International Project Management

Group 2: Project 4 – International Students Event Portal

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1. Introduction

1.1 Project Overview

The main focus of this study is to revamp an existing international student event portal to help students with information about life at Heidelberg and nearby cities during their study life. This is expected to be realized in the portal through curating and presenting the information about university campus, curricular events, interesting areas to visit, field trips, traffic rules, café and market spots, sports, clinics, and additional related information.

1.1.1 Initial State

The current situation observed within the international student event portal is that it doesn't serve the end users with the above mentioned information. Despite the case that there are innumerable data assets which it can be shared with secure information storage capabilities, there is no customized and structured data accessible for the users through the portal.

1.1.2 Definition

The goal of the study is to present a concept for an international student event portal for SRH University Heidelberg with the focus to upgrade the webpage so that the users can utilize it better. The international student event portal website page is intended to boost access to the data assets required to improve existing understudy entryway and plan to build up an innovated mindful society.

The international student event portal is a passage to interface many web applications which is valuable for doing understudy exercises in their everyday life. The understudy gateway site page gives access to numerous applications, for example, university campus, occasions, areas, trips, traffic rules, Indian café and market, sports, medical clinics and so forth.

Online international student event portal is aimed to be valuable for students in order to support them with information and execute the processes. The portal starts with serving students in their enrolment and all the way through other processes.

1.1.3 Target State

We will talk about the objective conditions of the web application to characterize the international student event portal as completed. After the fulfilment of all considered things, the international student event portal ought to have below objectives:

- The student portal application is progressively adaptable, and customizable and comprehensive to use.
- The availability to the site page is high with data security and data maintainability is easy.

1. The student portal must have features like,

- Route suggestion and saving favorite route in navigation functionality.
- The complete detailed information about Heidelberg, Germany, Europe.
- All university related information in SRH university Heidelberg profile.

2. The student portal should have features like,

- Tram and bus information features in the navigation functionality.

3. Information about restaurants and supermarket,

- The student portal could have functionalities such as an enquiry feature in the user profile etc.

1.2 EISENHOWER MATRIX

The 4 categories of the Eisenhower matrix

- A: - Urgent and Important (Login, User Details and Services).
- B: - Less Urgent But Important (Events, Fitness Activities).
- C: - Urgent But Not Important (Leisure, Network Services, Cloud Storage).
- D: - Not Urgent & Not Important (Social Network, Feedback, Volunteer Activities).

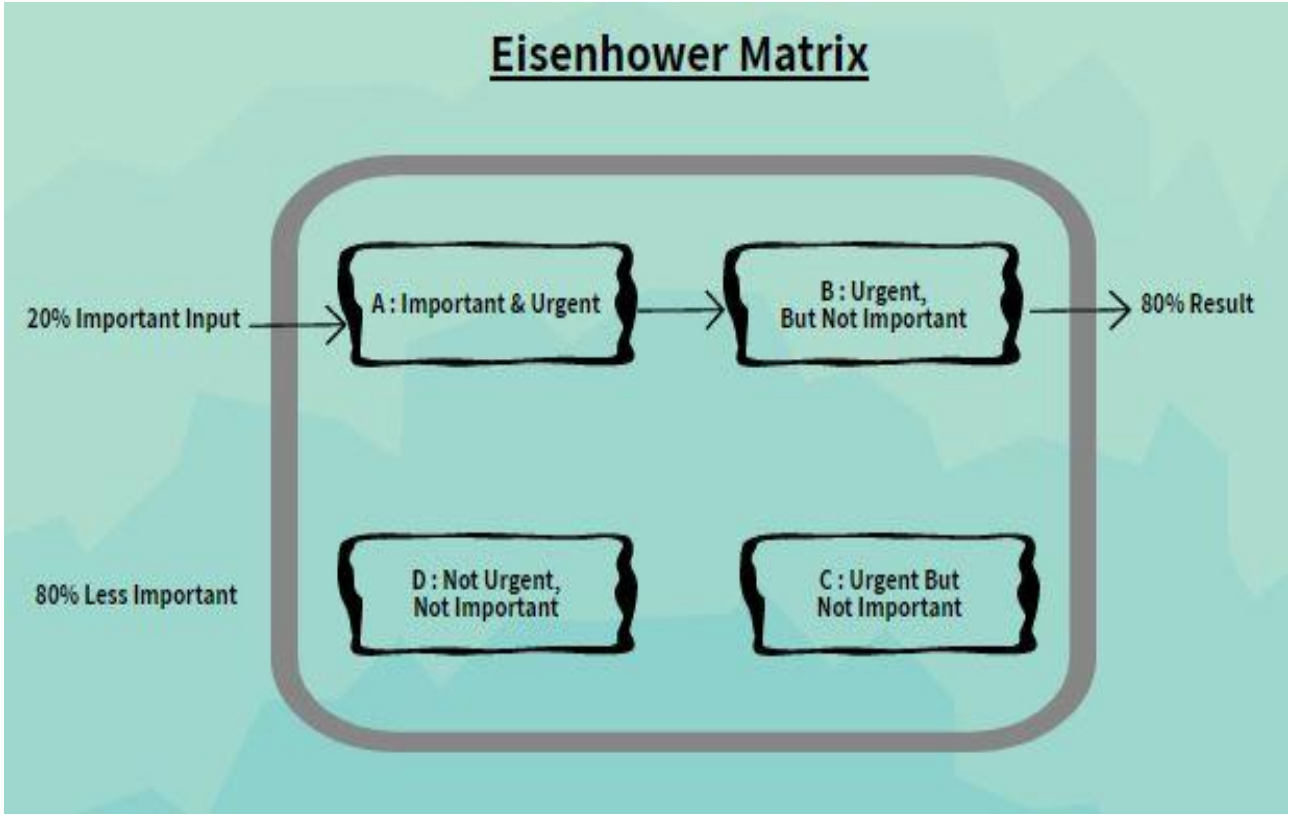


Figure 1.2 Eisenhower Matrix

1.3 PARETO PRINCIPLE

The Pareto-Principle (International Student Portal)

- General: - 20% of Input make 80% Success.
- Example: - 20% Data in web portal contain 80% of the actual Information.
- Example: - 20% of collected Information (survey) gain 80% of work Result.

➡ Identify these 20% and Implement in **A** (Urgent and Important)

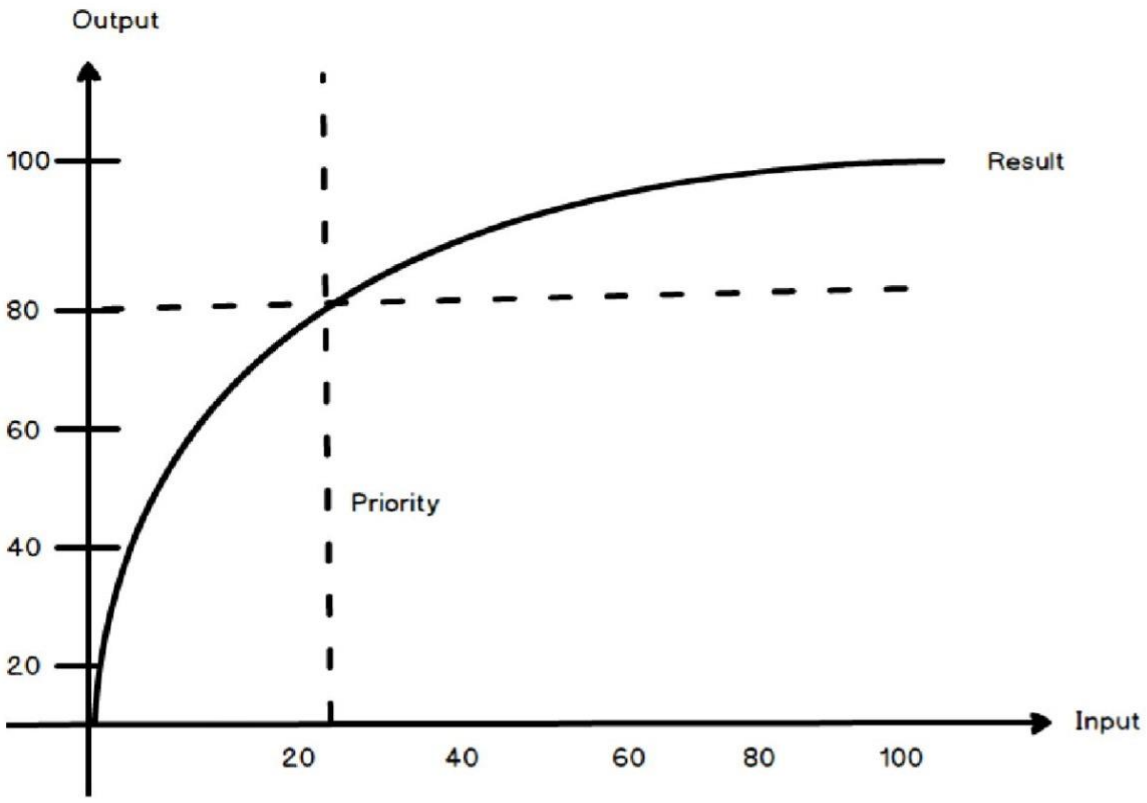


Figure 1.3 Pareto Principle Graph

2. PROJECT ORGANIZATION STRUCTURE

2.1 Organization Plan

The diagram below indicates the project organization hierarchy for the project "International student portal". Each Department will optimize their work by using the agile methodology Waterfall approach.

