## Senior Design II - Extra-Credit Assignment I - DEC 1708

We believe there are a number of ways our project could potentially be expanded in the future to create a more scalable and powerful product. As we were developing the application we encountered a few challenges and potential improvements which we deemed to be beyond the scope of the current project but felt could be attainable given more research and development time allocation for a few exciting emerging or growing technologies. We feel these potential project extensions represent not only a natural continuation of our client's project goals but also take advantage of the latest technologies which we feel will empower the next wave of powerful web applications with the support and longevity required for a successful product on a larger scale.

The first technology for consideration is Firebase's latest generation database build with progressive web applications in mind - Cloud Firestore. If implemented, this tool would replace our existing Firebase real-time database with a far more robust but equally responsive and modern NoSQL document database solution designed to sync app data in realtime at a global scale. Like it's predecessor and our current implementation - Cloud Firestore is available with iOS, Android, and web software development support and uses the same powerful real time sync feature that makes Firebase so powerful. However, this second generation data store service is built on a NoSQL foundation rather than using a simple JSON tree and is also built to work with more robust cloud services like Node or Go server implementations which means that services could be distributed and integrated directly with Performance Beef Analytic's backend service providers. This new database would also support more complicated queries within data collections and documents and because these queries are already implemented in as a non-ad hoc solution performance is advertised as remaining consistently low as the dataset size grows. Lastly, because Cloud Firestore integrates with the other Firebase services the cost of this extension could remain low as existing features would not have to be reimplemented.

One other potential project extension which would add a great deal of flexibility and power to our application would be the implementation of a complimentary react-native application for mobile devices. One of the biggest reasons we selected React as the fundamental library for our web application was its support for react native development. React native uses JavaScript source code to compile native applications for iOS and Android devices. This powerful technology allows native applications for both major mobile operating systems and a modern web application all to be developed reusing shared resources and assets. As a result the web application we are building could potentially be ported for publication to the Apple App Store and Android Play Store. This would allow the application to be used by a wider range of users in a wider range of situations and use cases.

Another area of extension we considered implementing but found to be cost prohibitive for this stage of development was the integration of a barcode lookup service for UPC and EAN queries. Because mediation data plays such a large and important part in our application barcode lookup could be an extremely effective way for allowing our users to very quickly add medication data and allow us to pull in additional metadata for analysis. This could improve the my medications user story within our application and also help us minimize malformed or unuseful data by eliminating the need to support user data entry. APIs are available from companies like Barcode Lookup which support web requests. Of course this extension would be dependent on the previously mentioned react-native extension as barcode scanning is most useful on mobile devices.