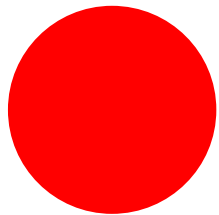
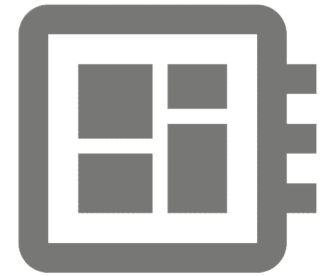
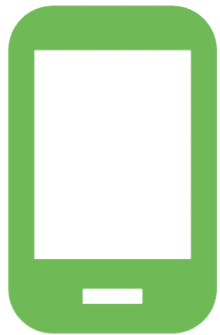


android things



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Ideal for powerful, intelligent devices on the edge that need to be secure.



Cameras

Gateways

HVAC Control

Smart Meters



Point of Sale

Inventory Control

Interactive Ads

Vending Machines



Security Systems

Smart Doorbells

Routers

Energy Monitors

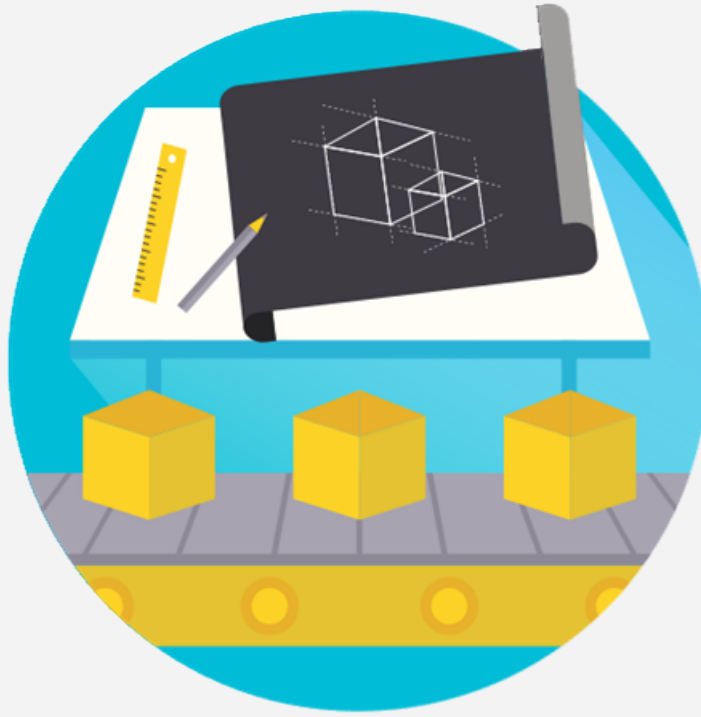


Asset Tracking

Fleet Management

Driver Assist

Predictive Service



From Prototype to Production



Android SDK



Android Studio



Play Services



Firebase



Cloud Platform



IoT Developer
Console



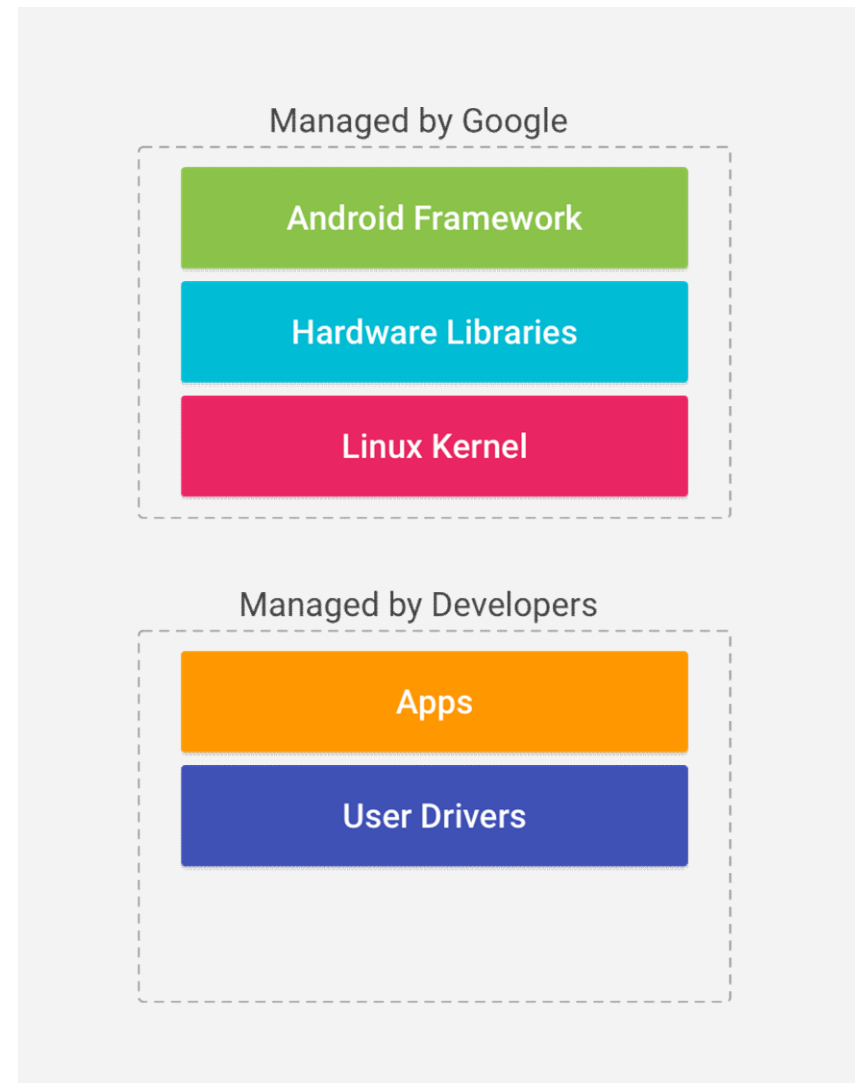
Automatic
Security Updates

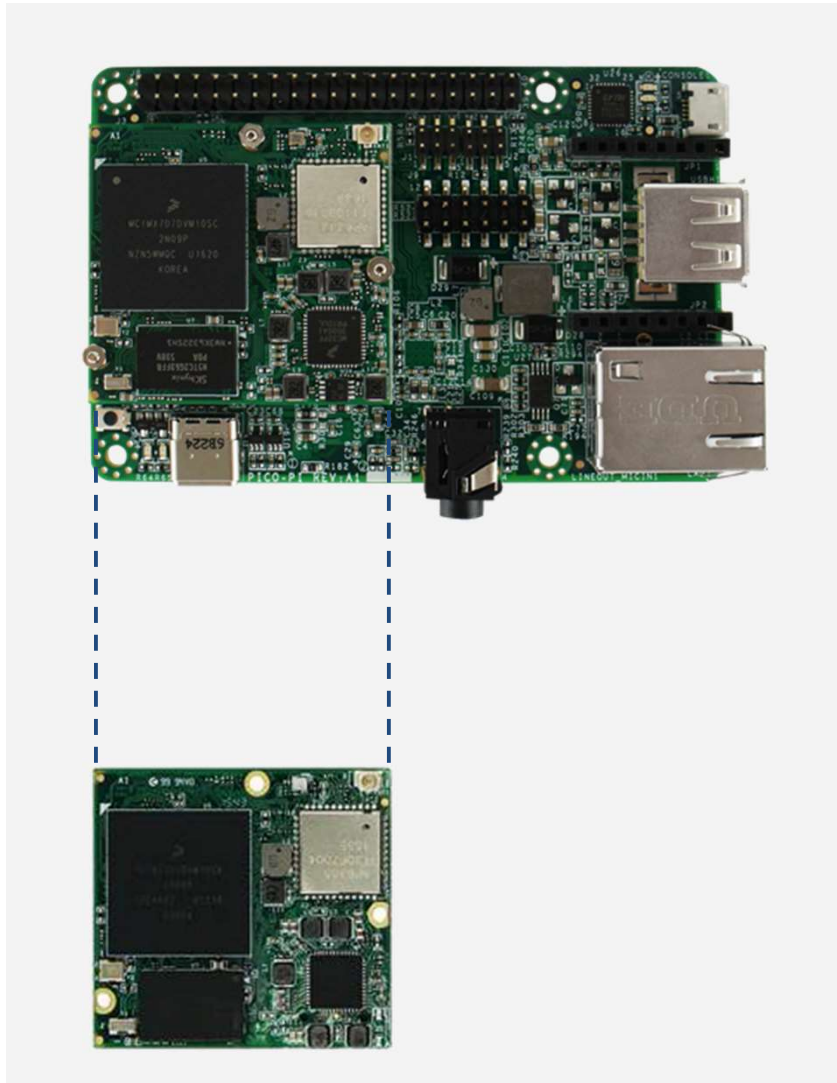


Signed Images



