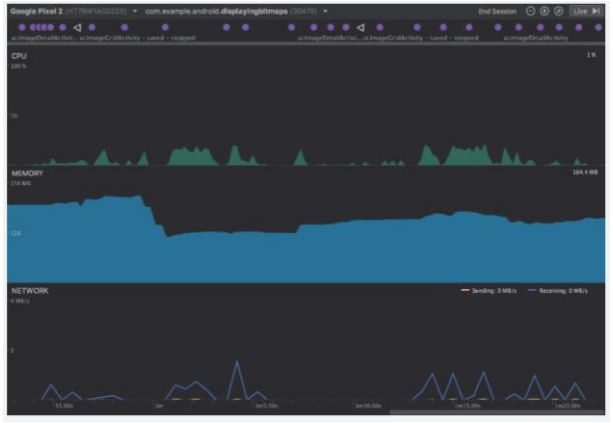
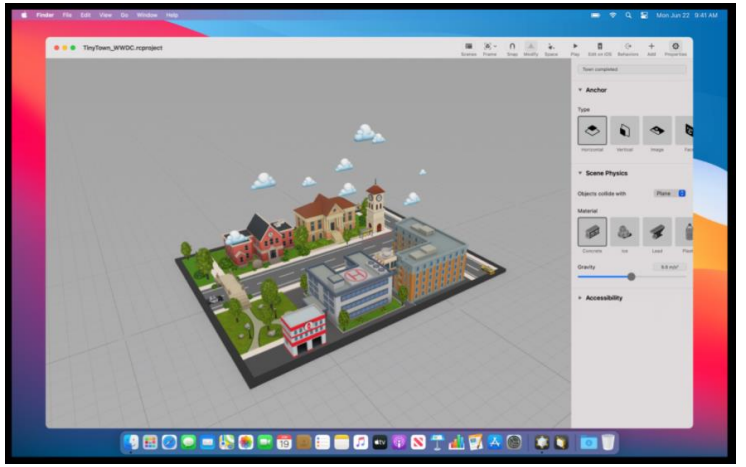
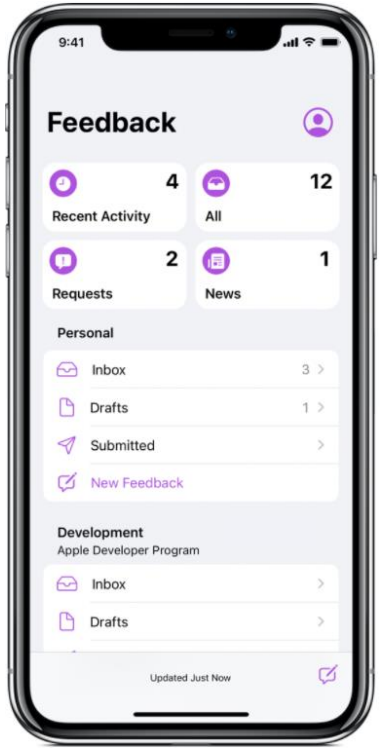
IDE features

- Android Studio
  - APK Analyzer
  - Fast Emulator
  - Intelligent Code Builder
  - Flexible Build Systems
  - Visual Layout Editor
  - Realtime Profilers



- iOS
  - CloudKit Console
  - Command Line Tools
  - Dashboard
  - Reality Composer
  - Reality Builder
  - Swift UI





