National Park Map ++ Requirements Summary

Group 22: Omar Salas, Brian Goldenberg, Harsh Gupta, Emmanuel Utomi

The National Park Map ++ will contain many use cases and requirements for those use cases. There will be use cases for the general application, which includes the national park map selections and the navigation, path generation throughout the park, and the crucial emergency notifier and locator system.

The main use cases involve the object selection on the screen, like selecting an animal or lake, path request/generation, and notification/emergency request of a park ranger. The object selection will allow the tourists to click on an object on the screen, the application retrieves all the information that is stored on the database about that object, and returns that for the user to see. The path request/generation is more complex in the fact that they are separate requests because the request utilizes the backend system to get all possible paths with the given starting and ending locations in the park. On the other hand, path generation is a complex algorithm which the backend must execute due to its running-time. Finally, the emergency notification and locator system has many parts that are crucial. Sending a notification to all park rangers, handling if they accept or reject, and sending a notification of the emergency to all park tourists.

Even though we have established the use cases for the application, we made sure to have good requirements to accompany the use cases. There are functional requirements to ensure that certain actions take place like re-notifying the park rangers when they fail to accept the emergency request, or ensuring that the backend system is the one to generate the list of paths (and not the application) since it can be computationally demanding. Likewise, data and performance requirements must be strict since we deal with complex algorithms and lots of data. An important performance requirement is that the path generation must be quick; so, there is a data requirement that generated paths must be memoized so that future requests which are similar don’t have to be recomputed.

In addition, there are a number of dependability requirements that have been put in place for our application. Data is transmitted from local devices to the network of cloud servers. These cloud servers are load balanced, in order to effectively sort traffic so that no specific endpoint is overwhelmed with requests. The cloud services are fulfilled by AWS, which boasts a 99.9% uptime. Consolidating our data into cloud services allows individual devices to maintain their own unique state, which corroborates data with the cloud. The application data remains consistent across these devices, as they rely on the presence of the remote server. Nevertheless, in the scenario that a local device is unable to contact the remote server, the local device will retain all necessary data to be uploaded upon the next successful connection to the cloud.

There are also a number of security requirements that are mandated within our document. There is a first time agreement that must be acknowledged and accepted by every logged in user. Likewise, there is also a recurring notice upon launching various activities of the application.

The reality of administering an application that interfaces with wildlife, there will be unpredictable and spontaneous situations. This disclaimer will remind the user to utilize their best discretion and safety during use. In the unfortunate event that a person(s) is injured in a national park, there are plenty of emergency tools to utilize.

Integrity of the application is achieved through multiple ways. Users location will not be stored and any information that is stored will not be released to third parties. To ensure data is not corrupted or incorrect initial national park data will be inputted by the developers of the application and all other user inputted can be verified as to whether it is correct by other users. All data that is stored will be told to the user when they first start using the app. If any other information is necessary the user will be notified and approval is necessary. This will help ensure the users privacy is being held as a priority. Audits will be held on a quarterly basis by the test team to ensure that data and the application are correct. Finally, to ensure the immunity of the application, the app will run on high grade servers with anti virus and other security measures in place. The servers must also be guaranteed to be working 99.999 percent of the time.

The usability and humanity requirement is essential to the user experience. Our goal of this application is to ensure that anyone can use it regardless of their background. We achieve this by having an intuitive UI. Someone who is using the application for the first time should be able to navigate the application without any prior knowledge of National Parks. The UI also needs to be simple and not cluttered with information. By doing this we're ensuring users who are returning to the app will be able to remember how to do certain actions within the application. Users will also have the option to select one of five of the most common languages spoken to allow easier navigation throughout the app. Finally, users with visual impairments have the option to select whether they would like on screen text to be read out loud to them by their phone. This ensures users who are visually imparied will be able to access the app.

The look and feel of the app is essential to how we want users to feel when using it. The application must be designed with a national park tourist in mind. Therefore, the UI should appeal to national park tourists and enthusiasts. Aspects of national parks should be seen throughout the application. On top of this, the UI should also be simple and clean with each menu option specific to one operation within the app. Ensuring ease of use. The application must also inspire adventure. The UI should appear to invite people to explore national parks and make users use the app to its full potential.

The Operational and Environmental Requirements is a major part of the product providing the detailed requirements about the use of the product. Physical requirements will mostly consist of providing users with seamless navigation systems throughout the park along with directions to various places. The product will have a major reliance on third-party apps for various options like emergency providers, restaurants, places to visit and it's essential to have these integrations within the product. The product will be a free to download application on app store / play store or the client (Park Authorities) can decide to keep it for their parks only. But it will be modular, providing installing instructions along with how to use the application guide.

The release requirements are a very important aspect of the product keeping in mind various changes and updates to parks, hence it will be upto the discretion of the developers but an estimate would be a monthly release.

The Cultural and Political requirements don't affect this product to that extent, we would need to keep in mind to adhere to all the cultural boundaries and not try to provoke any communities. The users and client both would be responsible for meeting this requirement and the surveys and feedback forms will provide any issues being faced. Legal requirements are there to protect the user and the client from getting into any legal matters, and to meet those requirements we would not try to store any data that is not required for the functioning of the app efficiently like medical data, rather we would redirect those to third-party apps which exist for the sole purposes. Overall each requirement must have met all its acceptance tests before the product is released to ensure efficient and better use of the product.