***Functional Specification Contents***

## ***0. Table of contents***

*A table of contents with pages numbers indicated for all sections / headings should be included.*

## ***1. Introduction***

***1.1 Overview***

*Provides a brief overview of the system / product to be developed. It should include a description of the need for the system, briefly describe its functions and explain how it will work with other systems (if appropriate).*

The project is based on the Mini Mental State Exam (MMSE). The MMSE is a 30-point questionnaire which is used in clinical and research practices to measure cognitive impairment in patients, also in medicine to screen for dementia. The purpose of the exam is to accurately estimate the severity and rate of progression of cognitive impairment in a patient and to also follow the course of changes in the patient over time. The way in which the exam is administered now is with pen and paper. We plan to modernize this and make it into an application to be used in the aforementioned fields. It will allow the medical professional to administer the test or if the patient is competent enough they could take it themselves and then hand the device back to medical professional. This would reduce the time needed to carry out the exam and would speed up the getting of results as the app would be able to do this and return the result to the medical professional.

***1.2 Business Context***

*Provides an overview of the business organization sponsoring the development of this system / product or in which the system / product will / could be deployed. Note - may not be applicable to all projects*

Our project could deployed in numerous hospital and medical practices in which this test is carried out. As we know, technology is ever present in our lives and we are moving towards a world which takes advantage of this. Hospitals and other sectors are also doing this so our app would allow for easier storing of results of the test as it would eliminate the need for paper records as we would able to link results to a patient using an ID of some sort, easier administration of the test as the patient may be able to do it themselves or the medical professional can tap or type the answer and faster processing of results as the back end of our application would be able to process the answers given and return the results.

***1.3 Glossary***

*Define and technical terms used in this document. Only include those with which the reader may not be familiar.*

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## ***2. General Description***

***2.1 Product / System Functions***

*Describes the general functionality of the system / product.*

This is a list of the main function we wish to include in our project, this is only a first round list and functions can be added or removed later. Each function will be described in detail in the 3rd section of this document.

* Login System for Medical Professionals
* Store Results
* Graph Results
* Predict Progression of Impairment
* Questionnaire
* Process Results
* View Previous Results

***2.2 User Characteristics and Objectives***

*Describes the features of the user community, including their expected expertise with software systems and the application domain. Explain the objectives and requirements for the system from the user's perspective. It may include a "wish list" of desirable characteristics, along with more feasible solutions that are in line with the business objectives.*

Since we initially plan on having our application be web based it will be available to use on any device that is able to access a web browser within the hospital or medical practice that the staff can use and log in on.

The User Interface of the application will be clean and user friendly as we don’t want to add any stress to the user. The colors we use will be neutral and not too aggressive as to upset the users. We will make sure the font is easy to read and use a big size as not to strain the eyes.

The other side of the application will only be accessible by the medical professional and will be where they can see the previous results of test and also be able to see the graph of the progression of the impairment. We then aim to be able to predict how fast the progression will move in the future. We are still looking into ways to make sure the process is as accurate as possible.

If everything goes to plan we also want to port our apps to Android and iOS platforms this would allow for easier access to the application one either an Android tablet or an iPad depending on the resources available in the medical practice.

***2.3 Operational Scenarios***

*This section should describe a set of scenarios that illustrate, from the user's perspective, what will be experienced when utilizing the system under various situations.*

*In the article Inquiry-Based Requirements Analysis (IEEE Software, March 1994), scenarios are defined as follows:*

*In the broad sense, a scenario is simply a proposed specific use of the system. More specifically, a scenario is a description of one or more end-to-end transactions involving the required system and its environment. Scenarios can be documented in different ways, depending up on the level of detail needed. The simplest form is a use case, which consists merely of a short description with a number attached. More detailed forms are called scripts.*

There are three main scenarios of our application. Our scenarios involve the carrying out of the test on a patient, viewing the old test results and patient records and predicting the progression of the impairment

* **Carrying out the test:**

This is the main functionality of our idea. Right now when the medical professional or whoever is carrying out the test it is done with a pen and paper. This can be slow and frustrating. This method means the medical professional needs to have a physical copy of the test to use each time the test is carried out and if the test is done a number of times for tracking purposes then this can be cumbersome. With our idea the test would be readily available on an electronic device to be used over and over without the need for a physical copy. It will be in a user friendly format presenting one question at a time as to not overload the UI with information.

* **Viewing old test results:**

The medical professional in charge of specific patients may need to go back and see old results or the patient may be referred to someone else and they need to see the results so we plan to have a database to store these records. This eliminates the need for having to dig through files to find the old results as they will be linked to a specific patient and member of staff allowing for quick access to all results in one easy place. We also plan to have each result for a patient added to a graph for an easy to view visual representation.

* **Predicting the progression:**

Another use case of our project would be to use it to predict how fast the progression of the impairment is. We would use previous results and the time between the tests in order to track how fast/slow it is. This could help with prescribing different types of treatment or providing different levels of care to certain patients.

***2.4 Constraints***

*Lists general constraints placed upon the design team, including speed requirements, industry protocols, hardware platforms, and so forth.*

## ***3. Functional Requirements***

*This section lists the functional requirements in ranked order. Functional requirements describes the possible effects of a software system, in other words, what the system must accomplish. Other kinds of requirements (such as interface requirements, performance requirements, or reliability requirements) describe how the system accomplishes its functional requirements.*

*As an example, each functional requirement could be specified in a format similar to the following:*

* ***Description -*** *A full description of the requirement.*
* ***Criticality -*** *Describes how essential this requirement is to the overall system.*
* ***Technical issues -*** *Describes any design or implementation issues involved in satisfying this requirement.*
* ***Dependencies with other requirements -*** *Describes interactions with other requirements.*
* ***Others as appropriate***

## ***4. System Architecture***

*This section describes a high-level overview of the anticipated system architecture showing the distribution functions across (potential) system modules. Architectural components that are reused or 3rd party should be highlighted.*

## ***5. High-Level Design***

*This section should set out the high-level design of the system. It should include one or more system models showing the relationship between system components and the systems and its environment. These might be object-models, DFD, etc.*

## ***6. Preliminary Schedule***

*This section provides an initial version of the project plan, including the major tasks to be accomplished, their interdependencies, and their tentative start/stop dates. The plan also includes information on hardware, software, and wetware resource requirements. The project plan should be accompanied by one or more PERT or GANTT charts.*

## ***7. Appendices***

*Specifies other useful information for understanding the requirements.*

* <https://www.ncbi.nlm.nih.gov/projects/gap/cgi-bin/GetPdf.cgi?id=phd001525.1> This describes in detail each section of the MMSE.

Our application will have to have a clean and easy to use interface to allow the patients to feel comfortable using it. There will also be a UI only accessible by the medical professional using their staff ID which will be where we store the results of previous tests and graph the estimated progression of the cognitive impairment.

The other side of the UI will the questionnaire itself, we will have the question laid out cleanly and use and nice and easy to read font. This is to make the app as easy to use and as stress free as we don’t want to upset the patient.