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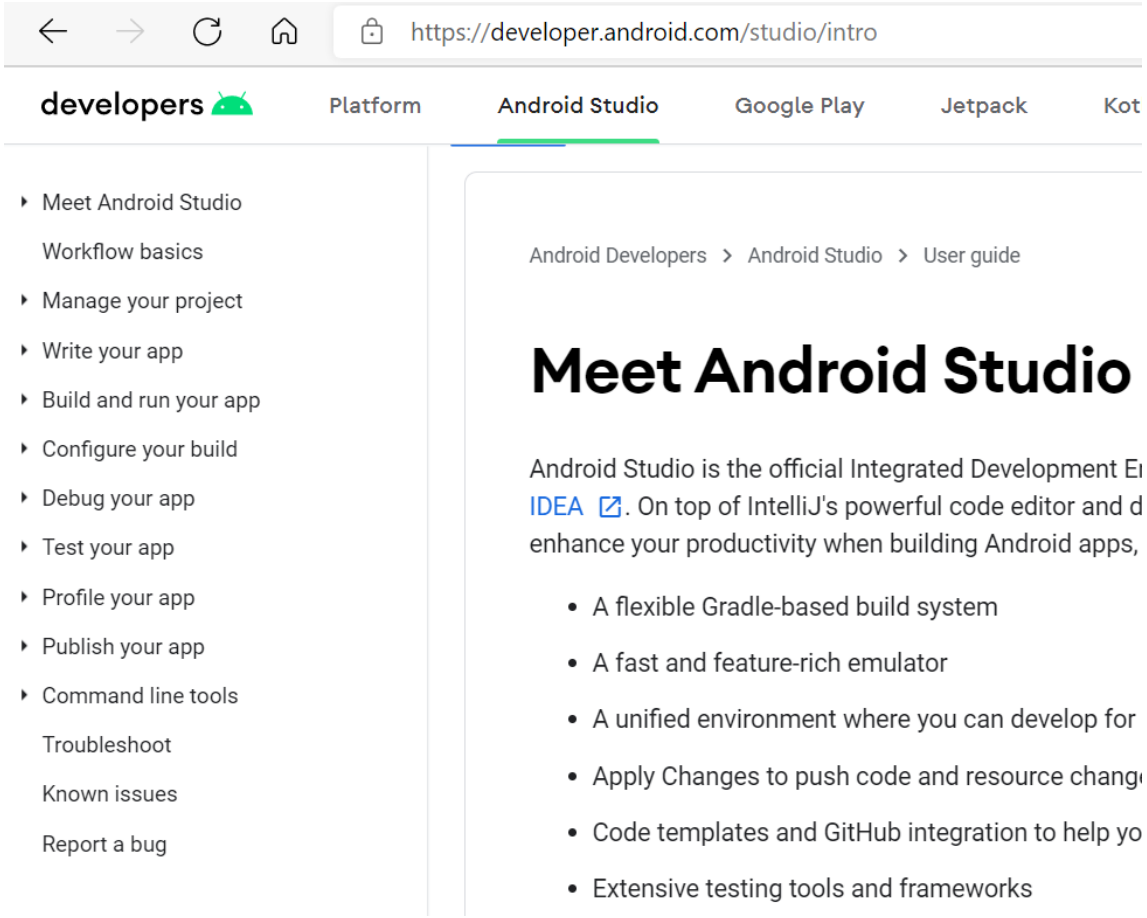
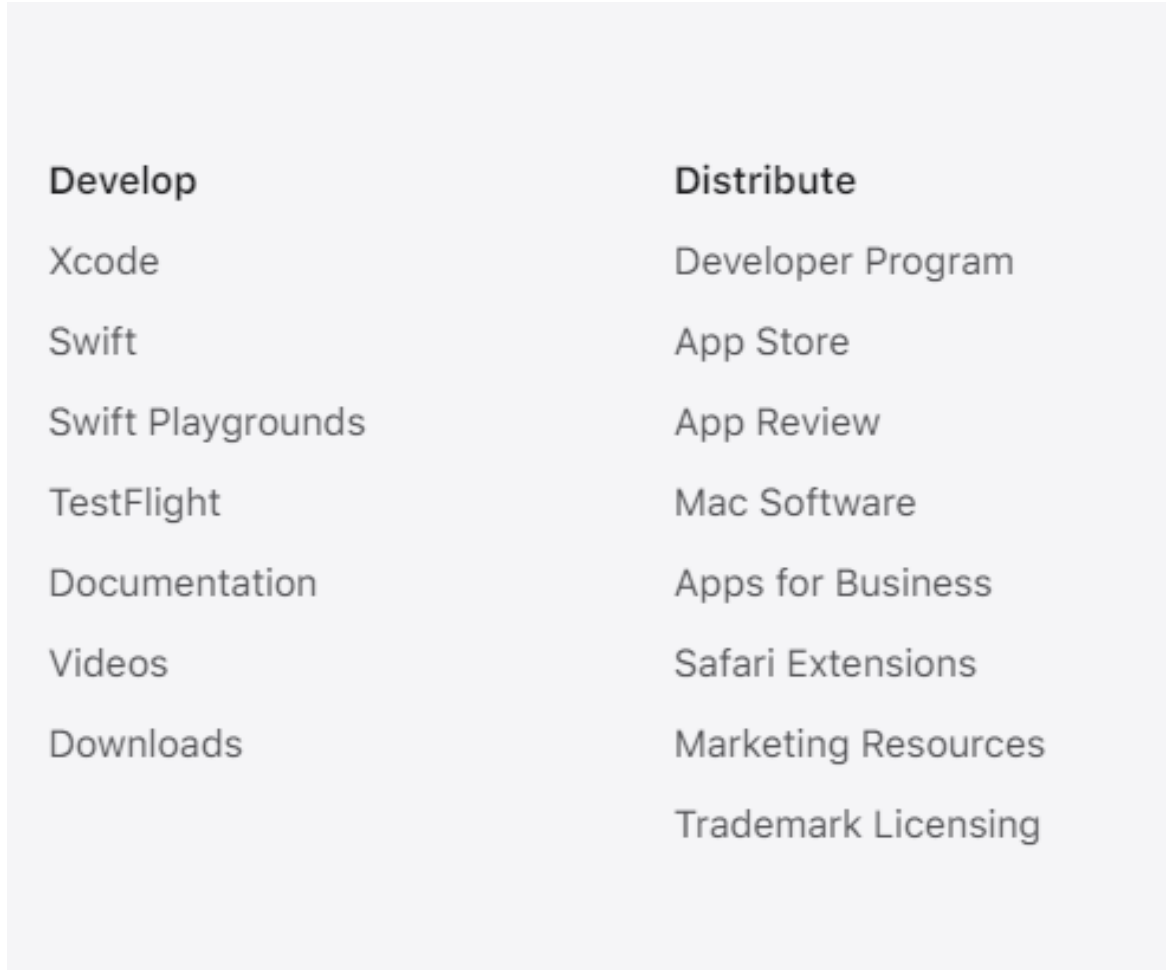
Documentation for each platform