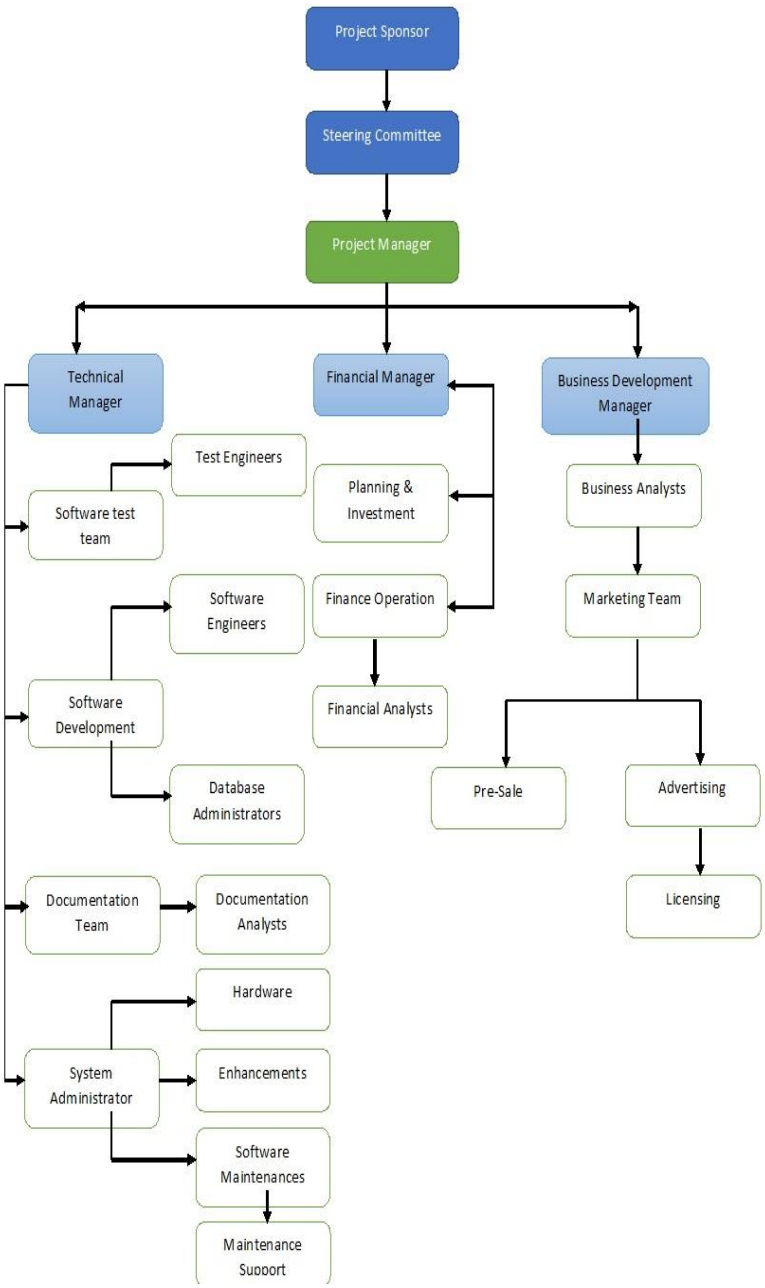


Figure 2.1 Project Organization Hierarchy

2.2 Responsibility

2.2.1 Project Sponsor

Project sponsor is the person responsible for the overall project accountability.

- Need to guarantee the task is appropriately launched.
- Support the project manager.
- Ensure changes in the task are managed appropriately.
- Ensure Risks are appropriately managed.
- Resolve clashes that are past the project manager's control and guaranteeing the project is under control.
- Removing obstacles on the way to advance.

2.2.2 Steering Committee

The Steering Committee is not involved in the day-to-day work but has other important roles to be performed. Their roles are,

- Development and maintenance of the task vision and project objectives.
- Determining what highlight, result or extent of the task will be included.
- Manage expenses and arranging funds.
- Manage operational and political risk and issues.
- Developing the policy.
- Responsible for conveying information to all partners.

2.2.3 Project Manager

The Project Manager is responsible to run the projects on a day-to-day basis and also has other important roles,

- Project Manager needs to guarantee that predefined outputs are conveyed from a specific project inside the concurred time allotment, cost, asset and quality.
- Project Manager will give timely reports (progress of the project, different issues and risks) to the steering committee all the time.
- It is Project Manager Duty to start gatherings with the project sponsor and steering committee and address any issues that need be consideration.

- A project manager is additionally liable for guaranteeing the project group finishes the whole project and convey it as guaranteed.

2.2.4 System Architecture Department

The system architecture group deals with the system architecture of the project. They are answerable for the enhancement of the systems, tools and the hardware and software stages that are appropriate for utilizing in our project. They consider architectural imperatives and the cost investigation is finished by them also. When the design is characterized, they are likewise responsible for the determination and the subjective appraisal of the potential providers. The group is additionally liable for proposing the best provider later. The lawful guidelines like privacy policy and others are satisfied by the Safety and the information security master.

2.2.5 Software Department

The software department is separated into three sections. The duty of building up the functionality is taken on by the designers. The system architects assume the liability of giving the correspondence structure. At last, the Database Engineer needs to give the data regarding the client profile with which the system will communicate.

2.2.6 Quality Assurance Department

The quality assurance group ensures that everything guaranteed with the product is conveyed in the correct way. Every one of the functionalities are tried and analyzed. Any breakdowns emerge assignments for fixes in the offices. The group additionally reports the extensive statics to improve the development procedure.

2.2.7 Deployment Department

The deployment department is answerable for the distribution of the project results. They are liable for making the administrative work like a client manual, change history and others.

