**Introduction**

This proposal is requested by Robert Sutcliffe to identify all the parties involved in the project, to identify the processes, tools and methodologies to plan, design and implement the project system. The proposal is due on the 22nd July 2016.

**Executive Summary**

This report looks at the proposed plans to build Database simulator. The proposal looks at the personnel involved with the project, the purpose of the project, the available methodologies to build the website, the client requirements, the planning and management approaches to build the website, the costs and risks involved within the project and the project deliverables with their due dates.

The projects main aim is to produce a simulator that diagnose and check the basic implementation parameters of SQL Server Instance and Database. The database simulator will target all version of SQL Server starting with SQL Server 2008 and SQL Server 2012. Older version of SQL servers are not supported by this simulator.

The project will run under the Software Engineering methodology, which will produce a high quality product and has no associated costs or risks in the implementation of the methodology.

The project has several management controls built in, this is to minimise the risk areas and improve the quality of the product. There are the standard advisor meetings, timecard, diaries and audits. Also change request controls and a methodology are used to control the processes used to develop and change the project.

Simulator will be developed by using Microsoft Visual Studio and SQL Server Express. The website development tool will be the wordpress with mysql. Customer can download the simulator from website and upload the file to website so it will be diagnose later. This tool is free to download and use which means there is no real risk and negligible downloading costs.

The execution will have three phases, download simulator from webpage, execute simulator against client system, Upload simulator file to website.

The website will have webpage to describe and help customer to understand how to download and execute the simulator. It will also help customer to upload the simulator file and get the final result from database expert side.

Website will allowing the users to share the experience of the website and simulator.

**Opportunity Context**

The team need to do a project as part of their degree programme where team needs to find a suitable project client, to develop a solution to meet the client’s requirements to fulfil their project. Team can also suggest their own project which is approved by Robert. If it’s suggested by team then they need to clarify why they want to do this project with strong justification and what will be skill and technology used?

Database simulator project is suggested by one of the project team member. So this project is not completely rely on any client. Because of this scope and requirement of the project will be decided by team members in beginning and as per this they want to build the database simulator which can be executed by any client and fits in any client requirement to gather and evaluate the implementation of SQL Server and database. Project team will develop their own website to promote their product and register clients will download the simulator and upload the results.

However the project team want to attract clients who has implemented SQL server in their infrastructure and want to know the implementation risk and verify the configuration of databases and SQL Server. The biggest opportunity with this project are first client can simply see what are missing parameters in exiting implementation and second if they have large number of SQL Server instances to be audited then it’s very easy by this tool.

**Project Requirements**

The project team’s requirements are 400 hours of work each of the project member. The project will be due on the 4nd of November 2016.

Team has identify the core requirement of the project and divided into main below categories.

SQL Server Instance

1. Installation

2. Configuration

3. Security

SQL Server Database

1. Implementation of Database (physical structure)

2. Database Configuration Options

3. Maintenance

4. Security

Database simulator can download and execute against the client system. Simulator will create one dump file which contains the current information of all above areas of client system. This information will later verify, checked and final report will be generated.

From Project team perspective, they want a light weight and small simulator which can run on client system and gather all the information which we needs to be audited. Team also need website from where client can download the simulator as well as upload and download the result. Website will also help customer to know the how to use the simulator.

The client’s requirements from the project will be a website that is fully functional, highly polished and links the irreverent careers test to currently available WelTec courses.

The project development teams perspective is that they want a successful outcome, namely a website that is functional, delivers the required material with efficiency and flair.

**Project Analysis**

The team is composed of a Database Specialist, a Web Developer, a Programmer and a certified Project Manager.

The Database Specialist is experienced in handling and administering Microsoft SQL Server that is why it is the target RDBMS of the project. With his skills we are confident to produce a Database Evaluation tool that is up to standards.

Given that the target RDBMS is a Microsoft Product, the Database Evaluator will be built using a Microsoft product as well. In this case, the team’s Programmer will have to adjust and learn how to program Windows Desktop applications using C#. Visual Studio already has some tools to make the GUI of Desktop applications easier so this will aid the programmer.

The product website will be built using PHP, Wordpress and mySQL. Many websites are built using the said technologies so finding references to aid in the web development would be easier. Also, Wordpress, being a CMS tool, has a lot of Plugins and Themes that just needs to be imported to use. These plugins will make the web designing much easier. It also has plugins for E-Commerce which is something that the team wants to implement on the site. Lastly, the Web Developer in the team has experience developing websites using the said technologies so they are the logical choice in this case.

For Source Code and Document Management, GitHub will be used to keep track of code and document changes and updates. This is quite easy to use even for first time users given that there is GitHub Desktop for easy upload. Viber is also being used for the team’s means of communicating. A group chat was initiated and ideas, links etc. are being shared through it.

The website needs to be built visually which gives the development team several website development kits to use. The kits are drag and drop with a language specific builder and compiler built in. There are java, visual basic, C#, PHP and other website development kits around.