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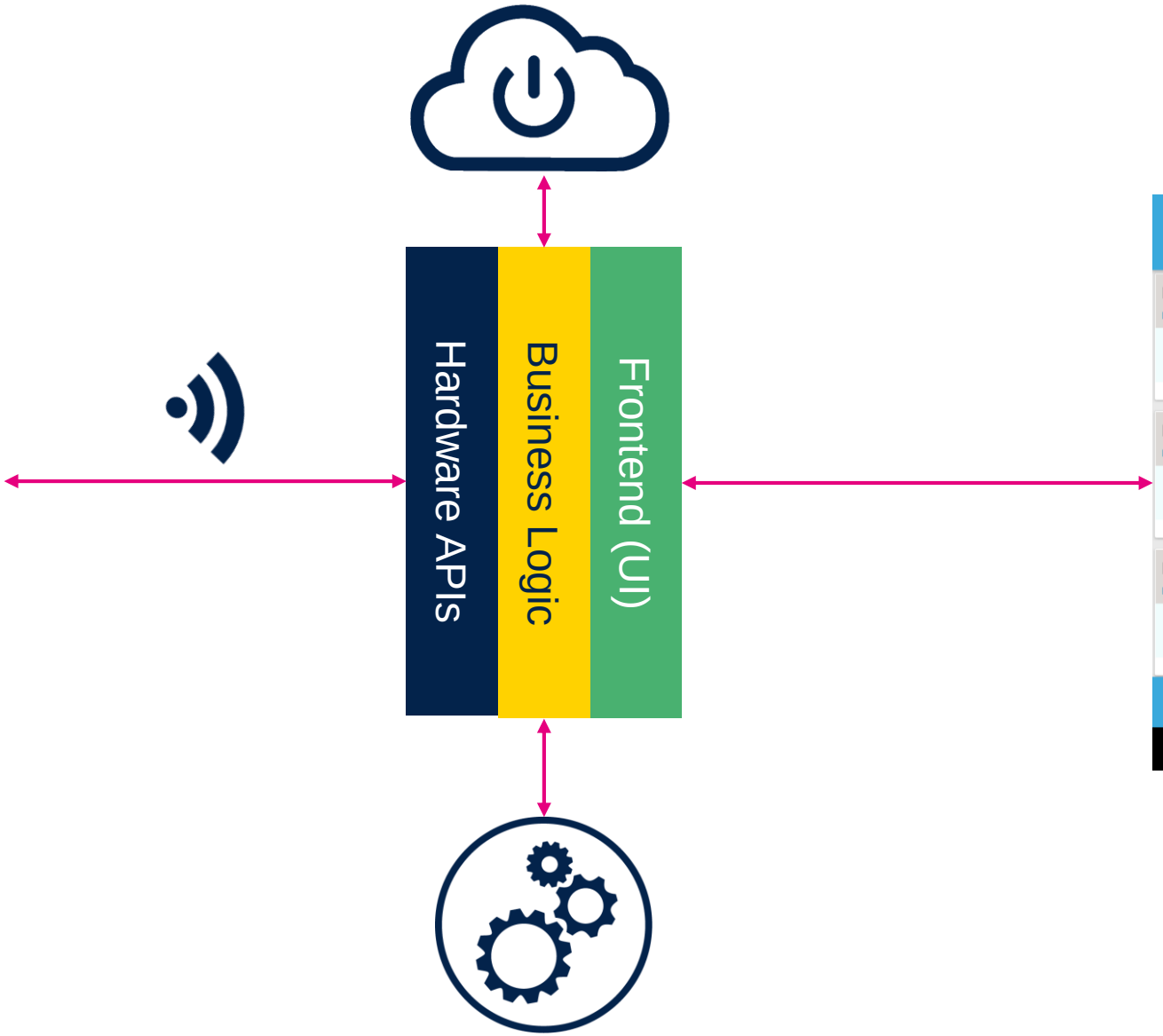
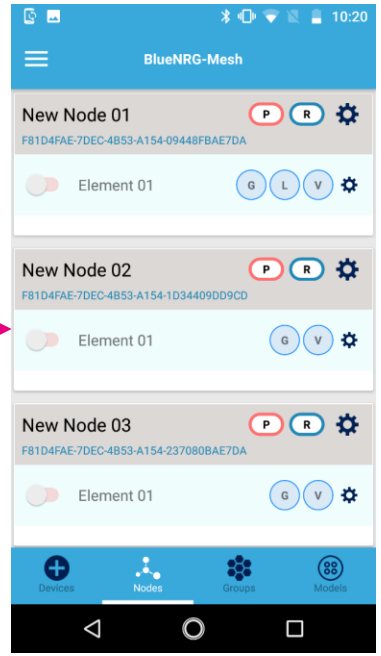
Typical mobile app architecture