2.3 Project Flow

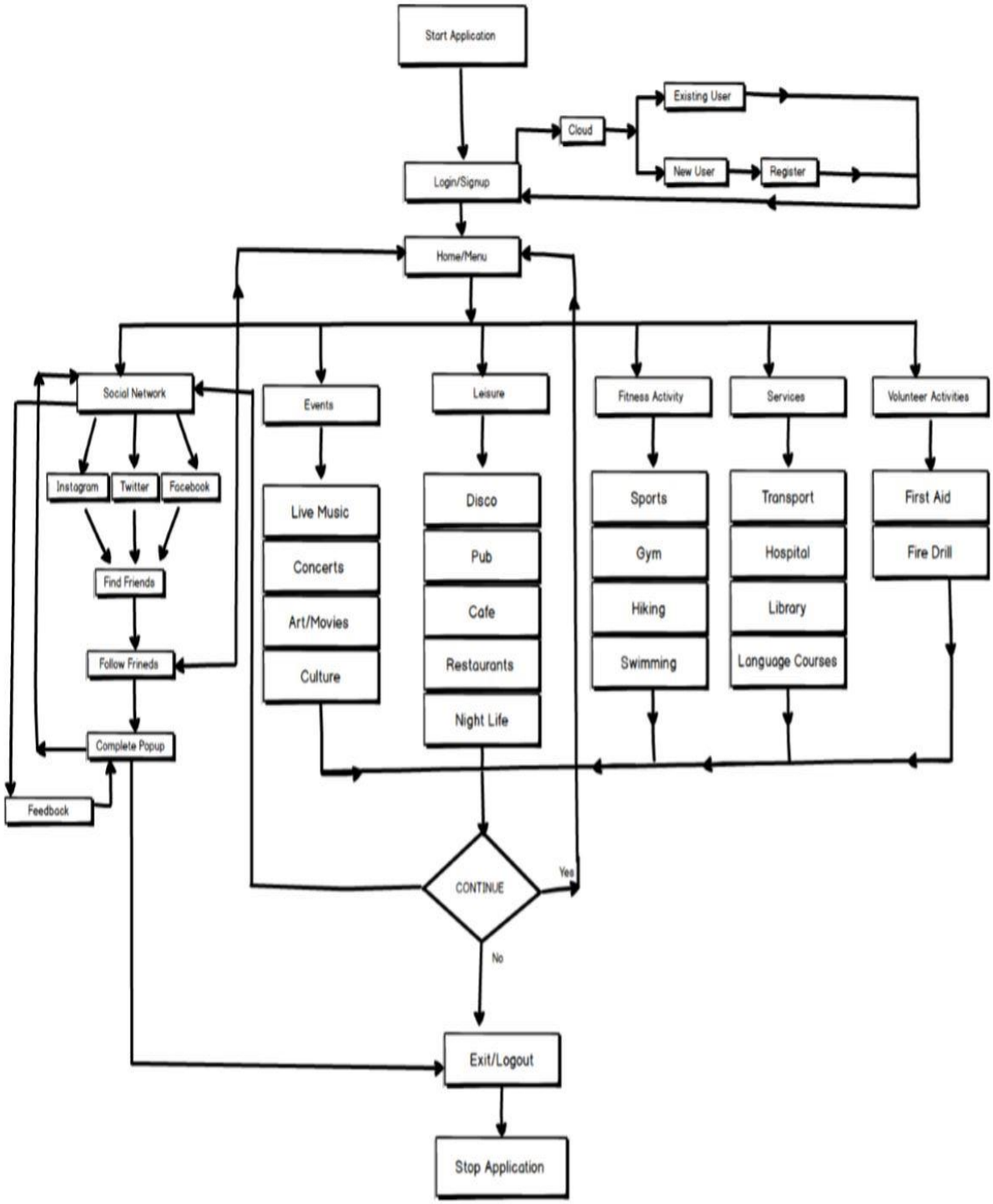


Figure 4.1 Project Flow

3 Business Analysis

3.1 Competitive Analysis

Competitive research is an essential tactic to gather information about our rivals and the threats they are posing on our business. Our portal comes under the Monopolistic Competitive Market which means that the number of competitors providing the same service is high but with a minor differentiation. Differentiation creates diversity, choice and utility and the International Students Event Portal aims to do so.

The competitors that we currently have are the following,

Competitor	**ESN Heidelberg International Exchange Erasmus Student Network - Https://Heidelberg.Esn-Germany.De/**
Description	The ESN aim at improving the integration of internationals and facilitate their participation in the cultural life of Germany.
Pros	They provide a reasonable amount of information regarding accommodation for international students, bank information and ways to travel around the city.
Cons	Their web application lacks information regarding the university campus, route maps for the city, language courses, and contacts of clinics, cafes and supermarkets that our portal promises to fulfill.

Competitor	**TripAdvisor- https://www.tripadvisor.com**
Description	The TripAdvisor portal is a company that allows users to make reservations at restaurants, hotel rooms, etc. and write reviews.
Pros	The TripAdvisor is a travel platform that helps customers to view information regarding popular destinations and attractions, restaurants and cafes, make bookings at hotels, airlines and cruises and also allows the consumer to provide reviews based on their experience.
Cons	As good as the pros sounds, this website is not tailor-made for a student or a customer that has just arrived to the city and requires information that is essential for their survival. It does not provide any information regarding the travel needs, emergency contacts, banks, etc. to the customer.

Competitor	**Eventbrite- https://www.eventbrite.com/**
Description	It is an event management website that allows the customers to browse, create and promote events in the neighborhood.
Pros	This platform enables the search of events based on different cities in Germany. Various pubs and hotspot locations are mentioned on their portal. An additional feature is that they allow the user to create any new events on their web application.
Cons	The Eventbrite website has no important information tailor made for a student. They have a collection of events listed down, but no data about the necessities that a student needs to get adjusted to a new city.

Competitor	**Myhelpbuddy- https://myhelpbuddy.com/ :**
Description	The web application, myhelpbuddy is a web portal that allows international students to get help from an external source working to help you. They aim to bring the international people together.
Pros	The user gets to log onto their portal and request any kind of help they need. They offer services related to accommodation, documents certification, bank information, etc.
Cons	The myhelpbuddy does not offer any information regarding the events happening around the city. They are limited in the manner they provide a lending hand. The user needs to book a buddy through their website and further carry on with their task. This makes it time-consuming for the users.

3.2 Market Analysis

Market analysis is an integral part of project management. The necessity to identify the type of market our service relates to, is a crucial part of this project. The International Students Event Portal falls under the trade of the life of a student and the instances in them.

Market Needs / Goals

The requirement for an International Students Event Portal is a definite necessity. The initial days for an international student in a new town is a total disorganization. Important stipulations like registration at the University, acquiring the student ID, enrolling at the dormitories, City Registration, creating a bank account, etc. fall into the basic needs to begin one's journey in a new country. There is a mammoth demand for a web portal that is specifically designed and curated for a student. This is the market that we wish to explore. Our portal fulfills the requirements of every student who is in need of necessary data that makes their day to day lives easier.

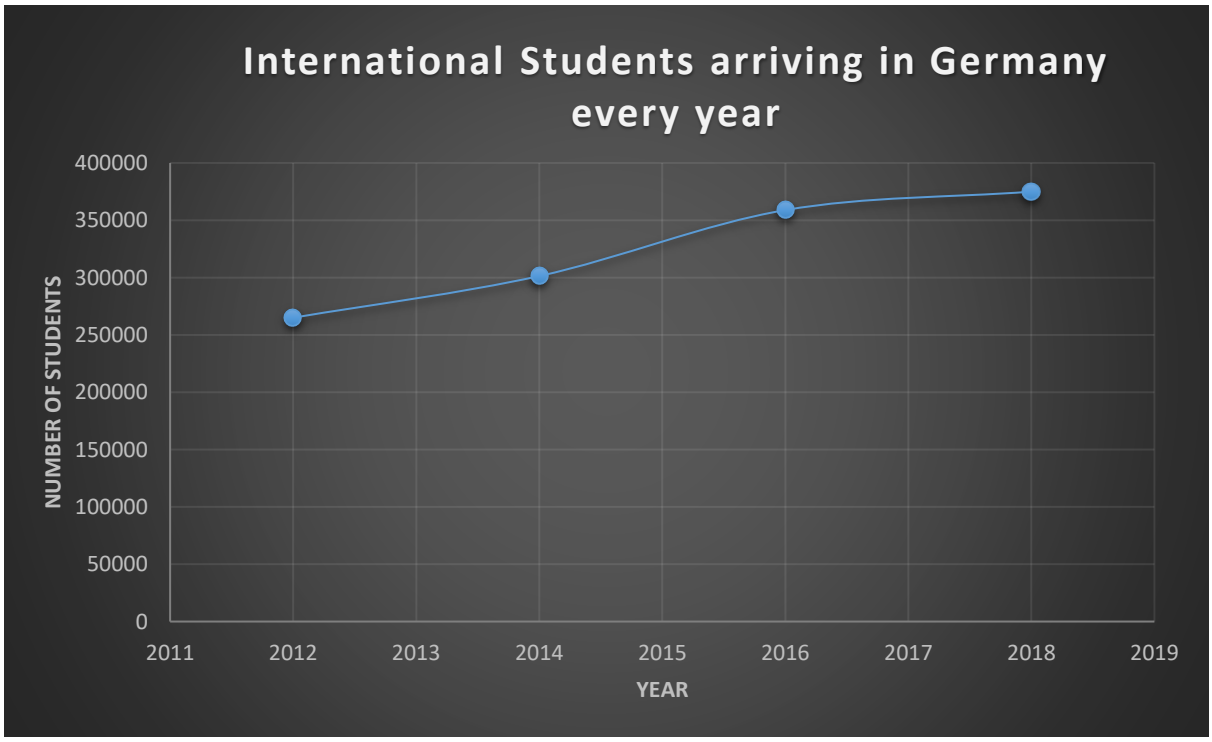


Figure 3.2 Survey of International Students

3.3 Target Market

International Students:

The Events portal is focused primarily on International students coming from different cultures of the world to Heidelberg, Germany. Our target market comprises of the International students newly arriving to the city. We are catered to provide the needs of the people who are keen on learning more about the city of Heidelberg and are ready to build their life in a new city.

Visitors:

Our web application can also be utilized by anybody who is new to the city and require information about the new activities. The target audience constitutes of people aging around 18 to 40. An explorer whose weekends are available, can use our portal to register for several events.

Volunteers:

The International Students Event portal is available for any user who wants to be of service to the society and the country they're living in. The users can take part in fire drill and volunteer for first aid activities around their neighborhood for people in need.

Marketing Strategies:

The International Students Event Portal is curated for any user that is new to the country of Germany. What we aim to achieve through our marketing strategies is to make every International person arriving to the city to be known about it.

An approach that we took upon was querying international users, new to the city. They provided a great deal of information in terms of the necessary requirements. The strategies that we built was based off the input we obtained from foreigners setting foot in a new city.