Verified Boot



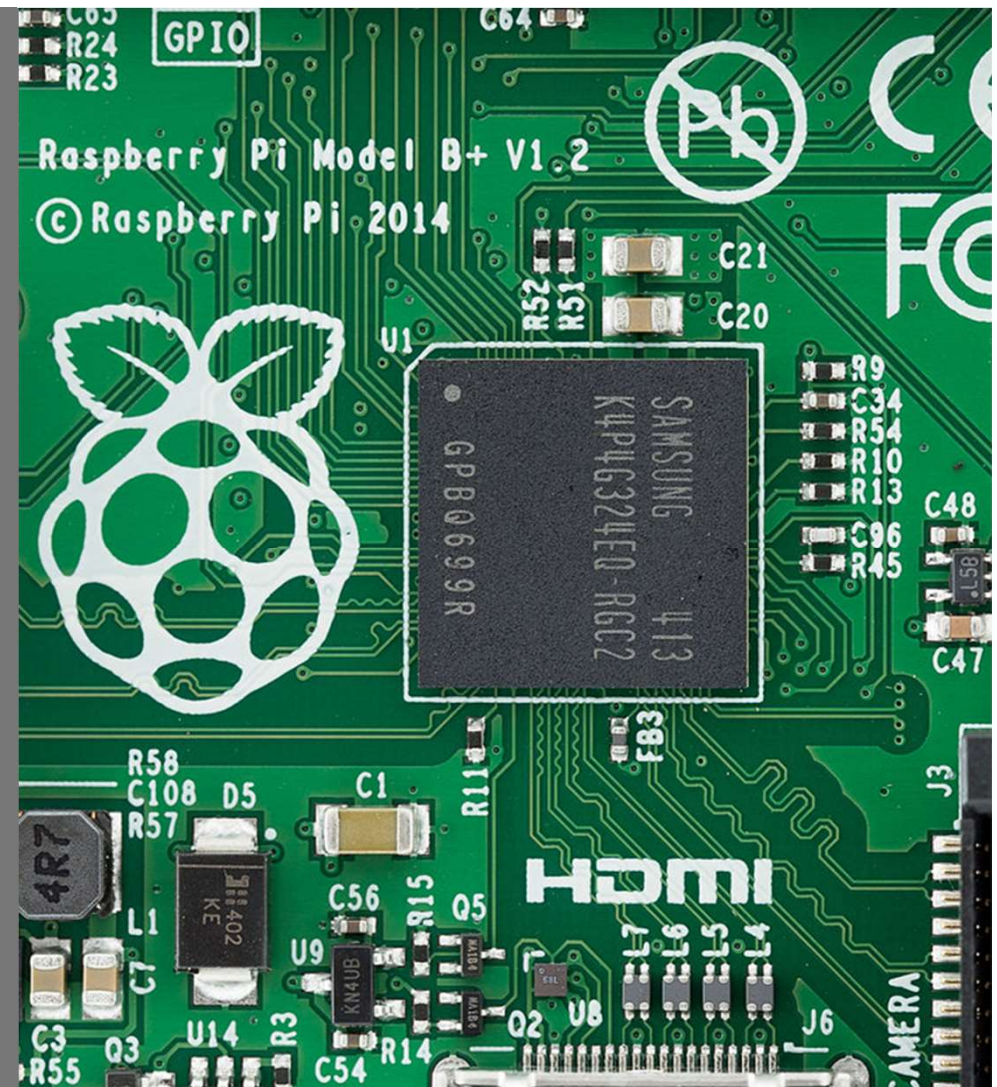


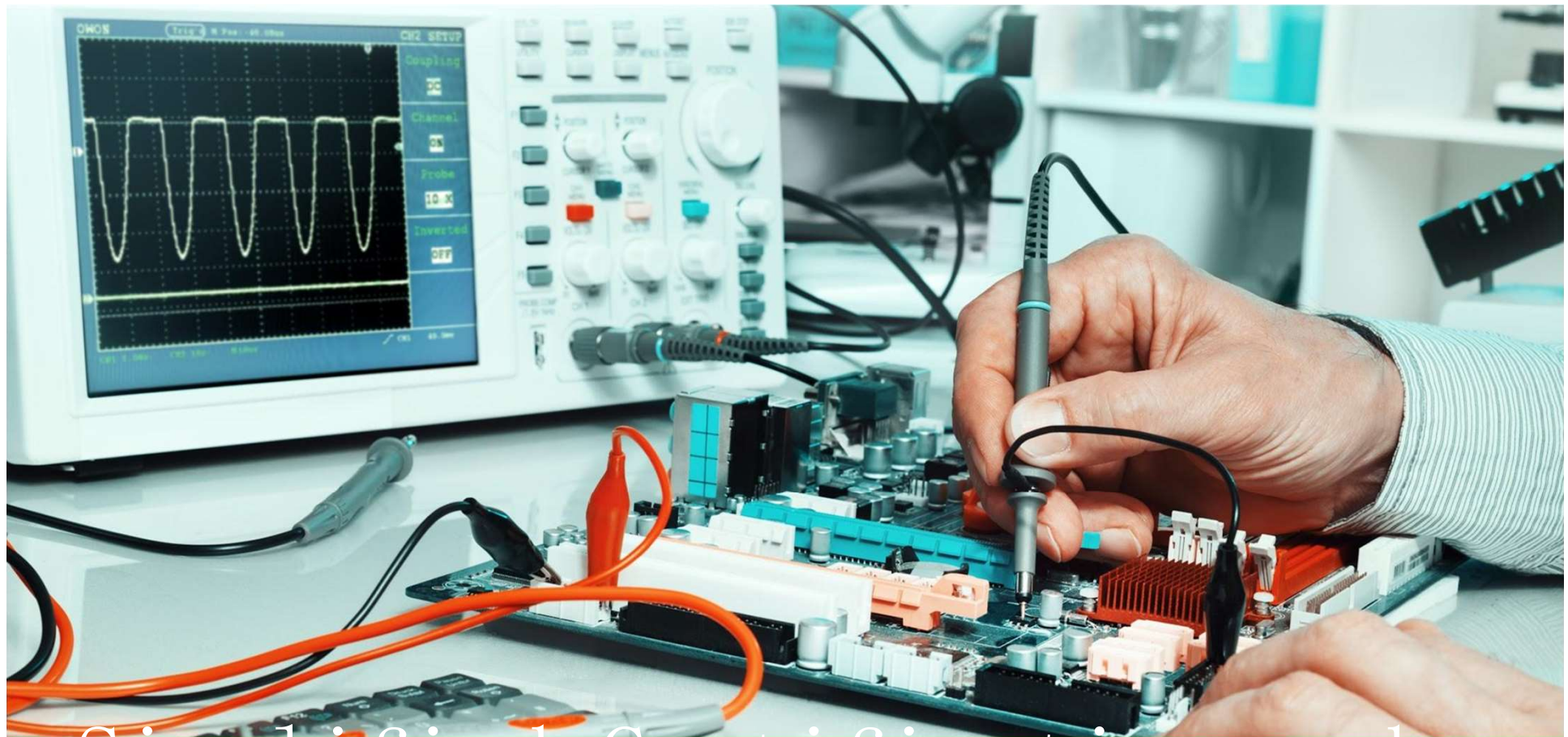
SoM
Architecture



Google Managed
BSP

Hardware is Hard



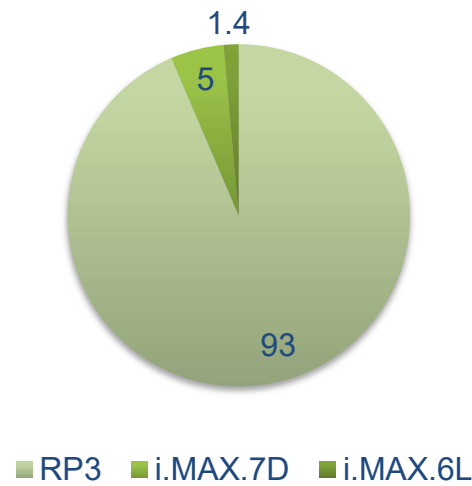


Simplified Certification and
Testing



Develop Time Line

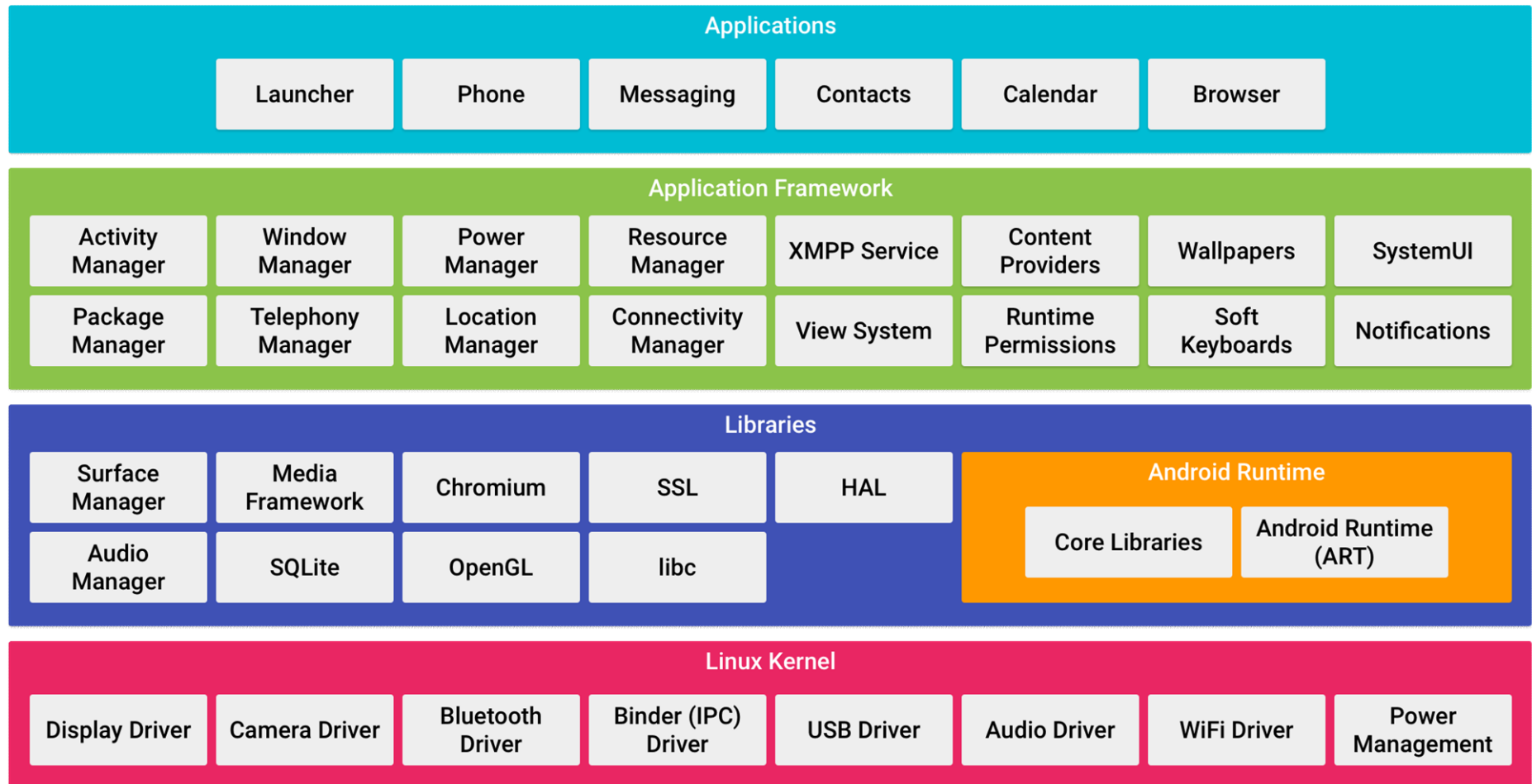
Active User

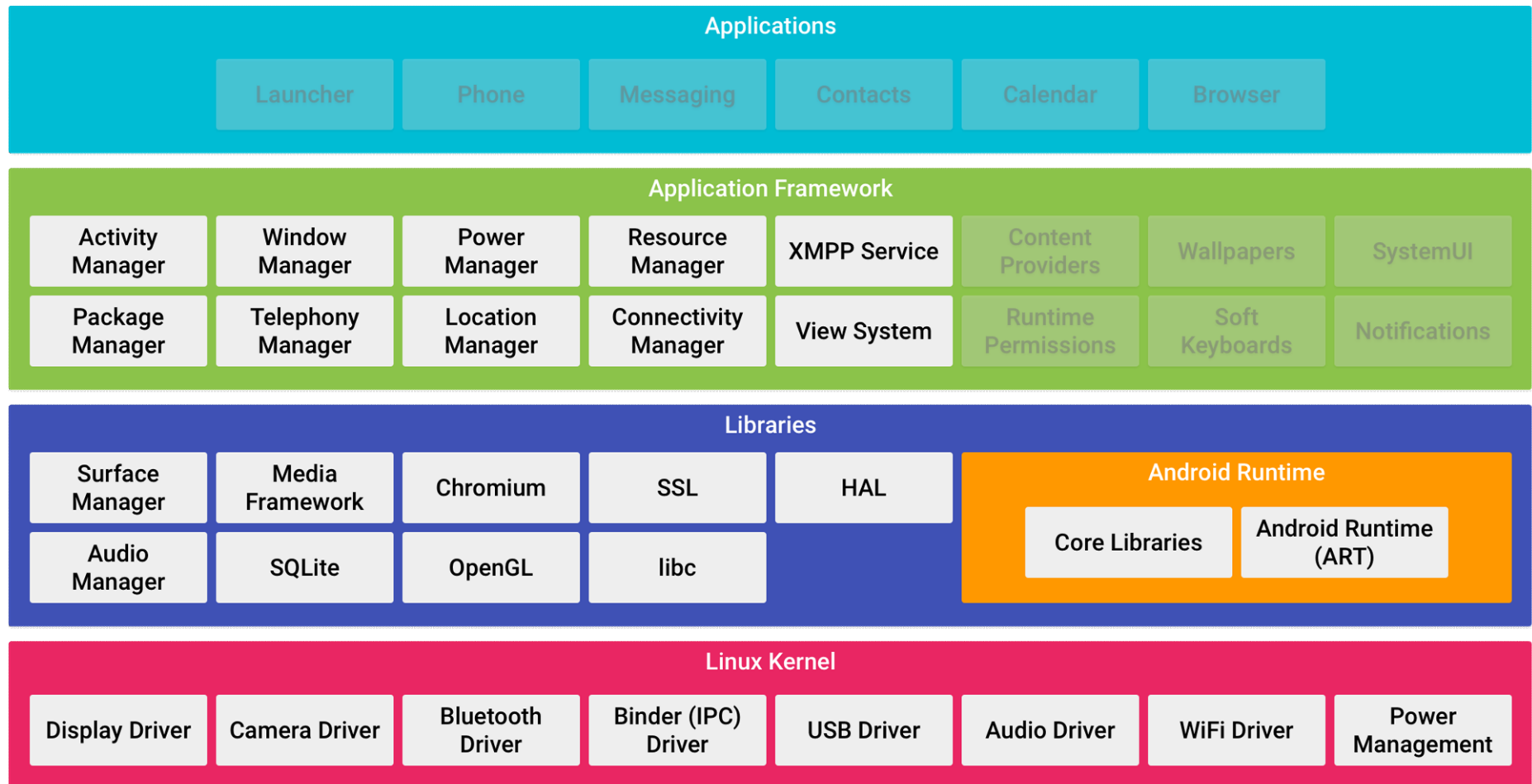


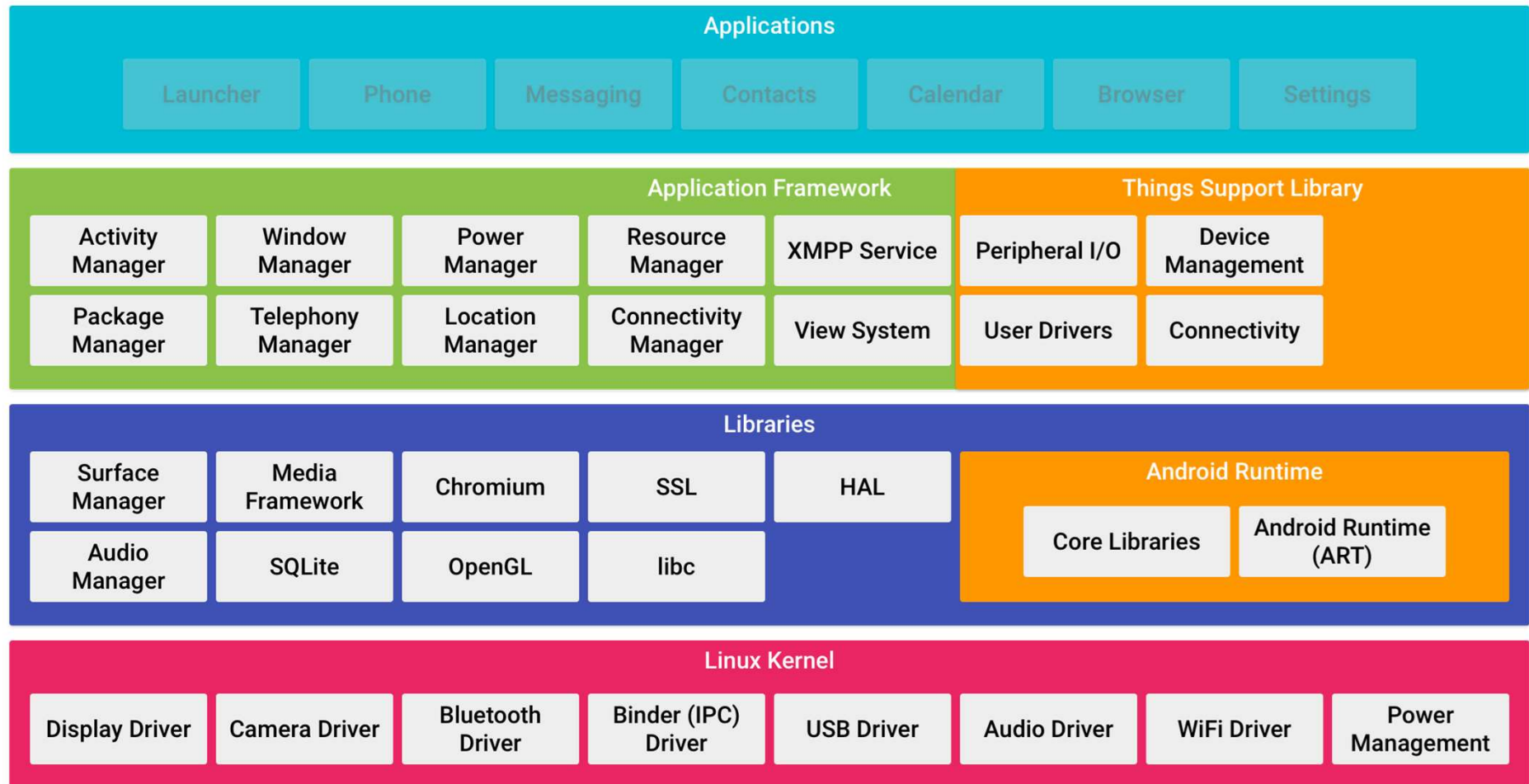