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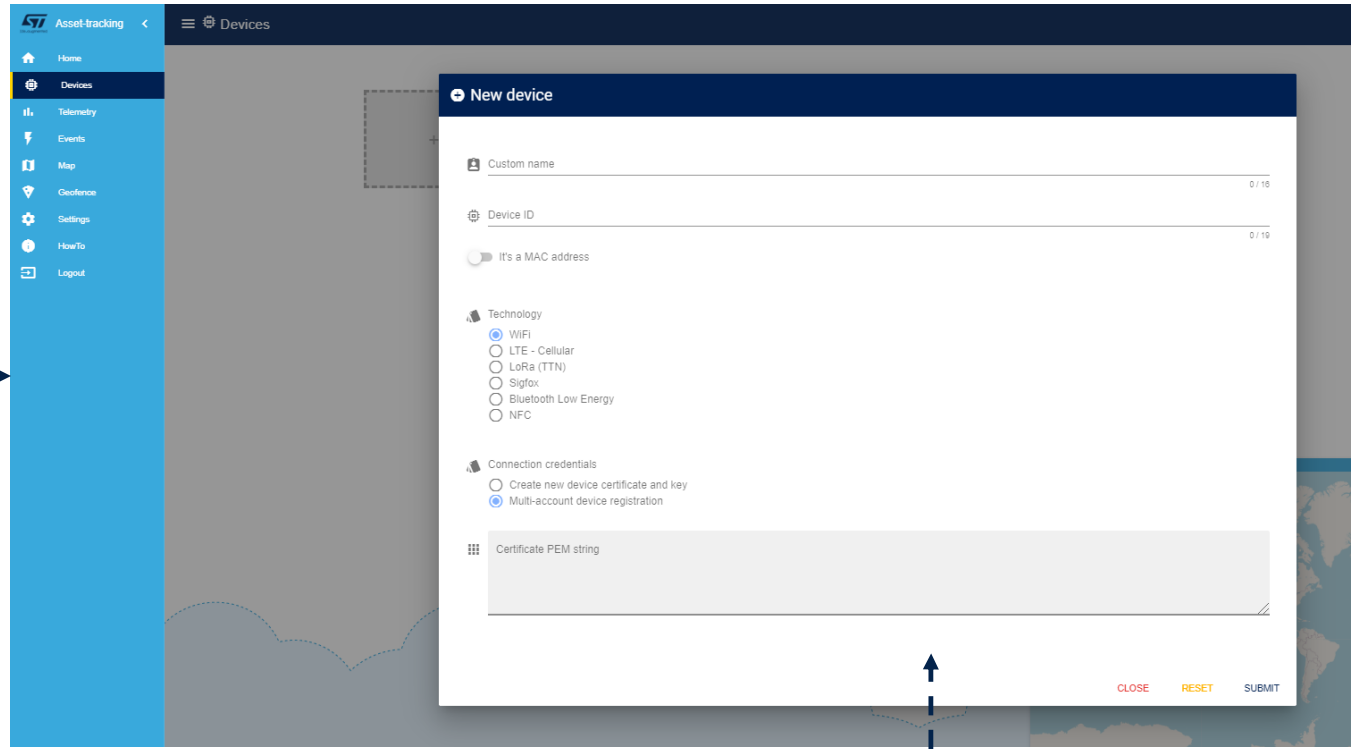
IoT data to cloud