A window of opportunity that we hope to explore is the time of release of our web application. The International Students Event Portal intends to enter into the market at a crucial time for high recognition and increase of traffic. This timeline would be during the Welcome week at the University, hence broadening our recognition.

Advertising:

One way to beat the monopolistic competition is through advertising. A unique way to advertise the portal is through the website of SRH Hochschule Heidelberg. Since us, as a consulting company are working for the University, it is a great way to attract international students enrolled at SRH Hochschule Heidelberg to our web application.

1. Print Advertising
    - Newspapers
    - Magazines.
2. Outdoor Advertising
    - Posters
    - Flyers around several universities.
3. Online Network Advertising
    - Google Ads
    - Social Media- Facebook, Instagram, Twitter Ads

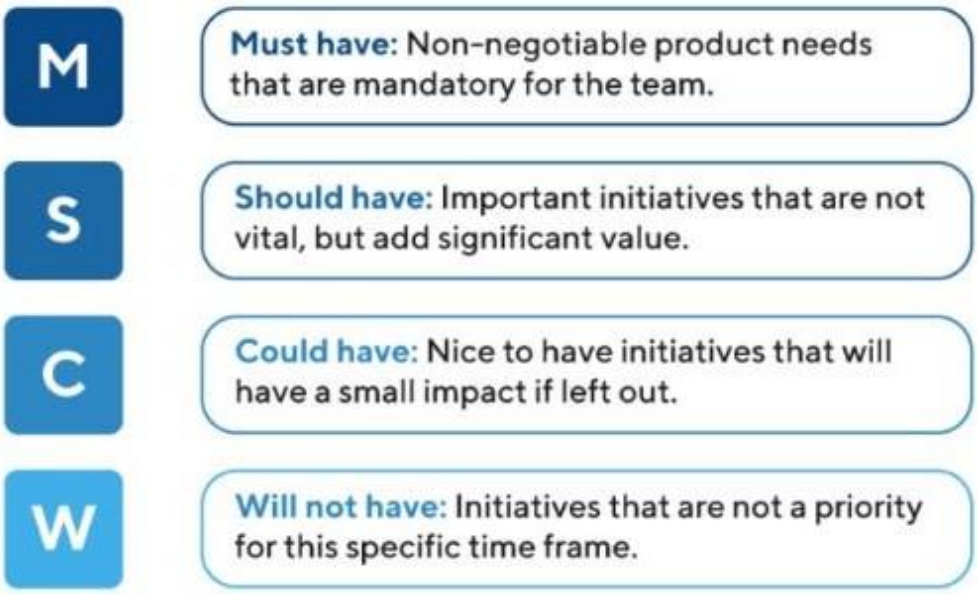
3.4 MoSCoW Analysis

The MoSCoW method is a prioritization technique used in management, business analysis, project management, and software development to reach a common understanding with stakeholders on the importance they place on the delivery of each requirement.

The method is commonly used to help key stakeholders understand the significance of initiatives in a specific release.

The acronym, MoSCoW, stands for 4 different categories of initiatives: must-haves, should-haves, could-haves, and will not have at this time. Sometimes, the "W" in MoSCoW is used to stand for "wish" instead of "will not have right now.

MoSCow Prioritization Categories



Requirements

User requirements generally come from the requirements elicitation process. They are often described in natural language and mainly focus on the problem domain. User requirements are often prioritized by customers in order to know which requirements contain high values for the customers. A system requirement expresses a desirable system property that will lead to the achievement of at least one user requirement. System requirements mainly focus on the solution domain. System requirements are often prioritized by the system developers in order to determine the system implementation order.

Requirements can be categorized in other different ways. Table 1 shows some categories of requirements. Requirements prioritization can be performed on different categories of requirements to achieve different purposes.

Requirement Classifications

• Functional requirements – What the system will do • Non – functional requirements – constraints on the types of solution that will meet the functional requirements e.g. accuracy, performance, security and modifiability
• Goal level requirements – related to business goals • Domain level requirements – related to problem area • Product level requirements – related to the product • Design level requirements – what to build
• Primary requirements – elicited from stakeholders • Derived requirements – derived from primary requirements
Others classifications, e.g. • Business requirements versus technical requirements • Product requirements versus process requirements – i.e. business needs versus how people will interact with the system • Role based requirement, e.g. customer requirements, user requirements, IT requirements, system requirements, and security requirements.

Web Site – MoSCoW Analysis

Requirement	MoSCoW
Users can log onto the website securely	Must
Users should be able to avail of a “Forgotten Password” utility.	Should
A user can send an email to the system requesting a change to the account Page.	Could
When a user clicks on a phone number on the web page a call is made automatically from their desk phone to that number.	Wont

Table 3.4 MoSCoW Strategy

Must-Have Initiatives:

As the name suggests, this category consists of initiatives that are “musts” for website. They represent non-negotiable needs for the project, For example, if you’re releasing an any business website application, a must-have initiative may be security functionalities that help maintain compliance.

Should-Have Initiatives:

It should-have initiatives are just a step below must-haves. As a self-service app user, they should have securely reset my password option, so that they can change the password for security reasons or if miss-placed previous password.

Could-Have Initiatives:

Another way of describing "could-have" initiatives is nice-to-haves. "Could-have" initiatives are not necessary to the core function of the product. Compared with "should-have" initiatives, they have much smaller impact on the outcome if they are left out. So let's consider sending an email to the system requesting a change to the account page as could have initiative.

Will Not Have:

One benefit of the MoSCoW method is that it places several initiatives in the "will-not-have" category. This helps manage expectations about what will not be included at one particular point of time. So when the user clicks on the phone number on the web page a call is made automatically from their desk phone to that number.

3.5 Stakeholder's Analysis

Stakeholder Analysis is a technique this is used to facilitate the project by way of taking into consideration and incorporating the needs of all the ones who have a 'stake' or a hobby in the assignment. Stakeholder Analysis is crucial to the achievement of every undertaking in every organization. The stakeholder can also make or wreck the Project. Sometimes the stakeholders act additionally because the participants of Steering Committee. There are 3 critical points to be taken into consideration with admire to Stakeholder Management.

- Impact of Project on Stakeholder.
- Influence of Stakeholder.
- Influence of Stakeholder on Project.
- Attitude of the Stakeholder.

The Stakeholders can be any Person, Organizations, and companies of pursuits which might be both contributing to the task, stricken by the outcome of the venture or suppose that they're stricken by the undertaking. They also can be inner or outside. Some stakeholder will have a specific terrible interest within the success of the project where the solution desires to be addressed. It is essential to note that for the project Sponsor or Financier or Lender and End Users play a Vitol function in the development of the venture.

