

Project Specification Submitted by
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Final Year Project Specification

Digital Media Project

Supervisor: **Alan Hind**

Project title: **NHS MoveNet Database**

Overview

The Movement Disorder service at The James Cook University Hospital provides care for 800 people living with Parkinson's disease (PD). The team includes neurologists, specialist nurses, physiotherapists, occupational therapists and speech and language therapists. Patients are seen either at James Cook University Hospital or in the community and are provided with a multi-disciplinary service of a very high quality.

They have requested Martin and myself working alongside the South Tees Trust, The trusts partners in the Pharmaceutical industry and leading Parkinson's charities, to develop the **NHS MoveNet database** to improve patient service, helping them to meet their aspirations for an efficient, high quality end product (online database) with enhanced audit and research capabilities.

Once in place, this Database will not only improve efficiency and productivity within the clinical service, it will also allow them an enhanced use of their audit and to develop a safe, high quality service.

Motivation and Rationale

Firstly I would like to make it clear that this is a joint live venture between myself and Martin Kleis. Our rationale for taking on this project stems from a smaller project that Martin and I were asked to do during our second term at Teesside University.

Both Martin and I were approached by a Lecturer at Teesside and asked if we would be interested in developing an intranet web site (Walker 2015) for the NHS at James Cook

Hospital, it was an offer that we both considered to be very interesting and perhaps lucrative down the road or future reference as demonstrated after Dr Neil Archibald, who is to be our main contact and **“head Consultant Neurologist”** at James Cook presented our work at a conference in London to an audience of over 2000 of his peers.

The feedback from the conference was very positive and it would seem most people were very impressed with the web site and its abilities, which is to allow hospital staff to be able to assess possible Parkinson’s sufferers who come into the out patients department, with or without family members thinking they may be a Parkinson’s sufferer.

As of now there are no guidelines to follow and a lot of potential PD patients are misdiagnosed and of course given the wrong advice, which means follow-ups can be costly and time consuming. The website is a set of instructions for staff to follow “to the letter” and designed by Dr Neil Archibald.

After his success at the conference in London, Martin and I had another meeting with Dr Archibald at the University to discuss the progress, and it was here that he brought up his intentions and needs for a database to be used for patient input during Dr/Patient sessions, because as of now it is just a bunch of notes and scribbling’s.

A light bulb came on in my head and it said, “Why don’t you ask him if we could design that database for you”, which I did, my thoughts were “This could be an excellent dissertation project” for Martin and myself, and to my surprise, Dr Archibald agreed to allow us to develop and design his database.

Area of Investigation

The **NHS MoveNet Database** will be created using MySQL as a backend and online database, it will utilize JSON, JQuery, AJAX and HTML5 (Hadlock, 2006) to display it on the NHS Trust’s servers. Initial areas of investigation will be Data Modelling (Letkowski, 2012) and Large Data Schemas as needed for this project. The database will be complex and containing at least 8 tables with various degrees of normalization, at this point the tables and structures are ongoing and will undoubtedly change as we progress.

The database will consist of detailed areas such as Patient Demographics, Next Of Kin Demographics, General Practitioner details, Medications needed, both motor syndrome and non-motor syndrome categories. It will contain detailed areas of information collected such as, Tremor, Gait, Stiffness, Balance, Medical History, Sleep, Vision, Bladder Symptoms and Bowel Activity.

Background Research

Since acknowledging our commitment to this project, I have researched many resources including websites books and journals identifying the need for healthcare database usage amongst patient and Dr Interaction, after being invited to sit in as an observer for an actual Dr/Patient session, I have found that at this time it is an area that needs to be addressed.

The main areas that I would need to research are data modelling, Database usage within the NHS, and any guidelines that may be in place within the NHS as well as some online technologies such as JSON, JQuery which will allow me to show the database online and to make changes to.

Literature Review

- 1) My first **journal** review (Managing Data in Healthcare Information Systems, 2015) covers the area of the need for large data bases within the healthcare system and also various frameworks that can be used to store the data.
- 2) Fundamental Database design (Doing database design with MySQL, 2012) is important when choosing the type of database used as there are many, this **journal** points out the pros and cons of all databases available.
- 3) New web technologies are making it easier and more secure (Ajax for Web Application Developers, Hadlock, 2006) to display online databases, this **book** describes how to display detailed personal information within a database in a secure manner.
- 4) Understanding how to create a database with many tables and to be able to connect all tables using “Data modeling” (Williams, 2009) gives examples on how to begin the design procedure and the questions you need to ask yourself on why these tables need to connect.
- 5) Management Disorder Team (Walker, 2015) is a **website** designed by myself and Martin to enable Parkinson’s hospital staff to use as a guideline for potential PD outpatients. It provides a very precise set of guidelines to questions answered.
- 6) Legal-and-ethical-issues-in-web-design (Paul, 2012) Provides guidelines which are widely regarded as the international standard for web accessibility, these help to make the web accessible to people with disabilities – because if **websites** are badly designed and accessibility issues not thought through, they can create barriers that can exclude people from using the web.