Android Things Daily Active Users



Android Things for Developers









Displays are Optional



Consider Alternate UI



Android Things	Android
Single Activity	Multi Activity
Single App	Multi App
N/A	Dynamic permission Request
Android Things library	N/A
N/A	Simulator

Different from Android

Supported APIs	Unavailable APIs
Awareness	AdMob
Cast	Android Pay
Google Analytics for Firebase	Drive
Firebase Authentication ¹	Firebase App Indexing
Firebase Cloud Messaging (FCM)	Firebase Dynamic Links
Firebase Crash Reporting	Firebase Invites
Firebase Realtime Database	Firebase Notifications
Firebase Remote Config	Play Games
Firebase Storage	Sign-In
Fit	
Instance ID	
Location	
Maps	
Nearby	
Places	
Mobile Vision	
SafetyNet	

Supported Google Service

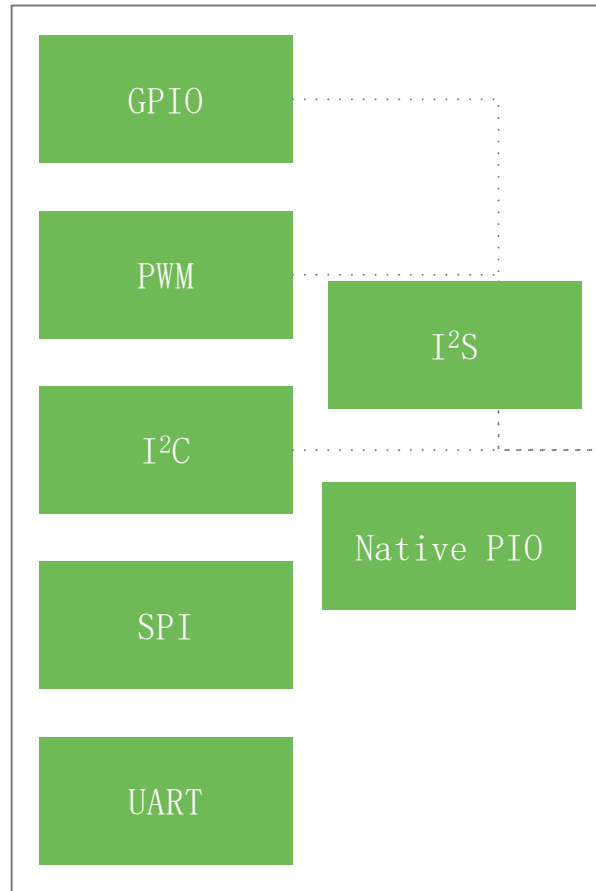
```
<application ...>
  <uses-library android:name="com.google.android.things"/>

  <activity ...>
    ...

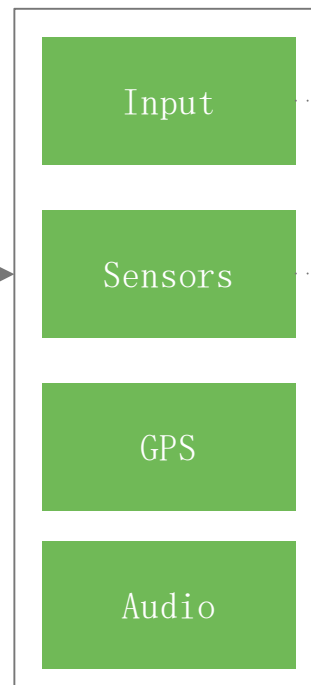
    <!-- Launch activity automatically on boot -->
    <intent-filter>
      <action android:name="android.intent.action.MAIN"/>
      <category android:name="android.intent.category.IOT_LAUNCHER"/>
      <category android:name="android.intent.category.DEFAULT"/>
    </intent-filter>
  </activity>
</application>
```