Below is the Mind map of the Stakeholder Analysis,

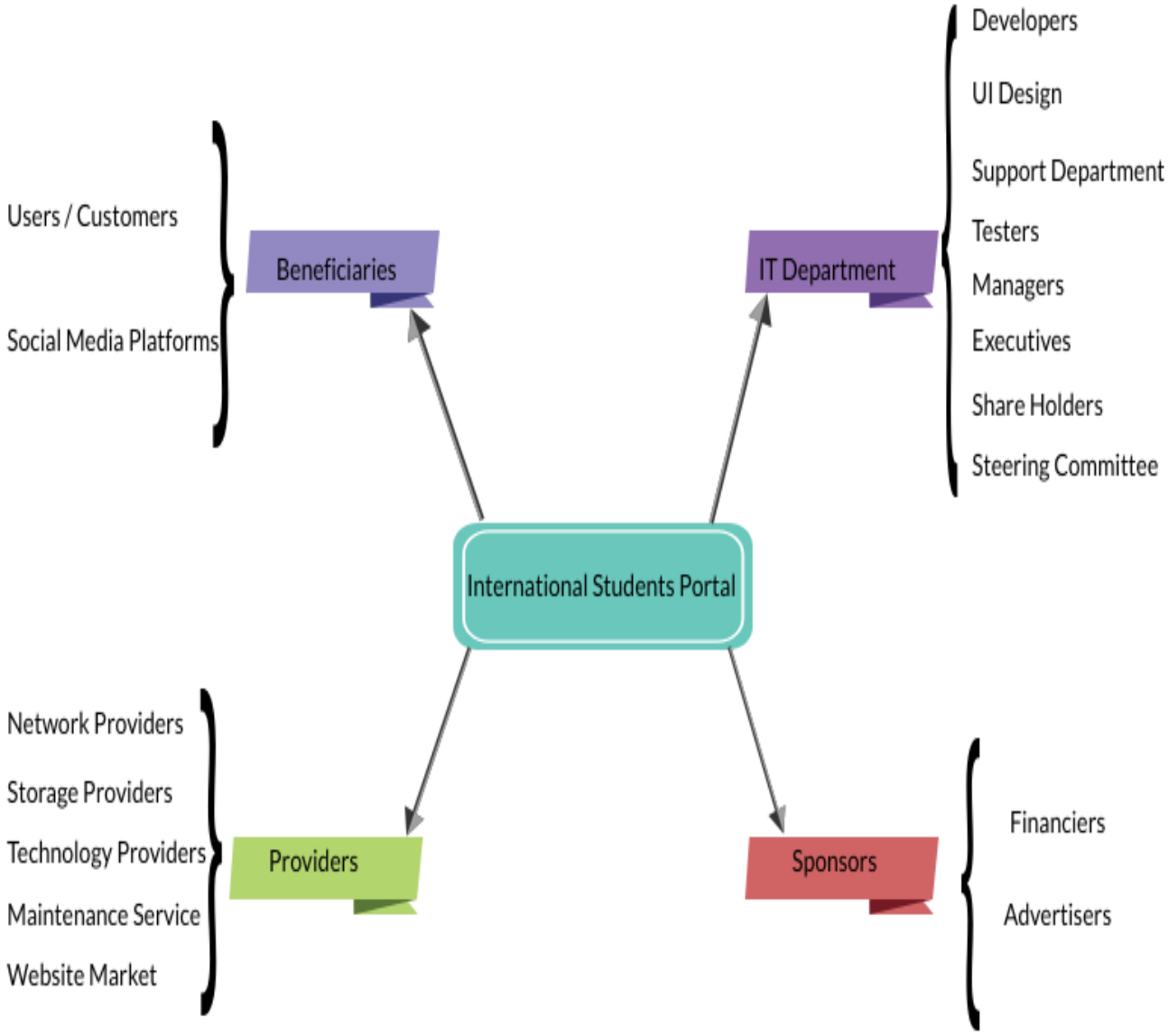


Figure 3.5 Stakeholder's Analysis Mind Map

It can be seen that Sponsor, End Users, Steering Committee, Managers & Developers have highest impact and influence in the project and appropriate remarks are provided to each of the Stakeholder. When the attitude of the stakeholder is negative there needs to be an appropriate response to handle the issue. From the above table it can be seen that, Network services and Stakeholders have negative attitude and requires a strategy to handle the issue.

The below Tabular Column provides a detailed information,

No.	Name	Impact	Influence	Attitude	Result	Remarks
1	Sponsor	4	4	Positive	16	Timely status report and review meetings
2	Advertisers	3	1	Positive	3	
3	End Users	3	4	Positive	12	Meeting market expectations
4	Social Network	3	3	Positive	9	
5	Cloud Services	3	3	Positive	9	
6	Network Services	1	2	Negative	2	Quality Measures
7	Database Services	1	3	Positive	3	
8	Technology Services	1	3	Positive	3	
9	Website Market	1	2	Positive	2	
10	Stakeholders	3	1	Negative	3	Quality Measures
11	Steering Committee	3	4	Positive	12	Timely status report and review meetings
12	Executives	3	2	Positive	6	
13	Managers	3	4	Positive	12	
14	Web Designers	3	2	Positive	6	
15	Developers	3	4	Positive	12	Clear objectives and roles
16	Testers	2	3	Positive	6	
17	Support Staff	2	2	Positive	4	

Table 4.1 Project Structure Plan (Mind Map)

3.6 Requirement Analysis

Functional Requirements

The International Portal is a reservoir of information formulated for a user arriving to a new city. The user needs to provide their basic information to log onto the portal. On successful registration, the user can use his username and password for login. The customer can view information portrayed on the web application and register for interested events if he/she wants to. An additional feature is that the user can provide feedback to the administrator if they wish to do so.

The administrator is a stakeholder that has access to the data outputted on the website. The admin is allowed to make changes and edit the information present. They can add new events happening around the city. The administrator is also allowed to answer the queries of any user. The admin also has access to the feedback information that the customer provides. This information can be taken as constructive criticism and be used to evolve the portal henceforth.

Technical Requirements

The consumer utilizes the International Students Event Portal by providing their login credentials and signs onto the web application. The user is required to know the basic use of a web application. The consumer is preferred to have a good knowledge about navigation through a website and maneuver through it with ease.

Hardware Requirements

- Recommended operating Systems –
  - Windows - 7 or newer,
  - MAC – OS X v10.7 or higher
  - Linux – Ubuntu
- Processor - Minimum 1 GHz; Recommended 2GHz or more
- Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)
- Hard Drive - Minimum 32 GB; Recommended 64 GB or more
- Memory (RAM) - Minimum 1 GB; Recommended 4 GB or above

Software Requirements

- PC Web –
    - Google Chrome - v61+
    - Mozilla Firefox - v60+
    - Safari – v12+
    - Edge – v44+

- Mobile Web –
    - iOS - iOS 11+ with Safari 12+ or Chrome 61+
    - Android - Android 7+ with Chrome 61+

- Technologies Used –
    - Front End:
        - Hypertext Markup Language (HTML5)
        - Cascaded Style Sheets (CSS)
        - Extensible Markup Language (XML)

    - Back End:
        - Hypertext Preprocessor (PHP)
        - JavaScript (JS)
        - Database
        - Ruby
        - ASP.NET

4 Managerial Process

4.1 Project Structure Plan Mind Map

Activities - The task paper creation is started and did by the project manager and then it will be processed next step. When the endorsement is done, the period of gathering requirements is started. In this stage, group building, market requirements, business plan and the hardware and software requirements are assessed by project manager and requirement analyst. At the point when the arrangement is endorsed, the project 'kick-off' happens. The programming for the functionalities is done by the developers and network engineers in the solution phase. The design engineers a simultaneously builds up the UI. When the project is finished, it arrives at the testing stage. In this stage, the QA manager does the tests concerning the hardware and software aspects of the application. At the point when the testing stage is finished, the final product is ready for deployment.

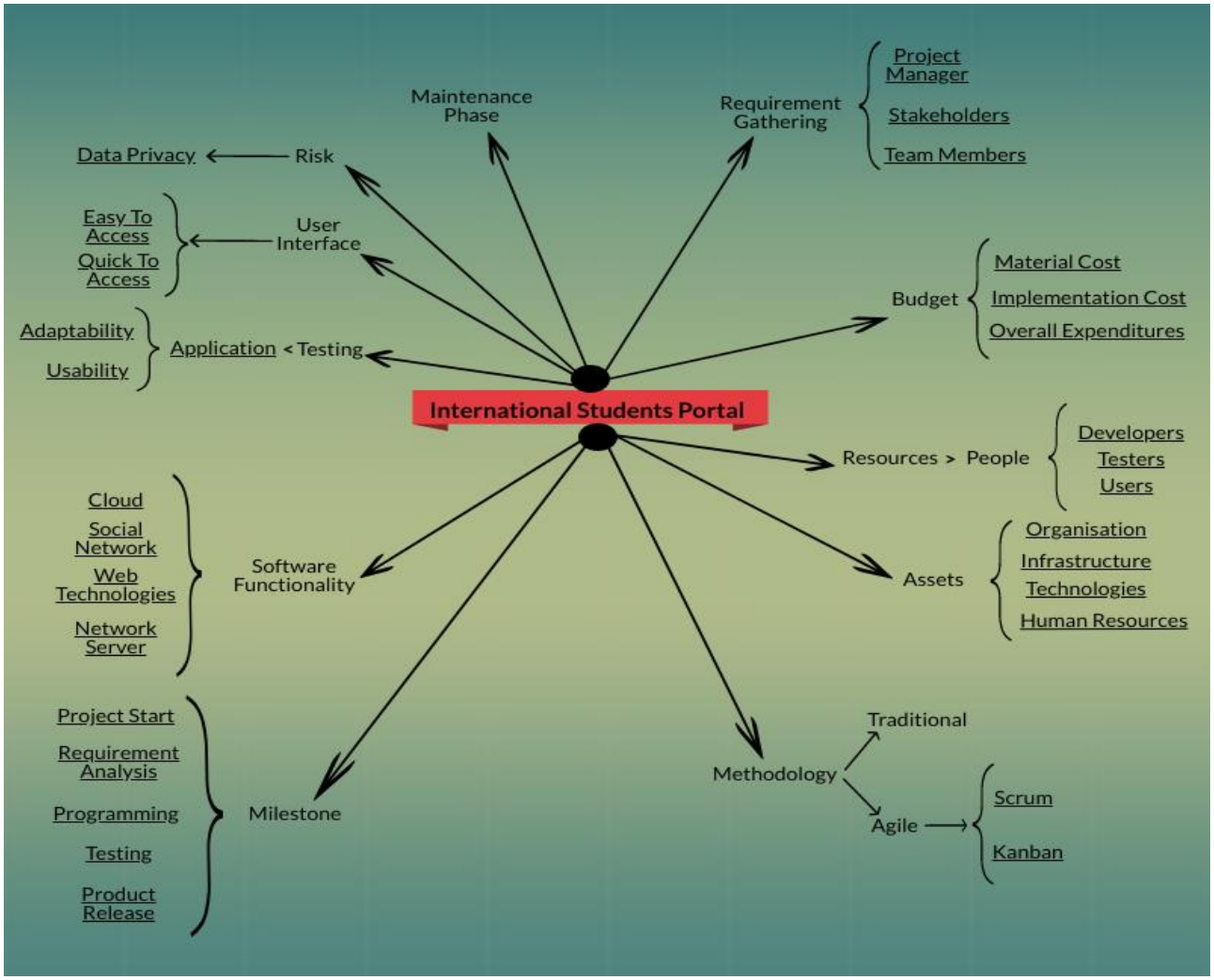


Figure 4.1 Project Structure Plan (Mind Map)

