Tools & Technologies

**Back-end Database Handling:**

The back-end database for our application will be handled by MongoDB. MongoDB is an open-source database developed by MongoDB, Inc. It is a non-SQL database language that stores data in JSON and BSON type documents that can vary in structure. Related information is stored together for fast query access through the MongoDB query language. MongoDB uses dynamic schemas, meaning that you can create records without first defining the structure. The structure of documents can be changed simply by adding new fields or deleting existing ones and documents in a collection do not need to have an identical set of fields. This data model provides the ability to represent hierarchical relationships and complex structures easily. MongoDB is also designed with high availability and scalability, which allows for a flexible database system and future increases in usage. (Ref 1. mongodb.com, *The most popular database for modern apps*, 2020)

The most efficient and cost-effective way to implement database management for our application will be as a cloud service. This will reduce our need to manage and service our own infrastructure (servers, network connections, etc.). To access MongoDB’s cloud service, which is known as MongoDB Atlas, the company charge a monthly fee depending on the level of service we require. There are three different packages available:

1.“Shared” for testing and small-scale implementation.

2. “Dedicated” for medium and large-scale implementations.

3. “Dedicated Multi-Region” for large scale implementations across multiple world regions (countries).

For development, testing and initial implementation of our application the minimum service we would need is the “Shared” package which includes shared CPU and RAM processing. With 5GB of storage the monthly fee is US$25. However, once the application is fully operational and is in use across multiple sites database management would need to be scaled up to cope with increased usage. To access additional services we would need to have the “Dedicated” package which includes dedicated CPU and RAM processing and a minimum of 10GB of storage for US$57 a month. However, fees increase depending on the speed of processing and amount of storage required. Ongoing monitoring and consultation with MondoDB staff will be necessary to ensure the correct level of service is maintained. (Ref 2. mongodb.com/pricing, *Pricing*, 2020)

References:

1. MongoDB. 2020. *The Most Popular Database For Modern Apps*. [online] Available at: <https://www.mongodb.com/> [Accessed 22 November 2020].
2. MongoDB. 2020. *Pricing*. [online] Available at: <https://www.mongodb.com/pricing> [Accessed 22 November 2020].