Wi-Fi / Internet



BLE

Mobile app to Cloud

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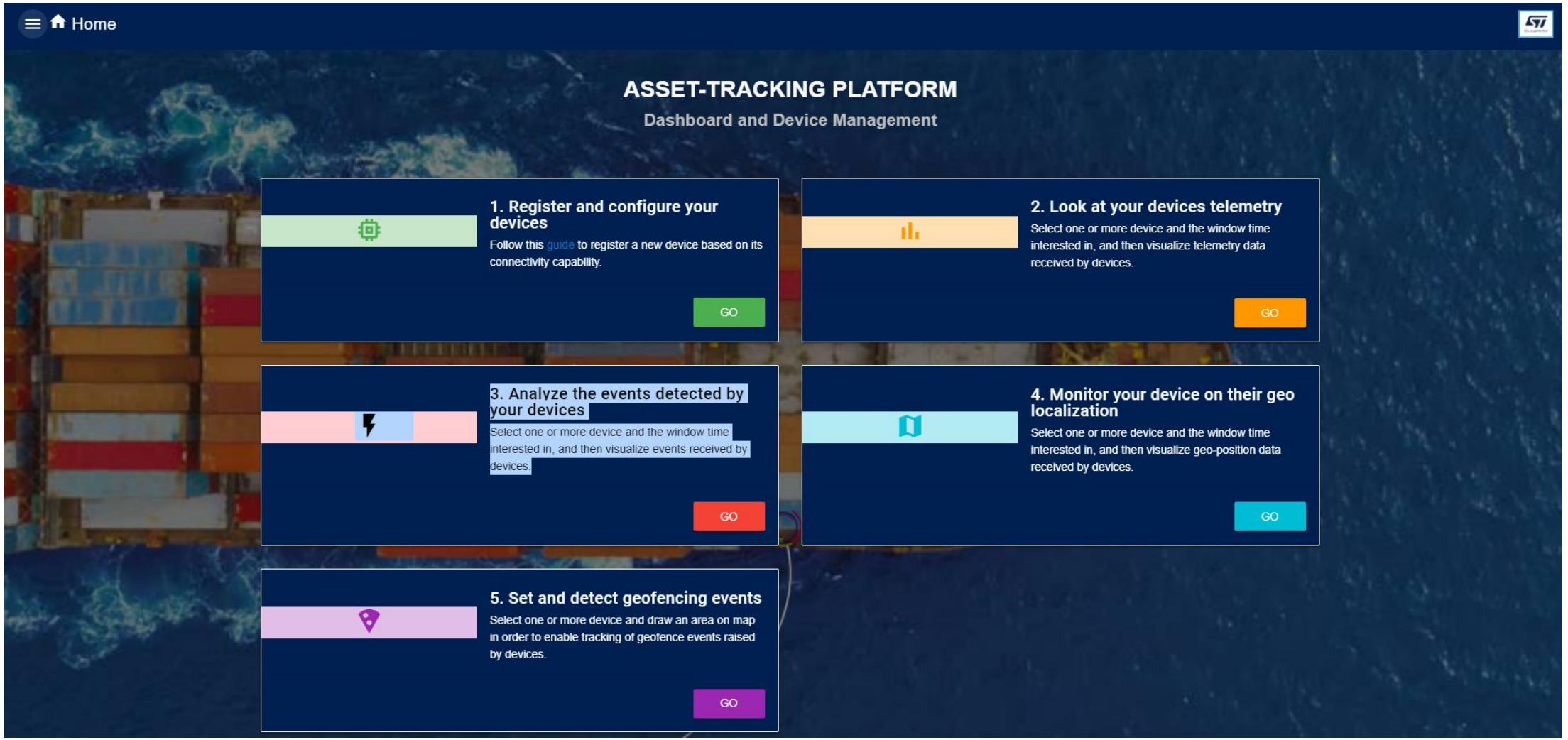
ST asset tracking dashboard



