Project Management

# Team Structure

The team for this Project consists of four members each member is focusing on one of USU’s subsystems. And I believe this method is optimal considering the fact the main system as already been split into four more simple sub systems. The development of each sub system is as follows:

* Member A – USU Student App (mobile application for students).
* Member B – Student Union Management System (web interface for university-specific student unions).
* Author USU Operation System (federation management subsystem).
* Member C – Society Leader App (mobile and web interface for society leaders).

# Collaboration

Despite working on four different subsystems, we are still focusing on having a high level of collaboration by having weekly meeting to share options on others subsystem designs. Along with the weekly meeting we also have other ways to communicate including a GitHub page to share files and information like our weekly meeting notes or our meeting agendas as well as our design documents. We also have a WhatsApp group to update each other on where we are on our design documents and to confirm if we will all be able to attend the weekly meetings.

We Also decided to assign a team leader Manage organization of the meeting and taking meeting notes Tania Reyes was eager to take the role, so this was decided without conflict.

# Meetings/schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Meeting | Date | Topic | Attendance | Time and Place |
| 1 | 23/09 | Organising group roles, assigning leader, setting up collaborative media. | All member | 12:00–13:00, AB-115, Headington Campus |
| 2 | 07/10 | Review case study, discuss quality attributes, reviewing Project management notes | Tania Reyes  Malachai Broderick | 12:00–13:00, AB-115, Headington Campus |
| 3 | 14/10 | Working on improvements on task 1 and beginning task 2 for sharing task 2 in meeting 4. | Tania Reyes  Ben Crosfield | 12:00–13:00, AB-115, Headington Campus |

# Project Management Approach

We have decided the best approach to this project is an agile approach we achieve this by having a focus on collaboration at our weekly meeting. This helps us keep our work flexible while giving us clear roles on what work we need to carry out.

Quality requirements of USU’s Operation System

# Overview

USU is a UK based organisation that is looking to upgrade their current system to a cloud computing-based system. Their goal is to allow provide software and assist all student unions and societies organise events as well as software to assist student unions and societies manage their members. To do this they plan to create four pieces of software that link to a backend system called the united students that shares the data from these 4 pieces of software to carry out live updates. The system I will be looking at the quality requirements for is a web app for the USU officers to manage the student unions connected to the USU and the USU national events.

## Functionality of the system

This web app will have a few different functions the users should be able to carry out:

* Receiving USU application and reviewing application data before rejecting or accepting the unions USU application.
* Upon a successful application union leaders should receive a login to the student union management app, and students in that Union can access the USU app and their data will be stored now union members can promote events via USU and attend USU events.
* Receiving requests to edit student union data and then accept or reject them saving the changed data over old data.
* Receiving request to terminate membership and then deleting that unions member and blocking their access to USU tools.
* USU officers should be able to create events containing all event details. This information will go on USU’s portal.
* USU officer should be able to make announcements about existing events. Which will show on the portal and email those attending.

USU officers should be able to see those who have registered for one of their events.

# Quality priorities

In the brief USU have outlined 5 key features of their system these are:

* KF-1: Dynamic Update of Information.
* KF-2: Services Across University-Specific Student Unions.
* KF-3: Automated Workflow.
* KF-4: User Experience.
* KF-5: Security and Privacy Protection.

From these attributes we can understand what Quality Attributes they want to focus on.

## KF-1: Dynamic Update of Information.

Here USU talk about dynamically updating data and pushing the updated data to users in real time this is most important for the mobile app however it still means that data entered on the USU web app should be pushed into the cloud database quickly, so they want a focus on efficiency.

## KF-2: Services Across University-Specific Student Unions.

Here the USU talk about how they must collect data from many different universities and push that relevant data to students at that university this means that the system must be able to handle a large amount of data. This shows the USU also want to focus on scalability which can have an inverse effect on efficiency. This is very Important for the Operation system as it needs to collect and store all the data from Student Unions across the country.

## KF-3: Automated Workflow.

Here USU specify how important it is for all the systems to be linked together and how the connection between the four systems needs to be seamless. I’d say this is once again demand high levels of efficiency in all 4 pieces of software so I will remember efficiency is a high priority when designing the application.

## KF-4: User Experience.

Here USU demand an excellent user experience taking advantage of all technologies available to them they what features like graphical user friendly interfaces and would even like to provide an AI tool to assist with queries on the app these user experience features will definitely have inverse effect on the efficiency but shouldn’t massively effect scalability useless they are unprepared for large amounts of traffic on their AI tools. These user experience demands show I high priority on usability however I will not need to worry about issues as the AI tool as the USU web application I’m designing isn’t designed to be accessed by all users only a very few so while the interface still needs to be easy to use the amount of graphics and effects in the software can be minimal.

## KF-5: Security and Privacy Protection.

This is the final key feature USU list, and I believe as the people on my web application have access to a lot of the data submitted by societies there will need to be a lot of features in place to prevent unauthorised access the simplest of which would be something like password protection. And while once again security will have an inverse effect on efficiency, I am going to put it as the most important feature for the software I am designing.

