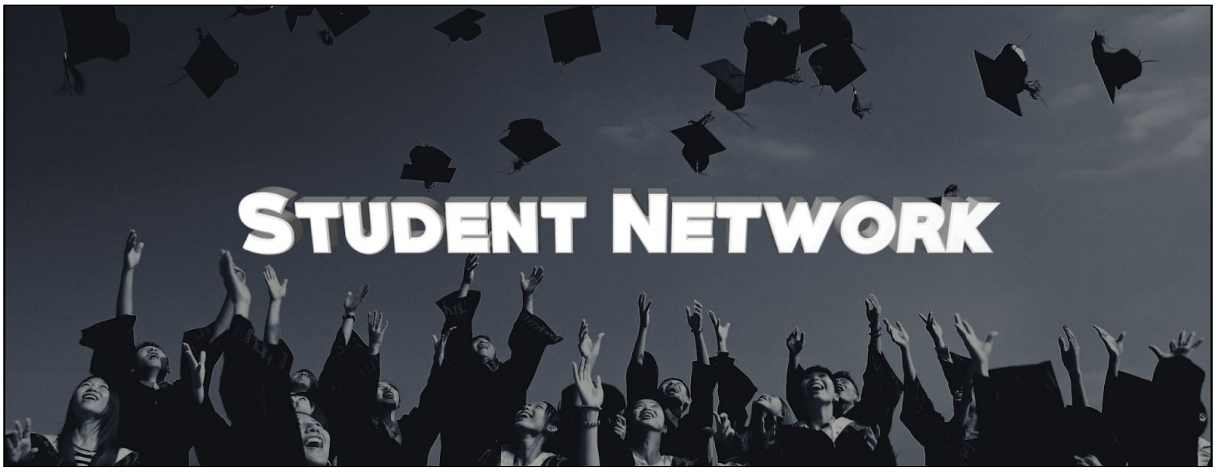
CA472 - Enterprise Computing Project Idea Proposal

Dublin City University - School of Computing
BSc. in Enterprise Computing
CA472 - Enterprise Computing Team Project
Idea Proposal
2020 / 2021

Project Title:



Date: 23/10/2020

Project Team:

Student Name	Student Number
Michael Walsh	17428926
Karl Hannigan	17435332

Project Summary:

The basis of our idea is to create a social networking platform where students can connect with each other within their universities and access valuable resources, enabling them to perform better in college. This idea came to mind when we imagined the difficulty that first year students were experiencing with trying to make friends and interacting with people in their college this year. We believed this would be due to lectures being mostly online and the fact that students would have limited face to face interactions due to the COVID-19 pandemic. We think that the platform would be extremely beneficial to students this year due to this but that it would also have the ability to be used continuously by students in the future.

The platform would allow students to connect and interact with others in their university and access valuable student resources such as tutoring services, a student discussion board, and a secondhand books marketplace. Students will be able to sign up to the site using their university email and customize their own profile on the platform. They will be able to add other students and chat with them through the platform. We also intend to add gamification to the site by allowing students to interact with posts through likes and comments. The platform will also offer online tutoring services where students who are struggling in a particular field will be able to access grinds. Tutors will create accounts and will be reviewed before they can be listed on the site. They will only have access to the Tutoring section of the platform. This will be our main revenue point. Commission will be charged on each grind given through the site. They will also be able to customize their profile to make them more appealing to students and can design their own tutoring advertisements showing their relevant qualifications and experience. Students will fully pay for the grind directly through our platform and all tutors will be paid once a month for the total amount of grinds given minus the commission.

The other services available on the platform to students will be a student discussion board and a secondhand books marketplace. The discussion board will be separated by faculty e.g. School of Computing, School of Business, etc. There will be subsections found in each of these related to the relevant faculty where students can discuss different topics and raise or answer questions. We would also hope to implement statistics here on profiles which would be able to track things such as date posted, total number of posts, etc. We also intend to implement a secondhand books marketplace to enable students to sell books they no longer need. Students will be able to advertise their books through the platform, allowing them to directly access other students looking to purchase them. Course reading material tends to be very expensive brand new so we believe that this secondhand marketplace would be of benefit to students.