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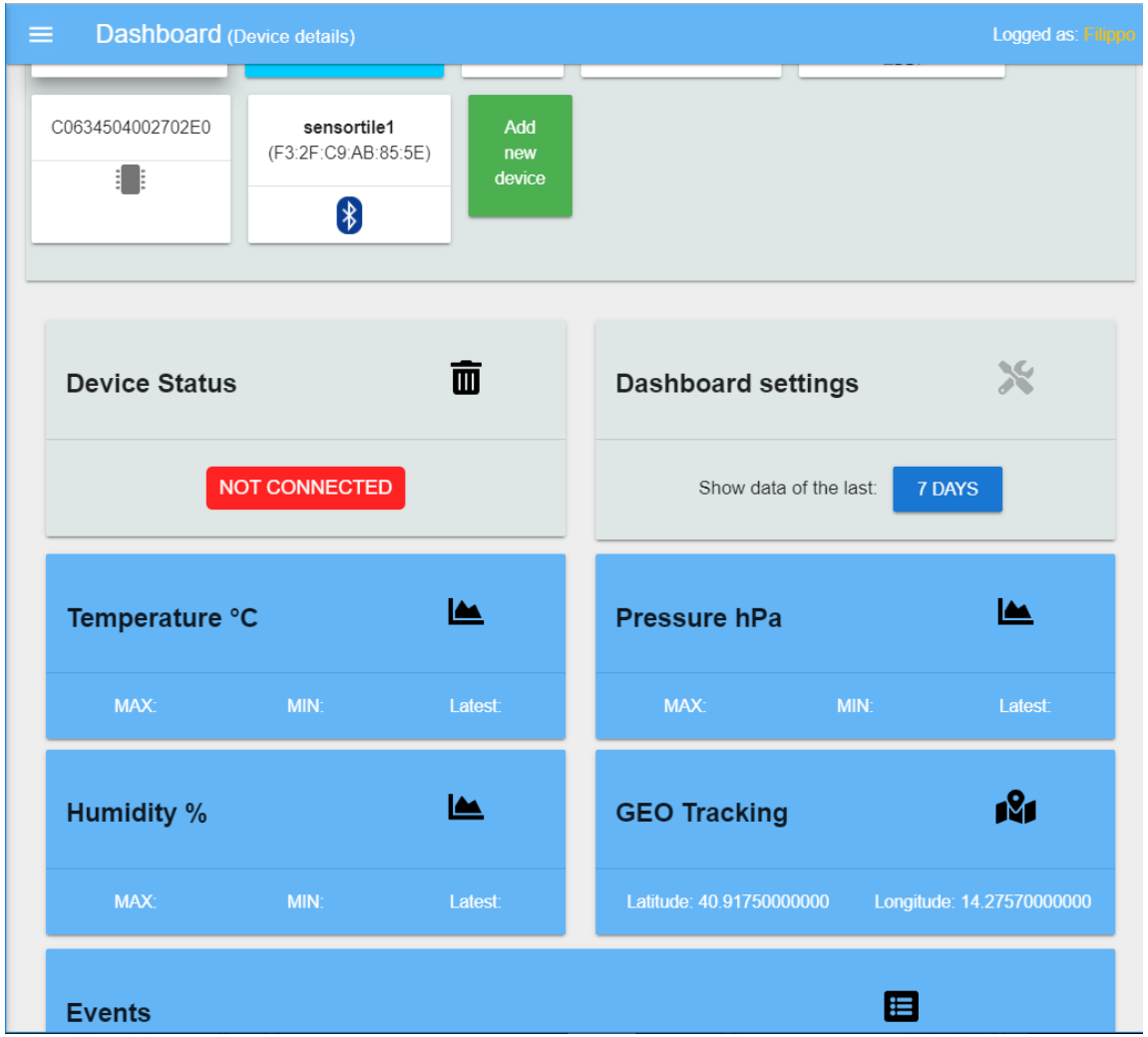
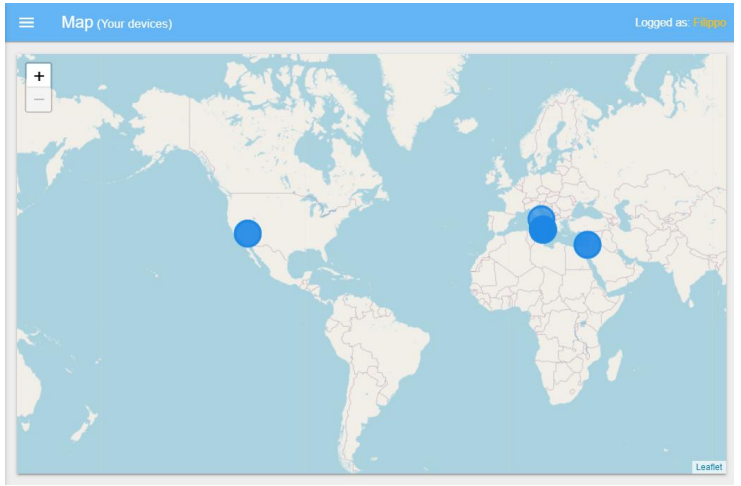
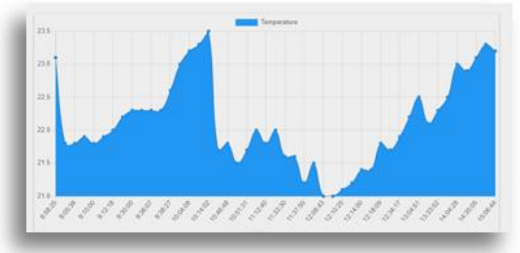
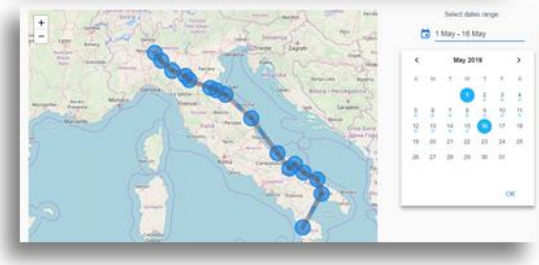
ST asset tracking dashboard