# Quality objectives

|  |  |
| --- | --- |
| QUALITY ATRIBUTES | Desired Outcome |
| Functionality | In functionally the main focuses will the Interoperability as systems must link to the other three systems created along with the security on the website should be very high as the system provides tools to access and edit a lot of data stored in the USU’s database. |
| Reliability | Reliability is required in any system and is very important for the web app as if there are any changes in USU events or USU’s connected societies they may need to be able to change their database quickly or use the website to quickly update the information on an event. So, we cannot have an unreliable system and even in the event of one bug we must have high fault tolerance, so it doesn’t affect other uses for the web app. |
| Usability | The number of people with access to the web app is limited as only USU officers can use it. However, it will still be important to have a simple easy to use interface. To help with usability, learnability and operability. |
| Efficiency | We should be able to create an efficient website as it is purely for data management, we don’t need any resource intensive images or effect so the overall efficiency of the web app should be high this will help with keeping the live updates as well. |
| Maintainability | The system shouldn’t be overly complicated as the main system has been split into four sub systems, and this web app sub system should be easy to maintain the main goal will be for it to be able to deal with the scale of information. Future changes to the software may involves entering more information to create a society and small adaptation like this won’t be difficult to add to the system. |
| Portability | Being a web app, the software should be highly portable it should work on all operating systems and devices so this will be something that needs to be considered during design |

ISO 9126 Model

## Quality prioritization

While all quality attributes are very important all should be considered in the design stages, I have listed them here in levels of priority for the system requirements USU have shared with us.

**Functionality**

In my quality report I have decided that the most important quality requirements is the functionality this is down two main reasons the first being the requirement for the system to be connected to 3 other systems so a high interoperability is required also with the level of access to the USU database this piece of software offers I have decided that security should also be a high priority.

**Reliability**

I have the system reliability as the second most important quality this is down the fact USU want real time updates from this software to their other pieces of software and without a reliable system it may be hard to achieve this.

**Portability**

While portability wasn’t specified in the brief when designing a web application, it is important it can be loaded on a selection of devices as we don’t know what devices the USU officers will have access to so I think the website should be designed to work on all Operating Systems and devices from laptops to mobile devices.

**Efficiency**

While this software isn’t going to be resource intensive, I think to carry out the real time updates across their three other pieces of software I will have to ensure the website is efficient.

**Usability**

As the app has many different tools that can affect the database drastically, I must ensure the website is easy to use to prevent management errors that could damage USU’s database.

**Maintainability**

Despite having it last maintainability is still very important I need to ensure the software I design will be easy to change in the future and easy to fix so USU can continue to add new features to their system.

## Quality relations

Focusing on one quality Attribute can have inverse effects on others with the project I have to focus on I will have to remember that high levels of security can have large impacts on many other quality attributes the main ones it effects are the efficiency as encrypting data will slow down the speed of the website. And it can have effects on the functionality as there will need to be security features in place like password protection and verification on certain actions like deleting data which does as an extra step to doing everything, but I believe it is necessary.

Other quality relationship I will need to keep in mind when designing the software is the fact that improving all quality attributes will influence the efficiency so I will need to find a balance between focusing on the key quality attributes without having to much efficiency.

I also will need to find about how reliability that is one of the quality attributes I want to focus on when designing the software can have a direct impact on maintainability and the usability.

Zhu, H. (2025)

## Success indicators

|  |  |
| --- | --- |
| QUALITY ATRIBUTES | Success indicator |
| Functionality | Data will successful be shared between the four different systems and my system will be able to access and edit data stored in USU’s database.  The data will also be secure with encryption and password protection so no unauthored users can gain access to the data or web app. |
| Reliability | **Failure rate:** The USU web app system should be operated continuously with a failure rate lower than 3 times in a year of operation.  **Mean time to recovery**: When a failure occurs, the USU web app system should on average recover to normal operation no more than 12 hours of down time as a longer down time may result in USU officers being unable to carry out updates on live events.  **Availability:** The USU web app system should not be out of service more than 50 hours per year in any consecutive operation period of one calendar year. |
| Usability | The system should have a simple easy to understand graphical interface that will be easy for USU officers to understand. |
| Efficiency | When a user clicks a button, the system should take no longer than 2 seconds to respond. When as user deletes, edits or adds data the system should take no longer than 4 seconds to respond. |
| Maintainability | The software should require minim maintenance and be easy for someone will low level IT skills to maintain and carrying out software updates should be easy. |
| Portability | the software should be highly portable it should work on all operating systems or devices.  The system should be ready to deal with large amount of data have up to 500 users which will consist of all the USU officers across the country. |

Zhu, H. (2025)

## Preliminary quality strategies

Some of the strategies I think we should consider In the design stage are:

**Secure by Design**- this involves starting the design process think of security as a foundational property of the software instead of an afterthought. (Niri, M. (2025))

**Encryption/Password Protection –** as mentioned earlier in the report I am very keen to have encryption and password protection to add more levels of security to the software.

**User Testing –** to assist with usability I want to have USU officers carry out testing through the design process so they can give feedback on the graphical interface.

**Backups –** as this software is linked most closely to USU’s database I want to ensure the database carry out frequent backups to assist with reliability.

## Reference

ISO/IEC 9126-1:2001, Software engineering — Product quality — Part 1: Quality model, International Organization for Standardization, 2001.

Niri, M. (2025) Secure Code Design[Lecture], COMP5020 Foundations of Security .Oxford Brookes, 1th October.

Zhu, H. (2025) Software Quality [Lecture], COMP5047 Applied Software Engineering .Oxford Brookes, 30th September .