**Justification of choices**

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# Language for Android app

Options:

* Java
* Kotlin
* C# /Unity/Vuforia

## Java

Pros:

* Familiarity – studied for 2 years and already used in Android Projects
* Used in current Sabisu apps, familiar to the client
* More standard

## Kotlin

Pros:

* Removes a lot of boilerplate code
* Null safety, no more unexpected null pointer exception
* Interoperability between java and kotlin, can use existing Java libraries

Cons:

* Something new to learn, could take up time
* Not much support from people I know

## C#/Unity/Vuforia

Pros:

* Vuforia SDK is meant specifically for AR
* Has the potential to create a very impressive looking app

Cons:

* Would have to learn Android development in Unity
* No support for existing java libraries
* Image recognition is not good for simple shapes
* Possible cost of unity pro

I will be developing the Android app in Java, this is because it is a familiar language to me and I have previous experience of developing for Android in java. Although Kotlin is a viable candidate I think that because it works interchangeably with Java but isn’t fully developed for Android it would result in a mix of languages which could prove to be difficult for both development and maintainability.

The Vuforia plug in for unity was suggested to me by my client. It does allow easy access to the android camera and image recognition capabilities which would help to create an impressive looking application. However, as unity is C# based it would mean that I would be losing out on any of the already developed Android libraries that are available. Furthermore although there is image recognition available it requires a complex shape as a base in order to identify it, so this would not be suitable for the situation my application would be used in.

# Language for admin app

## Server side

### .NET C# with Entity Framework

Pros:

* Familiarity – Would be quick to develop
* Lots of templating from Visual Studio and other tools
* Standard to the client – would fit with their existing infrastructure

### Node.js

Pros:

* Lightweight
* Easy to deploy
* More modern technology
* Already familiar with javascript
* Good for low cpu intensive tasks

Cons:

* Still some things to learn

For the server side language of the web admin application I will be using Node JS. Node JS means that the application will be operating system agnostic so it will work wherever it is deployed. Also as it is only a small application a full .net application would be too heavy.

# IDE for Android App

## Android Studio

* Industry standard IDE
* Fully supported by google
* I have experience in using it

# IDE for .NET applications

## Visual Studio

# IDE for Node.js applications

## Visual Studio

## Visual Studio Code