4.2 Assumptions, Dependencies & Constraints

4.2.1 Assumptions

- Team members will be worried of the undertaking task cutoff times.
- Team members will stay healthy and be physically fit for completing the assigned tasks.
- Team members will discuss effectively with other colleagues with most professionalism manner.
- Team members will always be motivated all through the length of the project.
- The group won't lose any individuals.
- Team member are offered access to every one of the instruments basic for finishing the project.

4.2.2 Dependencies

- Team members will not be delaying or postponing the relegated work pieces.
- Management will be efficient in corresponding the project goals.
- Management will be effective at upholding continuous progression of the process.

4.2.3 Constraints

- Team members' personal lives.
- Personal conflicts between team members.

4.3 Network Plan

The below figure shows the entire network plane which is exclusively made in Project Libre tool. Here Network plan consist of Name, Duration, start date, End date along with the name of resource which has been utilized.

	Name	Duration	Start	Finish	Resource Names
1	student portal	60 days	10/14/19 8:00 AM	1/3/20 5:00 PM	
2	**Project Start**	4 days	**10/14/19 8:00 AM**	**10/17/19 5:00 PM**	
3	Concept/ Paper creation	3 days	10/14/19 8:00 AM	10/16/19 5:00 PM	Project Manager
4	Project Approval	1 day	10/17/19 8:00 AM	10/17/19 5:00 PM	
5	**Requirement Analysis**	9.75 days	**10/18/19 8:00 AM**	**10/31/19 3:00 PM**	
6	Team building activities	1 day	10/18/19 8:00 AM	10/18/19 5:00 PM	Project Manager
7	Market analysis	2 days	10/21/19 8:00 AM	10/22/19 5:00 PM	Business Analyst 1
8	Competitive analysis	2 days	10/23/19 8:00 AM	10/24/19 5:00 PM	Business Analyst 3
9	Hardware and cloud analysis	1.75 days	10/25/19 8:00 AM	10/28/19 3:00 PM	Business Analyst 2
10	Softwre requirement analysis	2 days	10/28/19 3:00 PM	10/30/19 3:00 PM	Business Analyst 1
11	Business plan	1 day	10/30/19 3:00 PM	10/31/19 3:00 PM	Project Manager
12	Project kick off	0 days	10/31/19 3:00 PM	10/31/19 3:00 PM	
13	**Developer**	26.5 days	**10/31/19 3:00 PM**	**12/9/19 10:00 AM**	
14	convert functionality to kanban approch	1 day	10/31/19 3:00 PM	11/1/19 3:00 PM	Development Member 1
15	build target state	1 day	11/1/19 3:00 PM	11/4/19 3:00 PM	Development Member 2
16	Analysis review	1 day	11/4/19 3:00 PM	11/5/19 3:00 PM	Development Member 3
17	Functionality Defination	2.5 days	11/5/19 3:00 PM	11/8/19 10:00 AM	Development Member 2;De...
18	Clean coding	20 days	11/8/19 10:00 AM	12/6/19 10:00 AM	Development Member 1;De...
19	Coding complete	0 days	12/6/19 10:00 AM	12/6/19 10:00 AM	Development Member 1
20	Quality review	1 day	12/6/19 10:00 AM	12/9/19 10:00 AM	Project Manager
21	**Quality assurance/Testing**	18.5 days	**12/9/19 10:00 AM**	**1/2/20 3:00 PM**	
22	set guideline	1 day	12/9/19 10:00 AM	12/10/19 10:00 AM	Software Test Lead
23	Functionality test	2.5 days	12/10/19 10:00 AM	12/12/19 3:00 PM	Test Member 1;Test Member 2
24	unit test	2.5 days	12/12/19 3:00 PM	12/17/19 10:00 AM	Test Member 3;Test Member 4
25	user interface test	2.5 days	12/17/19 10:00 AM	12/19/19 3:00 PM	Test Member 4;Test Member 5
26	system testing	2.5 days	12/19/19 3:00 PM	12/24/19 10:00 AM	Test Member 1;Test Member 5
27	integration testing	2.5 days	12/24/19 10:00 AM	12/26/19 3:00 PM	Test Member 3;Test Membe...
28	final review	5 days	12/26/19 3:00 PM	1/2/20 3:00 PM	Software Test Lead
29	Product Release	0 days	1/2/20 3:00 PM	1/2/20 3:00 PM	

Figure 4.3 Network Flow

4.3.1 Gantt Chart

With the help of Gantt chart, entire project's timeline has been visualized in order to improve the organization as well as the throughput of the team. This Gantt chart has been built up using tool Project Libre.