We chose this idea because we believe that the original Facebook model for example (confined to your class / university) has gotten lost due to its huge growth and that there is now a need for a social site for students to interact and actually meet each other in real life. For the moment, students would be able to meet each other through our platform with the hopes of actually meeting each other in person in the future. This is an aspect that other well-known networking sites tend to neglect due to their intentions of mass marketing their platform worldwide to any user.

Expected Technical Delivery:

We intend to deliver a fully functioning database driven networking website allowing students to register, login, connect with other students, customize their profile, post and share information with others, view student discussion boards, and have access to a secondhand books marketplace. We don't believe we will be able to allow students to post on the discussion board or post advertisements in the secondhand books marketplace within the given timeframe but we would hope to have a hardcoded prototype developed for these sections at a bare minimum. Given the timeframe, the tutoring section may not be fully functioning but tutors will still be able to register and login to the site and we intend to present at least a hardcoded page of this section of the site. We intend to build as much of the proposed idea as possible but we are also trying to take a realistic standpoint on the amount of time that we have for the development stage of the project.

We are planning to develop the platform using Django, HTML, CSS and Javascript. Django is a high level Python-based web framework. It is an open-source framework with the main goal of allowing users to rapidly create high quality database driven websites. It follows the Model-Template-Views (MTV) architectural pattern. The pages themselves will be designed in HTML, styled in CSS, and will include Javascript to allow for dynamic and complex actions on the platform.

We also intend to deliver the platform fully hosted on Amazon Web Services (AWS). This will be done through the use of AWS Elastic Beanstalk with the implementation of AWS Relational Databases Services to help with the setup, scaling and the operation of our user databases. The use of AWS is a process that is completely new to us and is not something that we have covered in college before. We also do not have any past experience using this service so a large amount of external learning will be necessary in order to deliver this.

Our aim is to have prototype diagrams done before any development has been started which will act as a reference point when trying to deliver the technical aspects of the project. A huge amount of external learning will be necessary throughout the delivery of these technical aspects. This is due to the fact that we have very little experience with Django development having completed only one module (CA229 - Developing Internet Applications) using this framework throughout the course of university so far and we have no experience with the use of AWS.

We intend to deliver the project in 7 different phases: Planning, Analysis, Design, Development, Testing, Deployment and Maintenance. We will be following an agile development approach as this will be more beneficial to us when completing our tasks. The different phases and the expected delivery times are described in the Proposed Timeline section and a Gantt chart showing these can also be found there, following the Software Development Life Cycle methodology.

Market Rationale:

We believe that the potential market for the platform consists of college / university students worldwide and tutors looking to provide their services to these students online. We think that the platform has potential to expand worldwide but for our final year delivery we intend to develop a working version for college students in Ireland so we feel it is necessary to provide our market rationale specific to Ireland. We intend to validate our potential market through both primary and secondary research.