The development teams programming background is heavily java based. Therefore a java website development kit is the logical choice. Also factoring into the website kit decision is the development teams experience with NetBeans Ides’. The Team will be better served using a familiar IDE than having to use and understand a new IDE.

The website will need to be a highly polished product to reach its full potential of pulling in teenagers into an irreverent test to presenting possible careers and information on WelTec courses relevant to the potential career or interest area.

Grabbing a teenagers attention is one challenge, keeping their attention is another and the most difficult. The website will need graphics, sounds and irreverence to ask mostly crude, rude or weird questions with a few important career questions in between.

The tests should be irreverent, fun and informative as well as a portal to the WelTec course website. The tests should discretely ask the users details to subscribe to possible courses that interest them and to return their test results.

One idea given to the project team is to find a digital media student to do the graphics for the website. This would help polish the product as a digital media student would be able to produce high quality graphics and implement them easily.

However the biggest risk is that a digital media student is not available. To mitigate this risk the project team can focus on the website development and leave the graphics till either a digital media student is available or another team picks up the project and adds in the graphics.

Methodology selection and implementation will pose a challenge. There aren’t many standard, well-known and used web development methodologies. The biggest challenge is to find a methodology that can be applied to our project, will be practical and will aid in the development of the careers website.

Research into an appropriate methodology, will need to be conducted to find out the available methodologies, their strengths, weaknesses, practicality and viability. The methodology will need to be to produce robust websites with a minimum of effort.

Research into suitable website development methodologies has been conducted. The research uncovered few methodologies that could be used to create the website.

The first methodology has no given name and is an object orientated, software engineering based approach. The methodology looks at building CRC cards, analysis classes, use cases, state charts and transition diagrams.

The first methodology starts with obtaining the system requirements and existing use cases to illustrate the problem domain. An analysis class diagram is then produced to map out the system. After the analysis diagram is produced, CRC cards, state charts and class diagrams are formed to further map the system in detail.

The data produced from the system mapping is then put into a design document and the developers use the design document to build the system. The system is tested and debugged as well as a maintenance plan created to handle the systems upgrades, improvements or continued operations.

The main benefits of this methodology are that is has a large-scale plan behind the system. The system will be defined by the analyses, diagrams and CRC cards, which will help, begin to build the system.

The main drawbacks are that, the time spent on the planning, leaves less time for building the system and the planning doesn’t quite allow for audience target research to be fitted into the planning stages.

The second methodology is called HTML prototyping and agile development. The methodology is similar to the software engineering version of the prototyping model. A prototype website is built, tested, analysed and refined to build an improved version.

This particular methodology looks to cut down on paper work by scaling back on formal planning practices. The methodology works on a client and developer meeting, forming a small plan on paper and then letting the developers begin prototypes as soon as possible.

Once a prototype is built it is tested and analysed to find flaws, improvements or additional changes. The first few prototypes are accepted as crude and rough. The primary principal of this methodology is that, each prototype after the first will be a refinement on the last prototype. Also the work done for each prototype is kept for future use or improvements.

The main benefits of this methodology are that it allows for a more practical programming approach, it caters for mistakes and using flawed prototypes to build a refined and polished system. The cut back in the amount of paperwork is a half benefit, half deficit area the paperwork debt is reduced at the cost of more work.

The main drawbacks are that, the lack of paperwork means the developers have less material evidence to persuade clients who want to see tangible plans, the time spent building several models is large and the developers must be able to produce strong code with documentation, as well as readily anticipating and accommodating changes.

The third methodology is called web engineering (Web E). This methodology is an amalgamation of multiple IT planning and development disciplines.

Web E starts by creating a context analysis to define the clients, the clients requirements and the websites functionality for the short, medium and long term.

Once a context analysis is compiled, the website contents needs to be researched and planned to identify the information resources, the ongoing information evolution and a frequency schedule for updating information.

The developers will then look for existing websites, similar to the developing site and form an estimated traffic plan. The traffic plan is used to handle peak and off-peak traffic demands.

A project plan is then formed and executed to develop the website. The project plan is highly detailed to describe the layout of the website, the pages in the site, the functionality and each requirement is given one or many fulfilment parameters.

Once the site has been developed, tested, debugged and refined a maintenance plan is made. The maintenance plan will cover the updating of information and the implementation of evolutions and improvements.

The main benefits of Web E is that it is a multi disciplined approach, it has strong planning phases to clearly map the website design and the approach allows for research into the websites contents to increase the effectiveness of the website.

**System Outline**

The project team will follow a methodology to build a robust website and database simulator,

The website will have webpage to describe and help customer to understand how to download and execute the simulator on their system. It will also help customer to upload the dump file and get the final result from database expert side.

A database simulator is light weight tool which install on client system, connect to SQL server instance and execute. It will generate the dump file which contains all the current information of all the predefine areas of SQL server instance and database. Simulator either run to check only SQL Server instance configuration or you can execute on instance with single database. You cannot execute the simulator on multiple database at a same time.

Dump file will uploaded on website by client which will later diagnose by another tool just to verify and cross check all the information against with the SQL Server best practice.