Home Activity

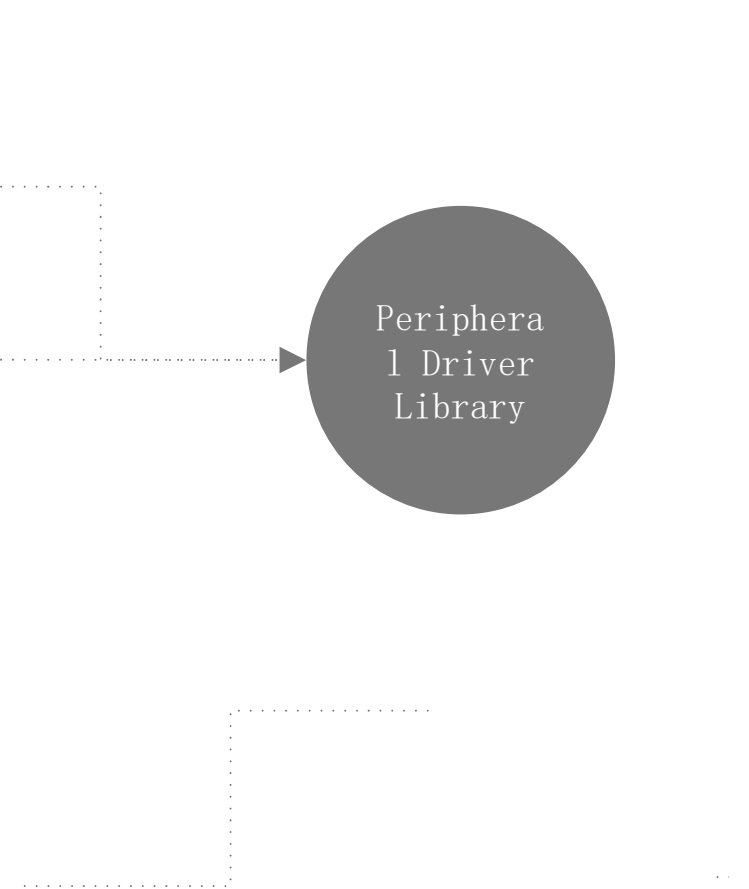
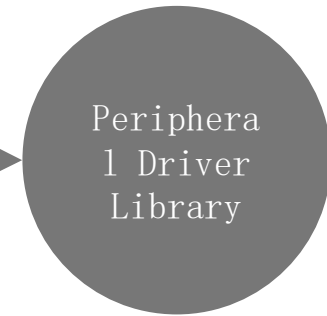
Peripheral I/O



User Drivers



Peripheral Driver Library



```
// Open a peripheral connection
PeripheralManagerService service = new PeripheralManagerService();
Gpio button = service.openGpio(GPIO_PIN_NAME);

// Configure the peripheral
button.setDirection(Gpio.DIRECTION_IN);
button.setEdgeTriggerType(Gpio.EDGE_FALLING);

// Attach callback for input events
button.registerGpioCallback(new GpioCallback() {
    @Override
    public boolean onGpioEdge(Gpio gpio) {
        Log.i(TAG, "GPIO changed");

        // Return true to continue listening to events
        return true;
    }
});
```

Simple Peripheral I/O

```
InputDriver inputDriver = InputDriver.builder(InputDevice.SOURCE_CLASS_BUTTON)
    .setName(DRIVER_NAME)
    .setVersion(DRIVER_VERSION)
    .setKeys(new int[] {KeyEvent.KEYCODE_SPACE})
    .build();
UserDriverManager.getManager().registerInputDriver(inputDriver);
```

```
private GpioCallback callback = new GpioCallback() {
    @Override
    public boolean onGpioEdge(Gpio gpio) {
        int keyAction = gpio.getValue() ?
            KeyEvent.ACTION_DOWN : KeyEvent.ACTION_UP;

        inputDriver.emit(new KeyEvent[] {
            new KeyEvent(keyAction, KeyEvent.KEYCODE_SPACE));
        });

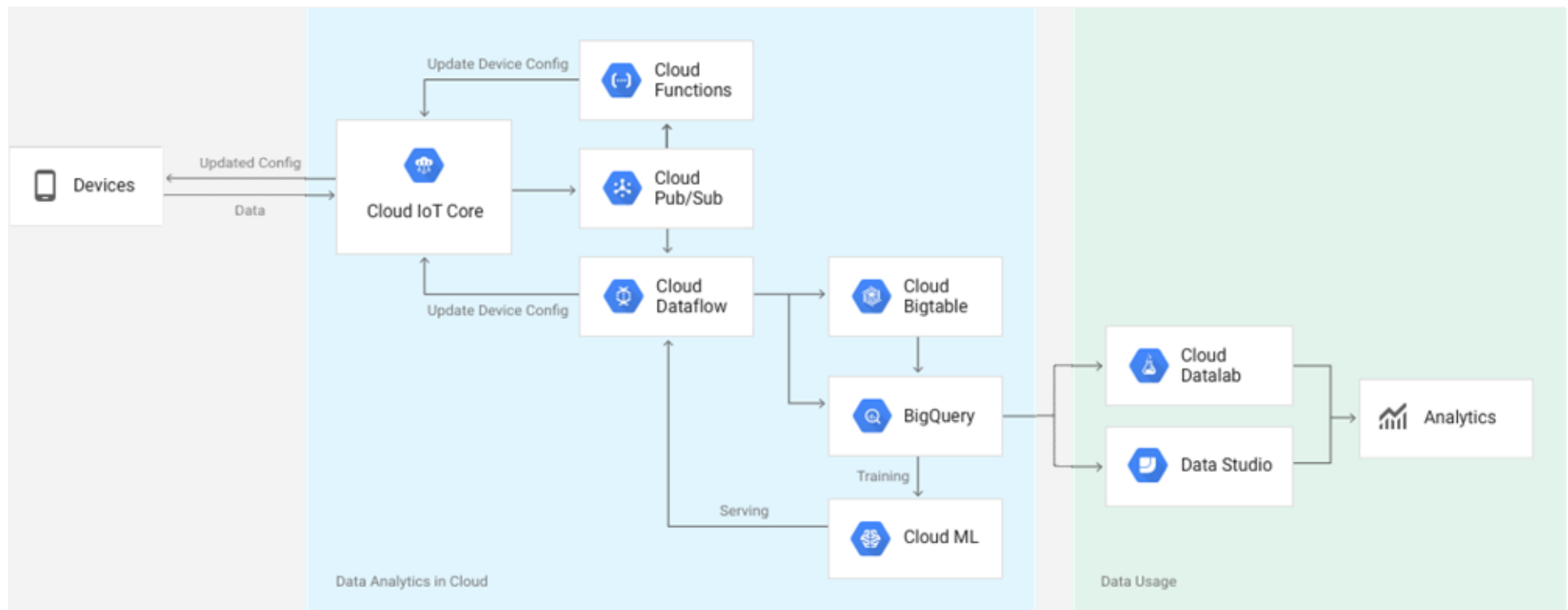
        return true;
    }
};
```