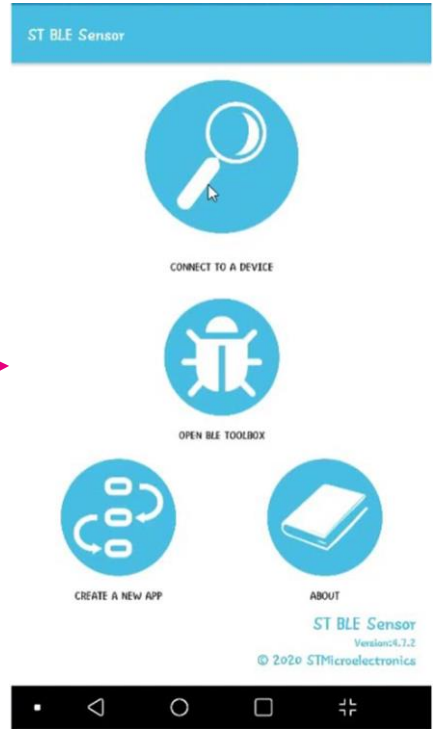


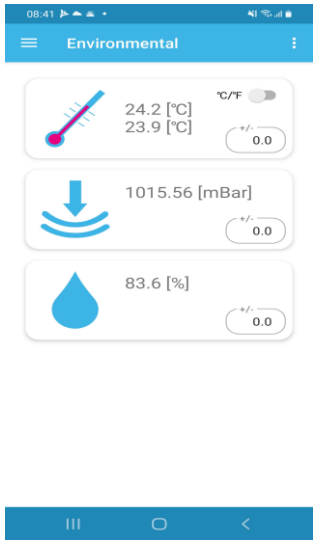


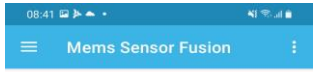
[ST Dashboard]

Demos

ST BLE Sensor App







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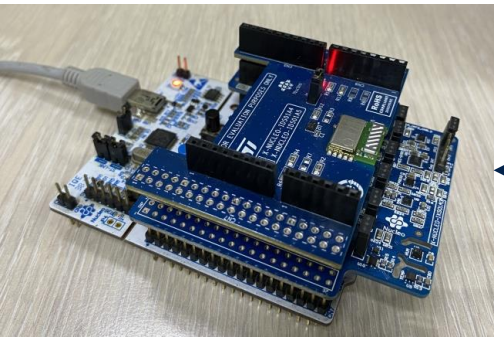
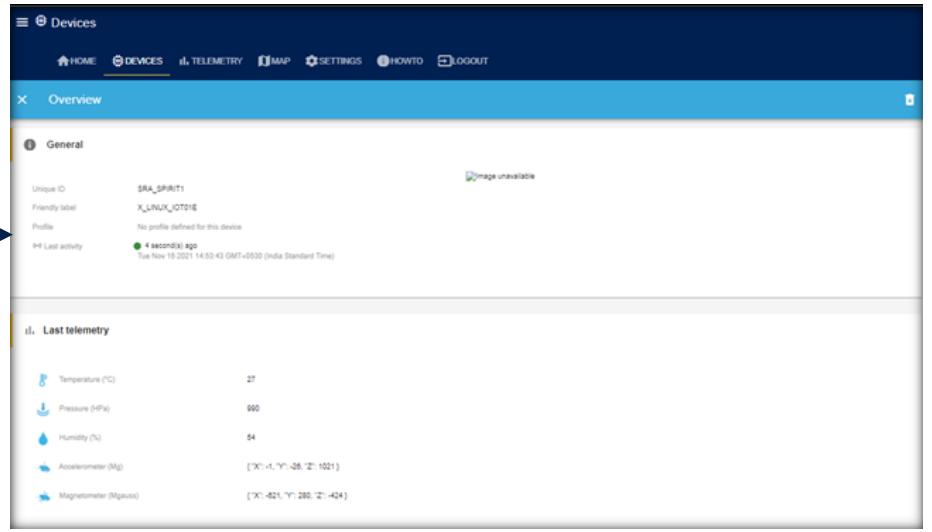
Gateway Demo