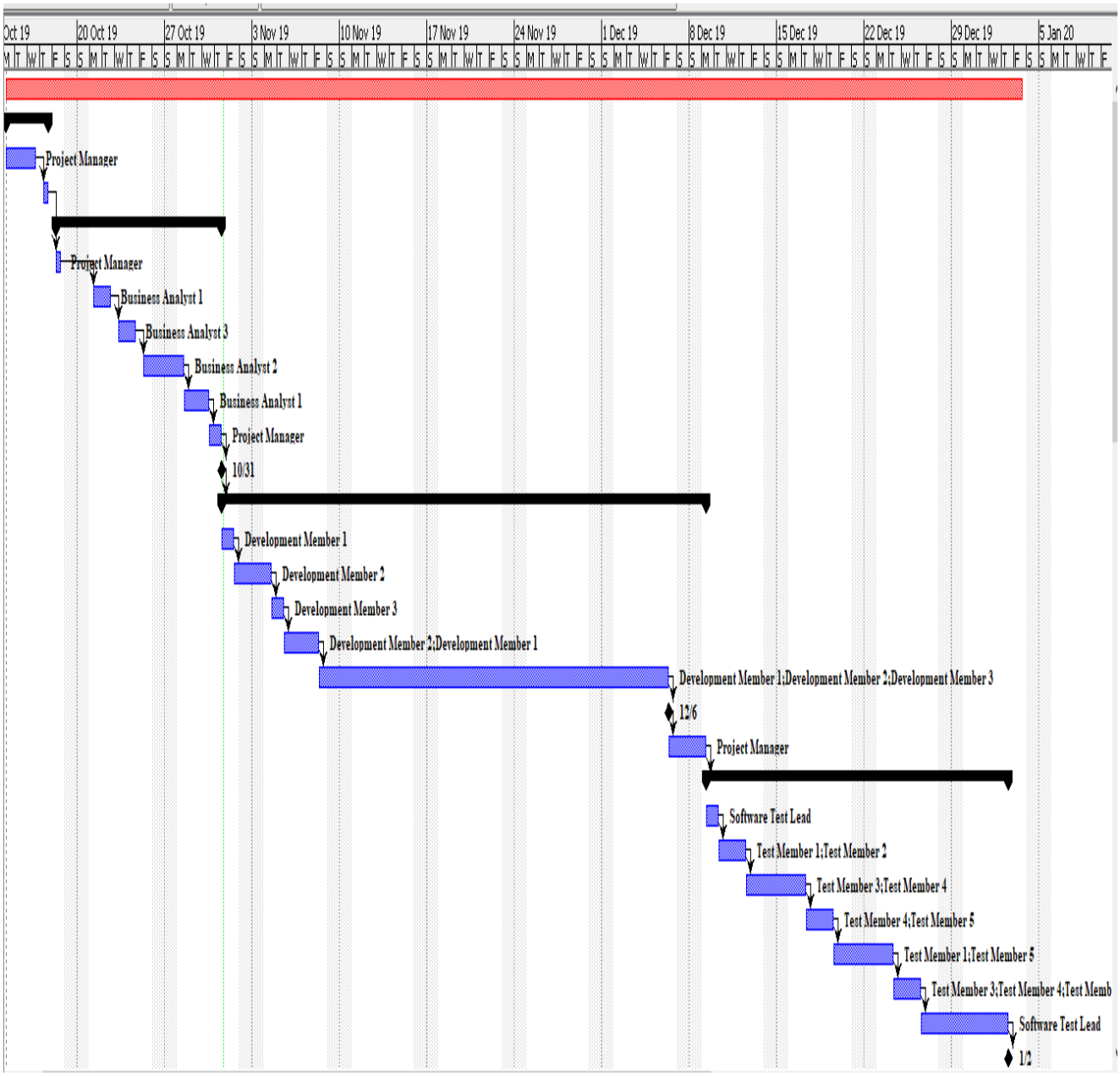
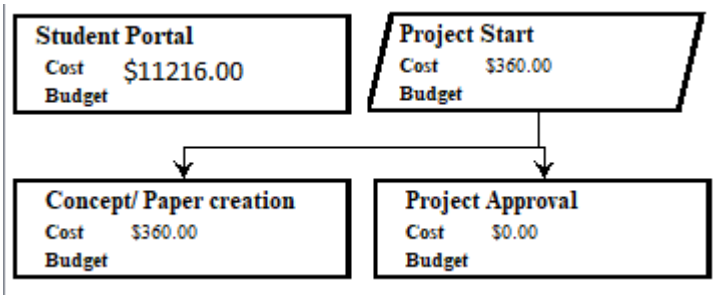
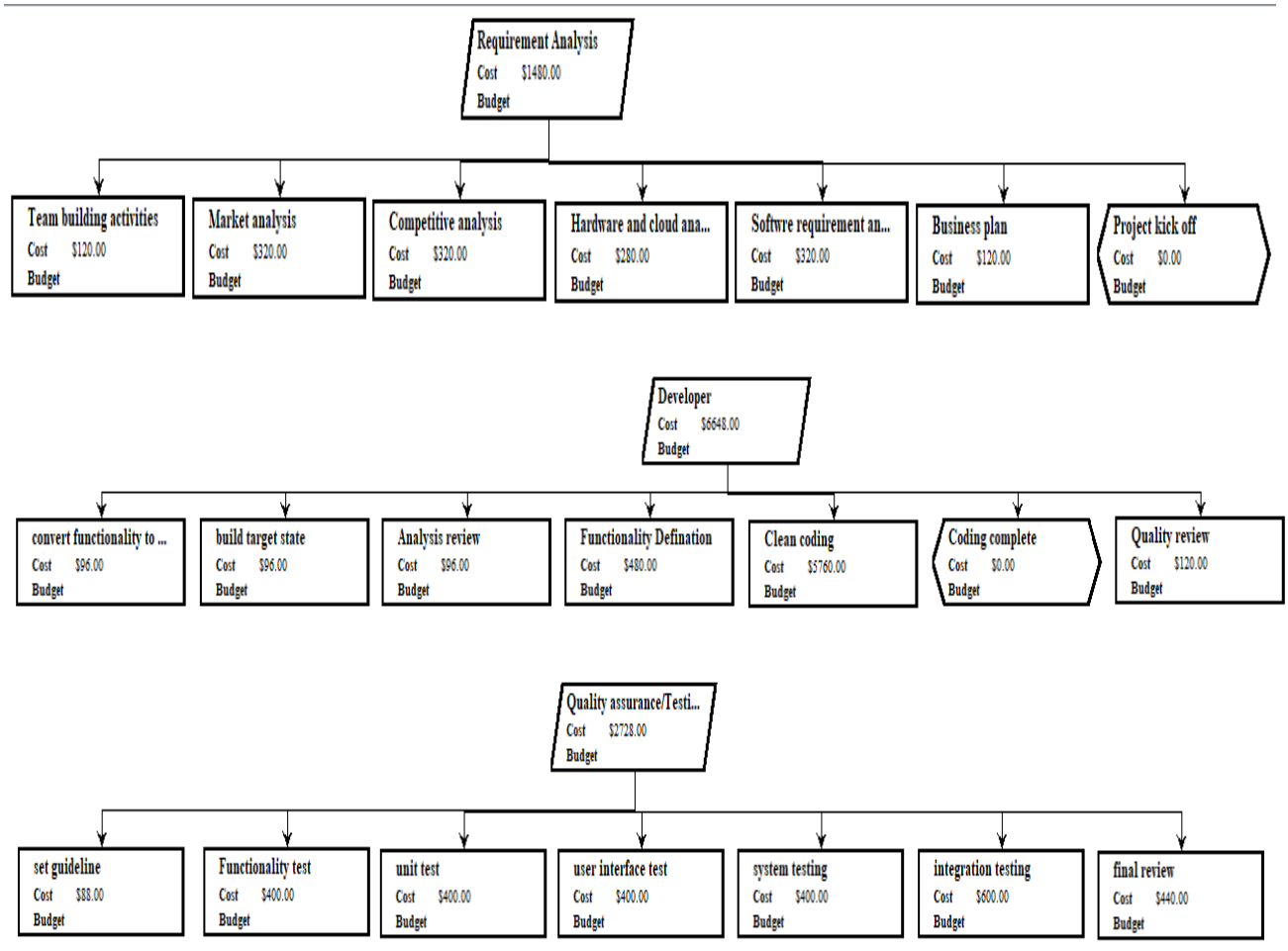


Figure 4.3.1 Gantt Chart

4.3.2 WBS (Work Breakdown Structure)

Full project has been broken down into different components so that managing of an entire project becomes little easier. As shown in the figure below, Main Project has been divided to Programming in further in the different phase with an approximate cost of each component. It is not a simple To-Do list. It has further partitions in each component, which in turn become the To-Do list of individual components. Work Breakdown Structure has been developed in Project Libre tool as well.





4.3.3 Network Flow

Work broken down structure has further divisions called as activities. Graphical representation of these activities has been shown below. It includes from the starting of a project to each analysis and then from reviews to different test to release of the application.

