**Tools and Technologies**

The tools and technologies we have identified that are needed for the project to be successful are:

* Google Developer Account – this is necessary in order to be able to publish our applications on the Google Play Store, and has a one-time cost of $25 USD registration fee. No additional costs associated with free applications, but for paid applications Google takes 30% of the revenue for distribution partners and operating fees.
* Google Play Console – this is the hub from which we manage everything associated with our project. This program allows us to manage the pre-launch development and access a wide range of tests to ensure the application is as bug-free as possible. It also allows us to manage the application after launch to manage its fees (if it’s a paid application), respond to user responses and more. Another important feature it has is it allows us to integrate maps into our application, which is a fundamental part of our project.
  + Material Design (UI creator) – Material is a Google creation, designed to help teams build high quality user interfaces from a large selection of components for various interfaces.
* Android Studio – this is Google’s official and recommended Integrated Developer Environment (IDE) for developing the code needed to run applications. It has support for multiple programming languages. It also has support for Android Package (APK) analysis to help reduce the file size, and a fast emulator to allow us to simulate running the application on different devices, configurations and features.
  + Languages – the official languages for Android Studio is Java and Kotlin, with additional support for C++, C#, LUA and JavaScript.
  + Software Development Kit (SDK) – this is included in Android Studio and is required for creating applications for Android. It provides a selection of tools required to build Android applications and to allow run on Android devices and access unique features of the Android Operating System (OS).
* Google Maps Platform – this is a set of Application Programming Interfaces (APIs) and SDKs that allows developers to embed Google Maps into their mobile applications. Depending on how the map we embed on our application is used there is a cost associated which can be found here: <https://cloud.google.com/maps-platform/pricing/sheet/>
* GitHub – this is a development platform which allows us to manage a project by creating a repository for it, which will include all the files the project will require including code files, images, any text files that are needed. It is a great place to ensure everything we need for our project is available. It is also free of charge for the most basic purpose.
* Doodly – this is a video creation tool that uses doodle-style art to create an entertaining video for any purpose, in our case it is to create a video to introduce our application and how it will be of great benefit for the users to have. It uses a subscription model for using it, prices are $69/month (enterprise edition) or $480/year (enterprise edition). We looked at the enterprise edition because if we are to launch our project and use the video, made on Doodly, the enterprise version will allow us to use it for money making purposes.

References:

Doodly.com, 2020. *Doodly - Whiteboard Animation Software (Create whiteboard, blackboard, & glassboard videos!)*. [online] Doodly.com. Available at: <https://www.doodly.com/> [Accessed 26 Nov. 2020].

Doodly.com, 2020. *Doodly - Easily Create Whiteboard Doodle Videos In Minutes!*. [online] Doodly.com. Available at: <https://www.doodly.com/pricing/> [Accessed 26 Nov. 2020].

GitHub, 2020. *GitHub: Where the world builds software*. [online] GitHub. Available at: <https://github.com/> [Accessed 26 Nov. 2020].

Google, 2020. *Service fees - Play Console Help*. [online] Support.google.com. Available at: <https://support.google.com/googleplay/android-developer/answer/112622> [Accessed 26 Nov. 2020].

Google, 2020. *How to use Play Console - Play Console Help*. [online] Support.google.com. Available at: <https://support.google.com/googleplay/android-developer/answer/6112435?hl=en> [Accessed 26 Nov. 2020].

Google, 2020. *Google Play Console | Google Play Console*. [online] Play.google.com. Available at: <https://play.google.com/console/about/> [Accessed 26 Nov. 2020].

Google, 2020. *Google Maps Platform FAQ  |  Google Developers*. [online] Google Developers. Available at: <https://developers.google.com/maps/faq#whatis> [Accessed 26 Nov. 2020].

Google, 2020. *Download Android Studio and SDK tools*. [online] Android Developers. Available at: <https://developer.android.com/studio?gclid=CjwKCAiAnvj9BRA4EiwAuUMDf3RdC0DkAsZ4JmItU0YuTq7bZrSin6JMKfEXAdoLW\_L4yNYudMvt9hoC9N4QAvD\_BwE&gclsrc=aw.ds> [Accessed 26 Nov. 2020].

Manifest, T., 2020. *How to Publish an App on Google Play: A Step-by-Step Guide*. [online] Medium. Available at: <https://medium.com/@the\_manifest/how-to-publish-an-app-on-google-play-a-step-by-step-guide-80f9f533e370> [Accessed 26 Nov. 2020].

Anon, 2020. *Material Design*. [online] Material Design. Available at: <https://material.io/design/introduction> [Accessed 26 Nov. 2020].

Sinicki, A., 2020. *Android SDK tutorial for beginners*. [online] Android Authority. Available at: <https://www.androidauthority.com/android-sdk-tutorial-beginners-634376/> [Accessed 26 Nov. 2020].

Siniki, A., 2020. *I want to develop Android apps — What languages should I learn?*. [online] Android Authority. Available at: <https://www.androidauthority.com/develop-android-apps-languages-learn-391008/> [Accessed 26 Nov. 2020].