7) Understanding how to create a database with many tables and to be able to connect all tables using “Data modeling” (The Requirement is a Database for Hospitals and Patients, Barry 2009) gives examples on how to begin the design procedure.

Methodology

Database modelling or attempting to design a large database as we are doing is an ever changing environment whilst being designed, simply because of the tables relationships with one another, so because of this fact the structure of each individual table will almost always change during construction it is advisable that I choose an **Agile** approach to the methodology used.

1) Conceptual database design

Construct a model of the information used, independent of all physical considerations.

2) Logical database design

Construct a model of the information used, based on a specific data model (e.g. Relational), but independent of a particular DBMS and other physical considerations.

3) Physical database design

Produce a description of the implementation of the DB on secondary storage; it describes the storage structures and access methods used to achieve efficient access to the data.

Persona

Since I have the basic outline of the forms to be used for the initial questionnaire used for potential PD patients, I feel that it is my duty to promote the addition of questions that were omitted. My research into PD has led me to a new article on the BBC (Quigley, 2015) about a woman in Australia who detected a change in smell from her husband.

One in 500 people in the UK has Parkinson's - that is 127,000 across Britain. It can leave people struggling to walk, speak and sleep. There is no cure and no definitive diagnostic test.

Joy Milne was tested by researchers to see if she could detect people with Parkinson's through a tell-tale odour.

Joy noticed something had changed with her husband long before he was diagnosed - six years before. She says: "His smell changed and it seemed difficult to describe. It wasn't all of a sudden. It was very subtle - a musky smell.

Project Deliverables

The scale and size of this project is far too big and complex to deliver a finished product, given that our dissertation needs to be handed in on March 16th 2015 and so it has been agreed by all parties that this project will be delivered as a **Prototype** as to the University's guidelines.

We also intend to fully implement the complete project within a 12 month time frame, design the core areas of the **prototype** database ready for build. This will include design documentation for a detailed database model or schema.

Delegated Responsibilities

These responsibilities were based upon our strongest skills already known to the both of us and below is an outline of our duties.

Stephen Walker – Project Developer

Main responsibilities are creating from scratch a MySQL database schema or model that will reflect the online user forms to be submitted by the health care consultant. The online forms have also to be created, taking into account the need for use on all hand held devices. I will also add the ability to view the database itself online with the addition of the database to be “filterable” or the ability for the user to search for a specific item or field within the database.

Martin Kleis – Project Manager

Main responsibilities are to be administrative tasks such as Client Liaison, All legal issues that may or may not arise, the drawing up of our important contract with the client, Risk Management, Time Management and estimations. Martin also has the task of monitoring and reporting any and all progress to the client to the University and his co-worker.

Joint Responsibilities

Both martin and I have various responsibilities including Health Care Guidelines on the use of an online database within the NHS, Database design, Parkinson's research, Resource Planning and Quality control.

Ethical Implications

For this project there are some obvious ethical issues concerning Dr/Patient private interviews, and patient data although in this case all data to be used in our prototype will be “Dummy Data”.

We will however, take into consideration the NHS and UK Legislation including adhering to the **Caldicott** Review.

Project Plan and Schedule

Below shows a basic outline of how we will manage the tasks, we have divided our project into.

Research will include a half day at the Hospital observing both doctor and patient behavioral activities in how they conduct the manual collation of information used at present, this will enable us to have a more accurate understanding of time management.

Although the schedule shows the report commencing 28 Feb 16, this will be the final edition of the report as a diary of events. Information collation will be adopted throughout the module in order to have a more precise reporting method for final submission.

When the report has been completed, there will be approximately 10,000 words which do not include the appendices.

Due to other modules running at the same time as this project, I am sure that some of these schedules and deadlines will not be met and so are very flexible.

Use **control+click** on image below to open gant chart.

NHS MoveNet Database	October				November			
	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Project Plan and Schedule								
Specification								
Project Proposal								
Draw up Contract								
Research								
data Modelling								
Jquery								
JSON								
Market Research								
Design of Database								
Conceptual Design								
Logical Design								
Physical Design								
Initial Testing								
Online Build								
Responsive Data Tables								
Responsive Web Site								
Online Form								
Test/Evaluate								
Launch								

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