Annual Report

FY [Year]

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# Design Problem Overview

Every NUS student needs to satisfy a certain amount of credits in order to graduate. Planning what modules to take in a semester and keeping track of their own progress is hence an important task for every students. Websites like MyISIS (Integrated Student Information System), CORS (Centralized Online Undergraduate Registration System), NUS Timetable Builder or NUSMods are used frequently to assist them in planning.

Now, try imagining this. Jim is a NUS School of Computing (SoC) student. His third year of school is starting, and he has to start planning for the upcoming semester. However, he cannot remember the core modules he should be taking. He opens a sticky note on his computer, which is maintained manually, to check what modules he has not taken and also his overall progress in school.

After checking, he opens School of Computing’s main website to search for his major’s information to check which module he should be taking next. Now he needs to search for modules information and he opens another tab for CORS. After researching, he opens yet another tab for NUSMods in order to manage his timetable planning. Very often Jim keeps switching between tabs in order to search for the information he needed.

Thus, these are the main problems we are trying to solve.

1. There is currently no convenient way for SoC students to have a quick overview of their module progress. The modular system of NUS is fairly complicated, with certain modules requiring prerequisites to take them, some modules only being offered in specific semesters, others being suddenly discontinued, etc.
2. SoC students need to access multiple sites to find all these different kinds of information, after which they have to consolidate all the information by themselves in a local document.
3. Furthermore, some of this document is static, and has to be updated every semester by the student depending on any new information or plans they might have.

To sum things up, we realized that there is currently no singular tool available for students to find all the information they need and to easily plan out their roadmap of modules.

# Target Users

In general, our project is targeted at all School of Computing students. We have divided them into four different kinds of users.

**Freshmen Students**

Freshmen students tend to be less knowledgeable of the modular system in NUS, and some do not even realise the need for them to plan their roadmap of modules. Thus, they require not just information about the modules, but also guides and explanations about the intricacies of the modular system. They also require features to allow them to plan for the long-term besides being able to plan for individual semesters.

**Graduating Students (Year Four)**

Final year students would most likely have taken most of the modules they needed to for graduation. Instead of features for planning, these students require features that allow them to verify that the modules they have taken will allow them to graduate. For instance, they need an easy way to match the modules they have taken to their various graduating requirements. If there are any critical modules they need to take within the last year in order to graduate, they should be notified of these urgent requirements they need to fulfill.

**Students who plan their modules**

There are students who plan specifically on what modules to take in their remaining semesters. These students have already decided which modules to take specifically in which respective semester, but need to update their plan every semester in the case of not being able to acquire their desired modules for some reason (modules not offered in the current semester, clash of examination times, clash in lessons times, discontinuation of modules, etc.). These students will require an interface for them to input their desired modules for each semester, and the application should provide information to these students regarding the prerequisites, schedules and availability of each module in the respective semesters as much as possible.

**Students who do not plan their modules**

There are some students who do not plan their modules at all, but instead simply decide on what modules to take on a semester by a semester basis. These students do so mainly due to how troublesome and inconvenient it is to plan modules using their current tools. Hence, our program needs to be extremely convenient and easy to use to entice such students to plan their modules. These students will require more immediate information, such as the schedule of each module for the current semester so that they can plan their timetables. Showing these students the modules they have taken so far will also be helpful in allowing them to plan for the current semester.

# Contextual Inquiry

Using the contextual inquiry methodology we have learnt in class, we will engage the 4 target users in separate interviews. The team was split in pairs and scattered to various locations.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Gender | Age | Job Title | Location | Interviewer | Note taker | Time taken |
| 1 | Female | 25 | Year 4 student | NUS SR1 | Jade | Jacky | 33 mins |
| 2 | Female | 19 | Year 1  Freshman | The Deck | Jade | Jacky | 40 mins |
| 3 | Female | 20 | Year 3 student | Business Canteen | Ooh Jing | Jade | 32 mins |
| 4 | Female | 21 | Year 3 student | NUS SoC | Kang-An | Jacky | 44 mins |

## Summary of each contextual interview.

**Interview 1 (Graduating student)**

The interviewee was a computing student in his final year who plans for his modules mainly with the help of NUSMods and the use of an excel sheet. He is familiar with the use of most of the modular tools available and was specific in explaining the flaws of the interface design that has caused him much unhappiness over the years. We realised that the aesthetics of the website is of prime importance, and that the login panel (the very first item the user interacts with) and fonts should be distinct. The interview also brought us to the attention that there were instances when duplicate functionality were labelled in various pages on myISIS. Moreover, links to resources and module descriptions are scattered and it puts a strain on the users’ ability to use the website. This is a sign of a unfavorable user interface and we came to a consensus that in order to communicate clearly with users, an engaging user interface is key. He also suggested a possible adoption of voice recognition and usage of Artificial intelligence (AI) to list out the best combinations with his modules based on past student performance, timetable, exam timetable and workload. Thus, this informs us to provide students with a balanced timetable that is manageable and also allows them to graduate on time.