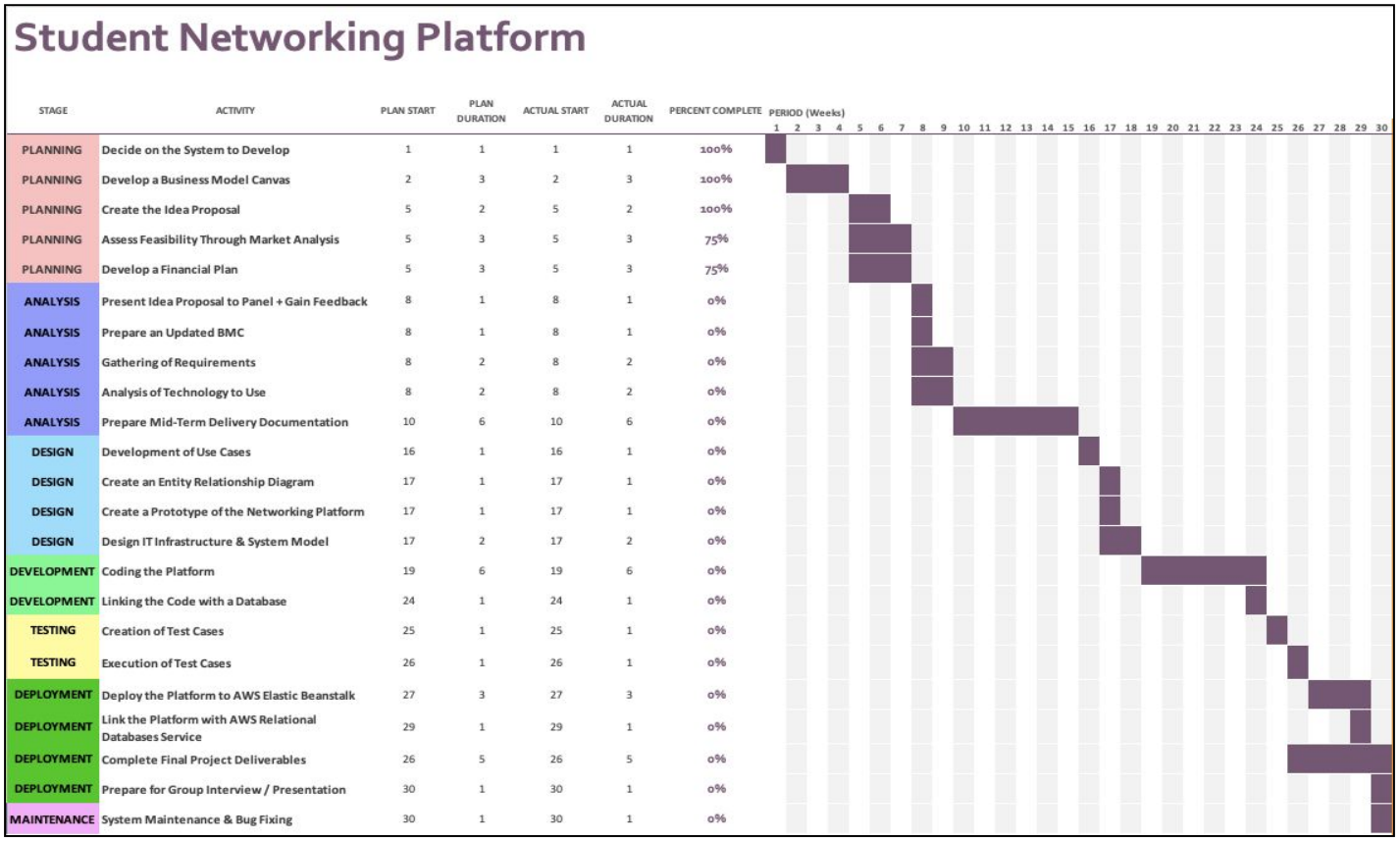
We have already completed extensive primary and secondary market research for CA4102 in order to validate our potential market. This involved completing secondary research into student enrolment rates, genders, age ranges, etc. from a report issued by the Higher Education Authority for the 2017/2018 academic year. Examining the number of students enrolled in undergraduate and postgraduate programs, their ages, and their genders can give us a better understanding of our potential target market. We also discussed a range of insights and issues addressed in a research paper created by NUI Maynooth's Sociology Department where they performed research into student online social media usage across the first year cohort of their university for the year 2016 which had some extremely interesting key findings of benefit to us.