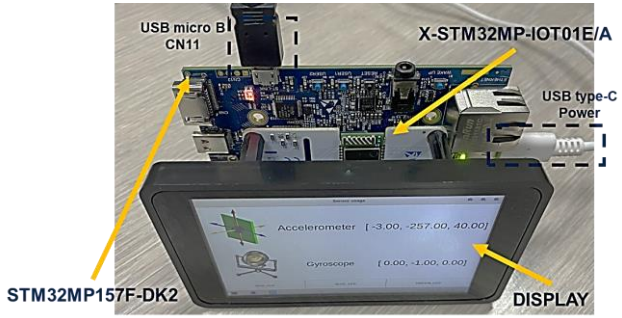
Sub1-GHz

Wi-Fi



Sensor Node

MPU based Gateway



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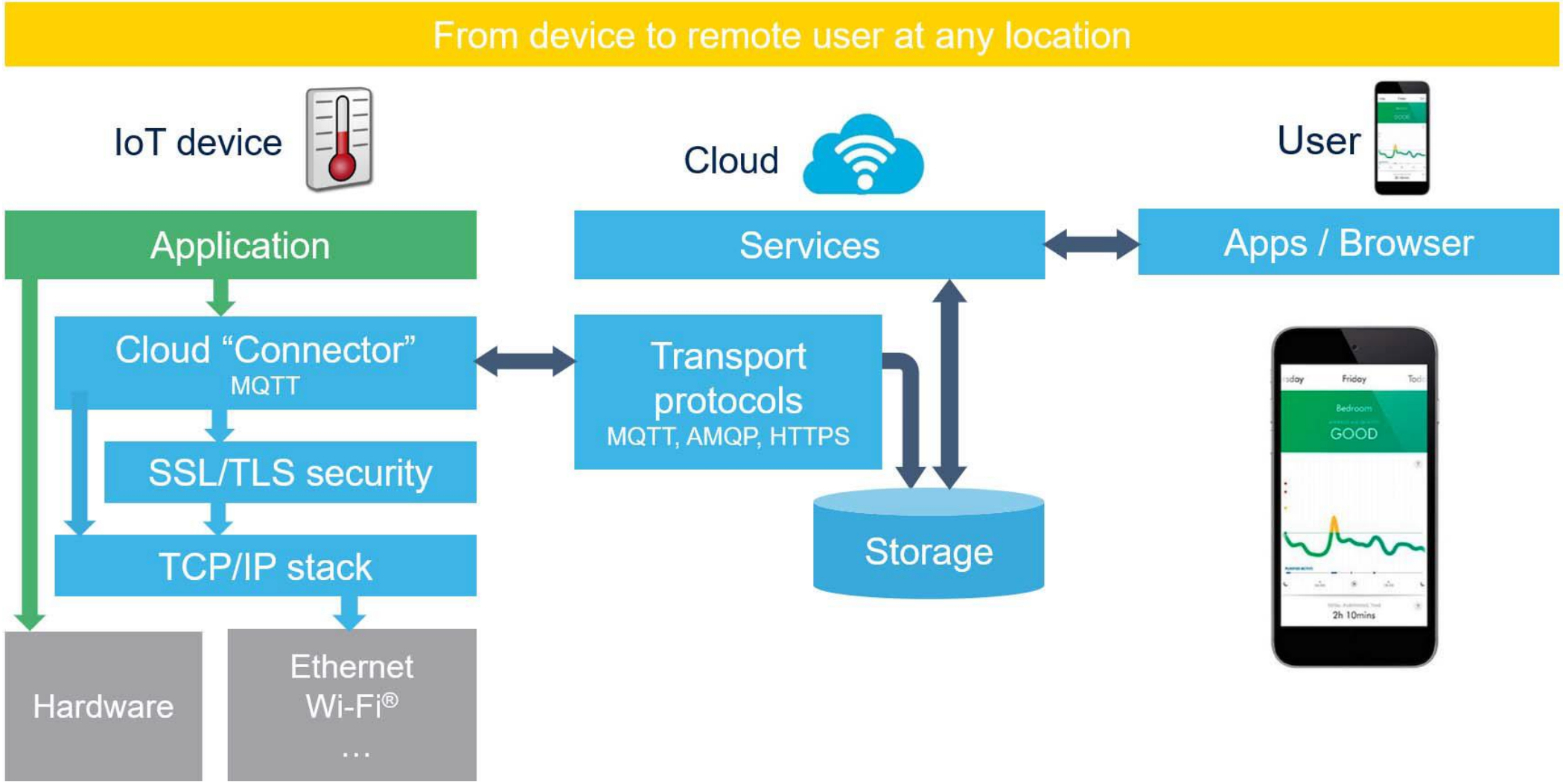
Azure IoT Ecosystem



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