**Interview 2 (Freshman)**

The interviewee is a freshman from SoC who are unsure of their focus area. Interviewee 2 was unsure of her choice between majoring in E-commerce or Information Systems. Her reason for not planning in advance was that she was unsure of the path she wanted to take in the future. Hence, we realised that our application should cater to these users as well.

She also drew our attention to the need to notify freshmen regarding the intricacies of the system of modules through guides and explanations that are easy to understand and not a page just loaded with information. The interview also pointed out the importance of color coding in web design. Visual styling can be used as a reliable cue to help people understand how to navigate the interface.

The interviewee also raised her concerns on the hassle of opening multiple tabs to check module reviews and this is in line with the design problem we cited on the first page. However, while she was moving from site to site, we were able to derive that this user does not trust reviews from all sites, only specifically the ones on www.module-review.com. It is a valuable point to note how students place their trust only in selective websites.

**Interview 3 (Student who plans)**

The interviewee was a computing student who planned for her modules using an excel sheet to merge all the information provided by all the different websites. We realised the importance of privacy regarding grade information provided by myISIS after interviewing her and realised that there would be users who would want to keep their grades private from their friends. The interview also highlighted the importance of including social functions into module planning as students would want to discuss and read comments from other students about the modules that they have not taken before deciding whether to take it or not.

The interview also highlights the importance of portability in our application as it would affect whether or not a student actually uses the application. One difficulty faced was that the user had not actually used the NUS TimeTable builder system. However, we were able to derive from the interviewee that having a good Graphical User Interface (GUI) was an important aspect as the user did not use the NUS TimeTable builder for that sole reason, and used an alternative with a better interface instead.

**Interview 4 (Student who doesn’t plan)**

The interviewee was a computing student who, surprisingly, did not plan for her modules at all. While she realised that planning her modules was important, she has very seldom taken a look at crucial module information such as pre-requisites and the intricacies of her degree requirements. It was only after interviewing her that our team realised the need to cater for such users as well, and to make our application as easy to use as possible so that it will encourage those who do not currently plan for their modules to start planning. This interview also highlighted the social aspect of module planning. Even though the interviewee does not really plan her own modules, she relies on her friends to inform her on what are the critical modules she has to take, and she tries her best to take the modules with them. Thus, this also informed our design to include more social features in the application.

## Experience of doing a Contextual Inquiry (CI)

The overall experience was fulfilling as we were given a realistic view of natural behaviors, user’s preferences and their day to day activities by observing the user using the laptop to perform the task we needed to study. It was difficult to unearth details on the features they would like to see on the site without the appropriate level of prompting. Therefore, some questions asked led to poor answers as interviewees came from different backgrounds but we had a similar set of starting questions for all of them.

Questions that led to in-depth answers were usually the ones in which we managed to invoke a certain memory in the user. Certain events that led the interviewee to feel frustrated also prompted more critical feedback as well. We did not expect there to be so many different parameters that we needed to take into account of and the process of contextual inquiry aided us with this collection of the information. Therefore, the whole interview process was a very enlightening experience. Moreover, as computing students we were able to communicate aptly and empathise with our interviewees as well.

However, the main obstacle all of us met with during the process of CI was executing the master and apprentice relationship model. The interviewees (users) are the masters and they “run the show”. The interviewer (the apprentice) should only be there watching and occasionally interrupt to ask questions when relevant. However, since most of the modules are planned at the start of the semester, we are unable to capture the real-life scenario where the user painstakingly (supposedly) plans his/her timetable. The lack of urgency in planning for modules by the users may have leaked out details that we would have failed to observe from the interview that occurred after the bidding periods. What we could do was observing a simulation of how the user interacts with the tools on their laptops to plan for their modules and compare it with their course requirements.