Our primary research will most likely entail contacting students from a range of universities across Ireland to gain insights into their thoughts on the potential use of the platform. We intend to create a questionnaire as part of our primary research and distribute it to a range of students across Ireland. This will yield quantitative data which is crucial for us as they are the main users of the platform and their opinions and ideas will allow us to determine our platform's potential. Irish students have access to a vast range of social networking and media sites already but they do not have access to one solely for networking with other students. This is one of the main reasons why we believe the platform has potential to compete in our chosen market. Given the circumstances at the moment due to the COVID-19 pandemic, a platform like this is needed even more for first year university students as we believe they are having difficulty making friends and interacting with others in their course. We don't think that the market for this platform is just circumstantial as we believe it has the potential to attract students of all ages, years, and fields of study across the country and can continue to grow after the pandemic.

Another part of our primary research will involve contacting tutors and speaking to them first hand in order to gain a better insight into their potential use of the platform. We believe that tutors would have a huge interest in using the platform as it would reduce the amount of time wasted advertising their services on a large number of websites, social media groups and even putting up flyers on notice boards around colleges and shops. The main value proposition that we offer to tutors is the fact that we would be giving them access to all of these students in one easily accessible place. We intend to validate these points by speaking first hand with tutors and yielding qualitative data from them. Detailed answers from tutors are crucial as the commission we charge on their grinds is the main revenue stream of the site so we intend to conduct in-depth interviews with them. Meeting with a number of tutors would help us to gain an insight into any difficulties they experience when trying to gain access to students.

We have also been in contact with members of the Student's Union in order to schedule a Zoom call in the future so that we can gain insight into the range of issues they have had so far this year with regard to engaging and welcoming first year students into the college. We intend to complete a Notification Only ethics form and will keep all of the Informed Consent forms when conducting our market research in order to comply with GDPR and minimize the chances of privacy related issues. We fully understand the importance of doing this with regard to our project.

Proposed Timeline:



STAGE	ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
PLANNING	Decide on the System to Develop	1	1	1	1	100%
PLANNING	Develop a Business Model Canvas	2	3	2	3	100%
PLANNING	Create the Idea Proposal	5	2	5	2	100%
PLANNING	Assess Feasibility Through Market Analysis	5	3	5	3	75%
PLANNING	Develop a Financial Plan	5	3	5	3	75%
ANALYSIS	Present Idea Proposal to Panel + Gain Feedback	8	1	8	1	0%
ANALYSIS	Prepare an Updated BMC	8	1	8	1	0%
ANALYSIS	Gathering of Requirements	8	2	8	2	0%
ANALYSIS	Analysis of Technology to Use	8	2	8	2	0%
ANALYSIS	Prepare Mid-Term Delivery Documentation	10	6	10	6	0%
DESIGN	Development of Use Cases	16	1	16	1	0%
DESIGN	Create an Entity Relationship Diagram	17	1	17	1	0%
DESIGN	Create a Prototype of the Networking Platform	17	1	17	1	0%
DESIGN	Design IT Infrastructure & System Model	17	2	17	2	0%
DEVELOPMENT	Coding the Platform	19	6	19	6	0%
DEVELOPMENT	Linking the Code with a Database	24	1	24	1	0%
TESTING	Creation of Test Cases	25	1	25	1	0%
TESTING	Execution of Test Cases	26	1	26	1	0%
DEPLOYMENT	Deploy the Platform to AWS Elastic Beanstalk	27	3	27	3	0%
DEPLOYMENT	Link the Platform with AWS Relational Databases Service	29	1	29	1	0%
DEPLOYMENT	Complete Final Project Deliverables	26	5	26	5	0%
DEPLOYMENT	Prepare for Group Interview / Presentation	30	1	30	1	0%
MAINTENANCE	System Maintenance & Bug Fixing	30	1	30	1	0%

We have decided on a structured list of tasks to be completed in order for the project to be completed successfully. These tasks have been put into 7 different stages: Planning, Analysis, Design, Development, Testing, Deployment and Maintenance. We intend to focus on the tasks at hand and distribute the work related to that task evenly between us as we will be taking an agile approach in line with Software Development Lifecycle methodology. We are aiming to consult with our supervisor Gareth Jones at least every two weeks throughout the phases of this timeline.