Button User Driver

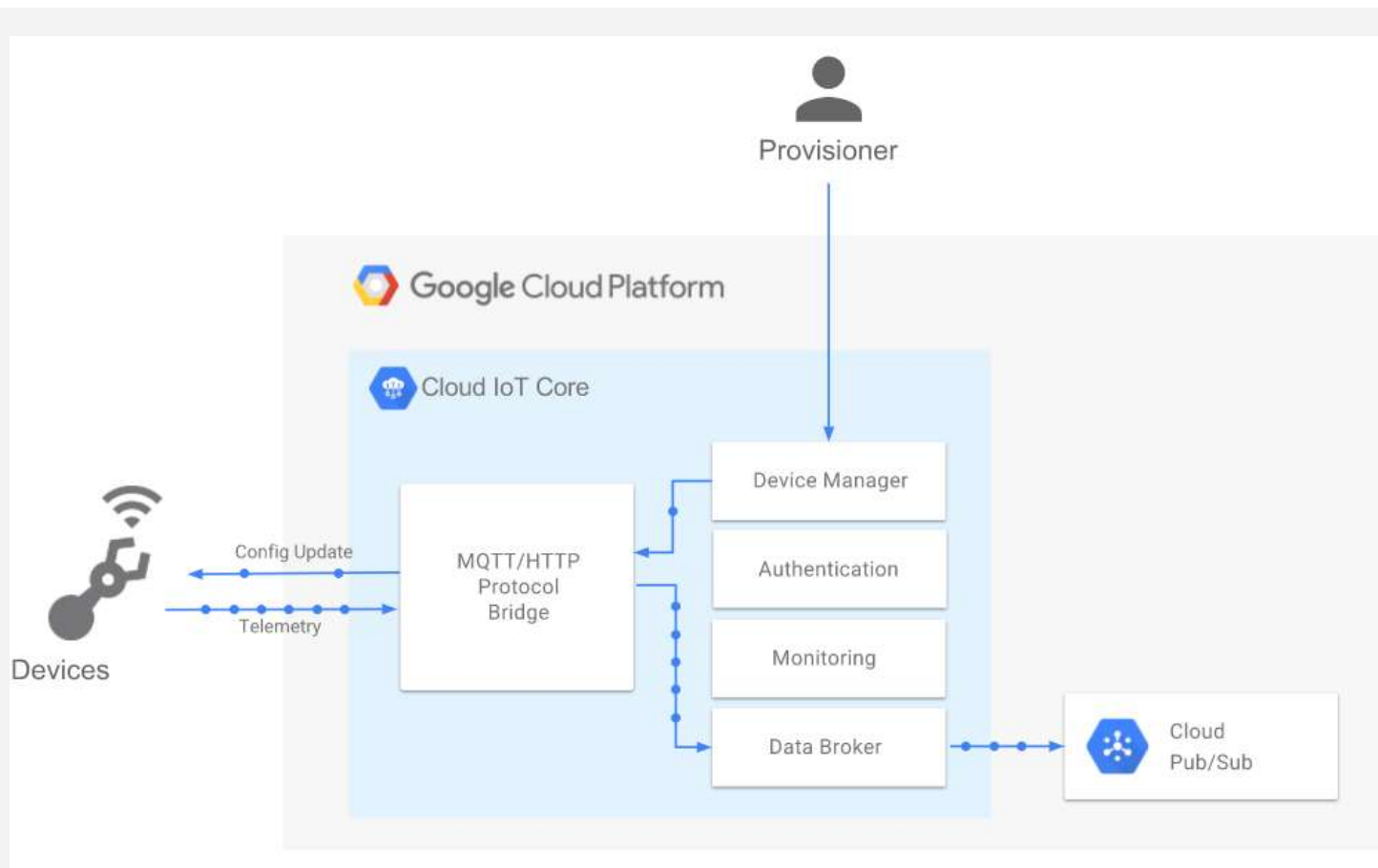
```
dependencies {  
    compile 'com.google.android.things.contrib:driver-button:...'  
}
```

```
ButtonInputDriver inputDriver = new ButtonInputDriver(  
    GPIO_PIN_NAME,  
    Button.LogicState.PRESSED_WHEN_LOW,  
    KeyEvent.KEYCODE_SPACE);  
  
inputDriver.register();
```

Button Library Driver



Cloud IoT Core Beta



Work Flow

androidthings



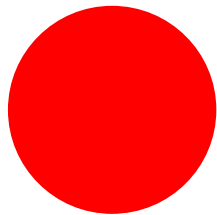
Google's IoT Developers Community
<https://g.co/iotdev>



Google's IoT Solutions
<https://iot.google.com>



Android Things SDK
<https://developer.android.google.cn/things/index.html>



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