While relatively tedious to work with, the sequence model was the the easiest model to produce as it gave us a better idea of the situation. It required us to capture the detailed steps performed to accomplish the task (planning of timetable along with comparing modules taken with course requirements). This includes the triggers, intent, how the user jumps from one site to the next, the interruptions during the work flow. Through this, we were able to have a better idea of the problems faced by a user by examining the minute details recorded by the sequence diagram.

The flow model is the most difficult work model to produce due to the nature of our observed workflow as users need to interact with different types of users in varying ways that we may be unable to account for. For example, there may be minuscule interactions such as when they may want to read comments about modules from other users that have taken the module from review websites that we may leave out. The interaction level between strangers is minimal and thus it is difficult to account for in the flow model diagram.

# Data Analysis

For data analysis, our group decided to organize our raw data and group them based on their natural relationships through the use of an affinity diagram. The raw data consists our interviewees’ opinions, ideas, suggestion and concerns which were brought up through the interviews. As such, our affinity diagram was able to contain the key observations, user statements, breakdowns, insights, design ideas and ambiguities.

Initially, we started off by sharing the information we gathered with each other. While sharing, we interpreted the information and recorded each idea as an affinity note. Secondly, with the collection of affinity notes we came up with, we started grouping them into different columns according to their similar nature. Then we assigned a heading to each of these groups as shown below.

|  |
| --- |
| I find it a chore to plan |
| * I found that there is no point in planning * It is time-consuming to plan * I decide what module to take only during bidding * I only find out it is important to plan in later years * I plan my modules only when there is a need to * I have to manually search for module information * I have to search for my course information for the modules I need to take and compare it to the modules available |

|  |
| --- |
| I need information on modules |
| * I read up modules to choose which one to take * I want a to have an overview of my modules information * I want a tool to provide me with information on factors that will affect my planning (e.g. pre-requisites) * I do not know what modules are available in a particular semester |

|  |
| --- |
| I do not like to use certain tools |
| * There is no need for me to use myISIS * I am not a fan of NUS timetable builder * I do not use myISIS * I find that NUS TimeTable builder is too troublesome to use |

|  |
| --- |
| I prefer some information to be kept private |
| * I do not want to mix sensitive information with general information (like module planning) |

|  |
| --- |
| I prefer UI that is easy to use and understand |
| * NUS timetable builder is not user friendly * NUSMods is easy to use and has a nicer UI * I want a website to have a nice design * I am happy with the design of NUSMods * I want the all-in-one website to be user friendly * I prefer NUSMods to NUS timetable builder |

|  |
| --- |
| I need help in using the tools |
| * I am unaware of the functions available for myISIS * I ask my friends to help me navigate through the sites * I want to have a tutorial option to teach me how to use the functions available on the website |

|  |
| --- |
| I need ways to deal with finding the information I want |
| * I need time to find the information I want on those sites (e.g. myISIS) * I am not sure what information I can get from those sites * I find it troublesome to plan my modules * I find that myISIS takes too long to show us the information I am looking for * I want to access the website on different platform |

|  |
| --- |
| I prefer an easier understanding tool |
| * I would rather explore the site myself * I do not mind a tutorial, but it should not be mandatory |

|  |
| --- |
| I need advice on planning |
| * I am uncertain about what focus area I want to study * I want to have an AI to give suggestion on the modules * I rely on my friends to suggest me what modules to take |

|  |  |  |
| --- | --- | --- |
| |  | | --- | | I need to manually track my own progress | | * I use excel to plan my roadmap * I plan my roadmap of modules | |

|  |
| --- |
| I prefer a site that can access other information |
| * I want to have a module review in the website * I prefer information to be available while I am planning * I want to have a combined forum |

After giving the first group label, we continued to look for the area of concerns.

|  |  |  |  |
| --- | --- | --- | --- |
| Usability | Social features | Ease of access to information | User Interface |
| |  | | --- | | I find it a chore to plan | | I need help in using the tools | | I need to manually track my own progress | | I do not like to use certain tools | | |  | | --- | | I need advice on planning | | I prefer some information to be kept private | | |  | | --- | | I need ways to deal with finding the information I want | | I prefer a site that can access other information | | I need information on modules | | |  | | --- | | I prefer UI that is easy to use and understand | | I prefer an easier understanding tool | |

As seen from above, through the use of the affinity diagram, we are able to identify the 4 major area of concerns. The diagram enabled us to have more insights, which can be missed out in the process of development, and helping us to organize information in a more systematic way and revealing the scope of the problem. With this information, we are able to further refine the requirements of our solution.