Planning: This stage involves determining the project goals. It is the most critical stage of the project as the potential of the market, the terms of the project and the costs involved must all be assessed here. We plan to have this phase completed by the end of Week 7 (November 22nd).

Analysis: Functional requirements must be decided in this phase of the project. We must ensure the platform can satisfy all end user needs when defining these requirements. We also intend to perform further research into our chosen technology which we are using to develop the platform. The mid-term delivery is also due by this date and should be completed before the end of this stage. The aim is to have this phase completed by the end of Week 15 (January 17th).

Design: In this phase, we describe in detail how the features of the platform will operate and the necessary specifications needed to satisfy the functional requirements. We are aiming to complete this stage by the end of Week 18 on our timeline (February 7th).

Development: This stage relates to developing the platform itself. This involves writing the code to actually develop the platform and linking it with a database. We hope to complete this phase by the end of Week 24 (March 21st).

Testing: Testing is a very critical part of the development process. This stage is completed to ensure that the requirements defined at the start of the development cycle are met. The aim is to complete this stage by the end of Week 26 (April 4th).

Deployment: During this stage, the system is deployed to the final production environment and made available to the users. This process will be done through Amazon Web Services. The final project deliverables must also be complete by the end of this stage. We intend to complete this stage by the end of Week 30 (May 2nd) or possibly sooner than this depending on deadline dates.

Maintenance: Once the platform has been fully deployed we will begin the maintenance phase. This involves consistent bug fixes, upgrades, new services, and general site maintenance. We have also marked the end of Week 30 (May 2nd) as the planned completion date for this stage but we believe that maintenance is a constant process after the platform has been deployed and should continue on into the future.

Workload Distribution

We will be breaking down each of the tasks in the Gantt chart into smaller, more manageable components. We will then distribute work related to the tasks at hand evenly as we progress through the stages. For example when we start the Analysis phase the tasks at hand would be Presenting the Idea Proposal, Preparing an Updated Business Model Canvas, Gathering of Requirements, and Analysis of Technology to Use. As these tasks must be completed concurrently we will distribute work related to each of these tasks as we begin them and work on them individually. Here is an example of the distribution of tasks in relation to the idea proposal:

- Preparing the Idea Proposal:
  - Project Summary **(Michael and Karl)**
  - Expected Technical Delivery **(Karl)**
  - Market Rationale **(Michael)**
  - Proposed Timeline **(Michael and Karl)**
  - Workload Distribution **(Michael and Karl)**
  - Staff Consulted **(Michael and Karl)**

Although we will be completing certain tasks individually, we feel that it is important to deliver the majority of the project collaboratively. We will be consistently consulting with each other throughout the project in order to gain a full understanding of every aspect of each stage and to maintain consistency.

Staff Consulted:

We consulted with a range of lecturers in order to gain insights into our business model and to gather ideas for the technical aspects of the project. The lecturers we spoke with were Murat Yilmaz, Paul Clarke, Rob Brennan, Monica Ward, Mark Humphrys, Gareth Jones, and John McKenna. We felt that they would be the most suitable people to discuss our idea with as their topics of interest covered some of the areas related to our project idea such as software engineering, cloud deployment, recommender systems, GDPR, data privacy, and education. We gained some really valuable feedback which allowed us to improve our initial idea. We had noticed some issues which we thought may cause problems for us in the future during the development stage so we discussed these with each of the lecturers in order to get their thoughts on them. We chose Gareth Jones to supervise our project due to his knowledge of search and recommender systems and his overall interest in the idea.

We have also been in contact with members of the Student's Union team in order to schedule a Zoom call to discuss the difficulties they have had with welcoming / engaging with first year students this year due to the lack of in person interaction. This will prove very useful for us as we will get the opportunity to gain a first hand insight into these problems.