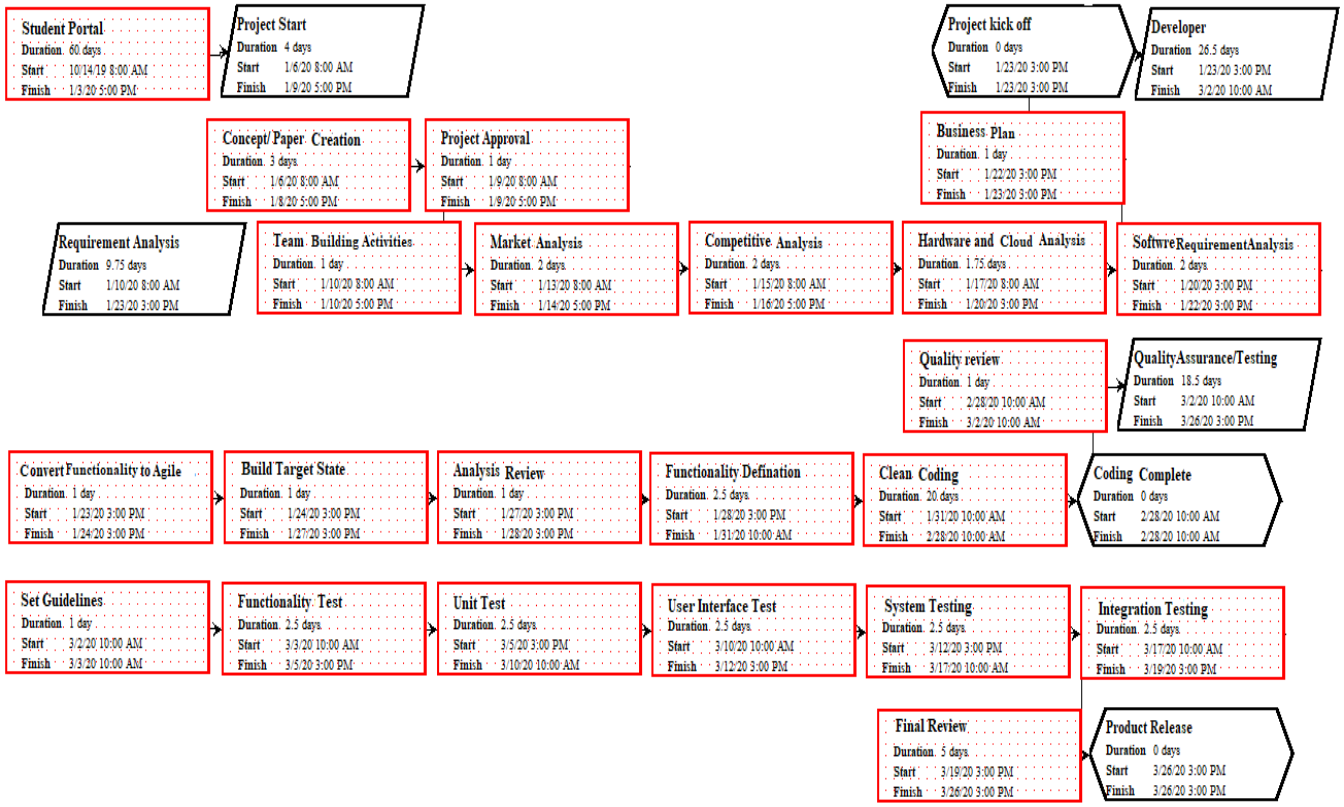


Figure 4.3.3 Network Flow

4.3.4 Resource Breakdown Structure

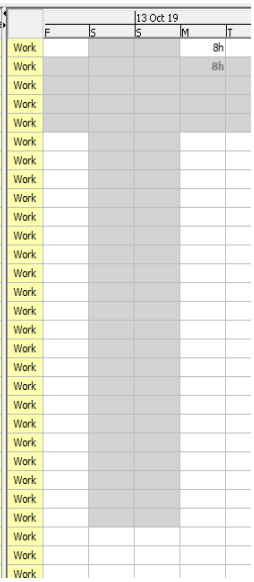
RBS (Resource Breakdown Structure) depicts the detailed structure of the tasks which are broken down into activities. It contains details of the entire organization with the respected working hours with cost related to that resource and that activity.

	Name	Work	Duration	Start	Finish	Work Contour	Assignmen...	Leveling D...	Cost Rate Table
1	student portal	480 hours	60 days	10/14/19 8:00 AM	1/3/20 5:00 PM			0 days	
2	**Project Start**	32 hours	4 days	**10/14/19 8:00 AM**	**10/17/19 5:00 PM**			**0 days**	
3	Concept/ Paper creation	24 hours	3 days	10/14/19 8:00 AM	10/16/19 5:00 PM			0 days	
	Project Manager	*24 hours*	*3 days*	*10/14/19 8:00 AM*	*10/16/19 5:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
4	Project Approval	8 hours	1 day	10/17/19 8:00 AM	10/17/19 5:00 PM			0 days	
5	**Requirement Analysis**	78 hours	9.75 days	**10/18/19 8:00 AM**	**10/31/19 3:00 PM**			**0 days**	
6	Team building activities	8 hours	1 day	10/18/19 8:00 AM	10/18/19 5:00 PM			0 days	
	Project Manager	*8 hours*	*1 day*	*10/18/19 8:00 AM*	*10/18/19 5:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
7	Market analysis	16 hours	2 days	10/21/19 8:00 AM	10/22/19 5:00 PM			0 days	
	Business Analyst 1	*16 hours*	*2 days*	*10/21/19 8:00 AM*	*10/22/19 5:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
8	Competitive analysis	16 hours	2 days	10/23/19 8:00 AM	10/24/19 5:00 PM			0 days	
	Business Analyst 3	*16 hours*	*2 days*	*10/23/19 8:00 AM*	*10/24/19 5:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
9	Hardware and cloud analys	14 hours	1.75 days	10/25/19 8:00 AM	10/28/19 3:00 PM			0 days	
	Business Analyst 2	*14 hours*	*1.75 days*	*10/25/19 8:00 AM*	*10/28/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
10	Softwre requirement analy	16 hours	2 days	10/28/19 3:00 PM	10/30/19 3:00 PM			0 days	
	Business Analyst 1	*16 hours*	*2 days*	*10/28/19 3:00 PM*	*10/30/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
11	Business plan	8 hours	1 day	10/30/19 3:00 PM	10/31/19 3:00 PM			0 days	
	Project Manager	*8 hours*	*1 day*	*10/30/19 3:00 PM*	*10/31/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
12	Project kick off	0 hours	0 days	10/31/19 3:00 PM	10/31/19 3:00 PM			0 days	
13	**Developer**	552 hours	26.5 days	**10/31/19 3:00 PM**	**12/9/19 10:00 AM**			**0 days**	
21	**Quality assurance/Testi**	268 hours	18.5 days	**12/9/19 10:00 AM**	**1/2/20 3:00 PM**			**0 days**	
29	Product Release	0 hours	0 days	1/2/20 3:00 PM	1/2/20 3:00 PM			0 days	

	Name	Work	Duration	Start	Finish	Work Contour	Assignmen...	Leveling D...	Cost Rate Table
1	student portal	480 hours	60 days	10/14/19 8:00 AM	1/3/20 5:00 PM			0 days	
2	**Project Start**	32 hours	4 days	**10/14/19 8:00 AM**	**10/17/19 5:00 PM**			**0 days**	
5	**Requirement Analysis**	78 hours	9.75 days	**10/18/19 8:00 AM**	**10/31/19 3:00 PM**			**0 days**	
13	**Developer**	552 hours	26.5 days	**10/31/19 3:00 PM**	**12/9/19 10:00 AM**			**0 days**	
14	convert functionality to kar	8 hours	1 day	10/31/19 3:00 PM	11/1/19 3:00 PM			0 days	
	Development Member 1	*8 hours*	*1 day*	*10/31/19 3:00 PM*	*11/1/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
15	build target state	8 hours	1 day	11/1/19 3:00 PM	11/4/19 3:00 PM			0 days	
	Development Member 2	*8 hours*	*1 day*	*11/1/19 3:00 PM*	*11/4/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
16	Analysis review	8 hours	1 day	11/4/19 3:00 PM	11/5/19 3:00 PM			0 days	
	Development Member 3	*8 hours*	*1 day*	*11/4/19 3:00 PM*	*11/5/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
17	Functionality Defination	40 hours	2.5 days	11/5/19 3:00 PM	11/8/19 10:00 AM			0 days	
	Development Member 2	*20 hours*	*2.5 days*	*11/5/19 3:00 PM*	*11/8/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Development Member 1	*20 hours*	*2.5 days*	*11/5/19 3:00 PM*	*11/8/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
18	Clean coding	480 hours	20 days	11/8/19 10:00 AM	12/6/19 10:00 AM			0 days	
	Development Member 2	*160 hours*	*20 days*	*11/8/19 10:00 AM*	*12/6/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Development Member 3	*160 hours*	*20 days*	*11/8/19 10:00 AM*	*12/6/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Development Member 1	*160 hours*	*20 days*	*11/8/19 10:00 AM*	*12/6/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
19	Coding complete	0 hours	0 days	12/6/19 10:00 AM	12/6/19 10:00 AM			0 days	
	Development Member 1	*0 hours*	*0 days*	*12/6/19 10:00 AM*	*12/6/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
20	Quality review	8 hours	1 day	12/6/19 10:00 AM	12/9/19 10:00 AM			0 days	
	Project Manager	*8 hours*	*1 day*	*12/6/19 10:00 AM*	*12/9/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
21	**Quality assurance/Testi**	268 hours	18.5 days	**12/9/19 10:00 AM**	**1/2/20 3:00 PM**			**0 days**	
29	Product Release	0 hours	0 days	1/2/20 3:00 PM	1/2/20 3:00 PM			0 days	

International Students Event Portal

	Name	Work	Duration	Start	Finish	Work Contour	Assignmen...	Leveling D...	Cost Rate Ta
1	student portal	480 hours	60 days	10/14/19 8:00 AM	1/3/20 5:00 PM			0 days	
2	**Project Start**	32 hours	4 days	**10/14/19 8:00 AM**	**10/17/19 5:00 PM**			**0 days**	
5	**Requirement Analysis**	78 hours	9.75 days	**10/18/19 8:00 AM**	**10/31/19 3:00 PM**			**0 days**	
13	**Developer**	552 hours	26.5 days	**10/31/19 3:00 PM**	**12/9/19 10:00 AM**			**0 days**	
21	**Quality assurance/Testing**	268 hours	18.5 days	**12/9/19 10:00 AM**	**1/2/20 3:00 PM**			**0 days**	
22	set guideline	8 hours	1 day	12/9/19 10:00 AM	12/10/19 10:00 AM			0 days	
	Software Test Leao	*8 hours*	*1 day*	*12/9/19 10:00 AM*	*12/10/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
23	Functionality test	40 hours	2.5 days	12/10/19 10:00 AM	12/12/19 3:00 PM			0 days	
	Test Member 2	*20 hours*	*2.5 days*	*12/10/19 10:00 AM*	*12/12/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Test Member 1	*20 hours*	*2.5 days*	*12/10/19 10:00 AM*	*12/12/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
24	unit test	40 hours	2.5 days	12/12/19 3:00 PM	12/17/19 10:00 AM			0 days	
	Test Member 4	*20 hours*	*2.5 days*	*12/12/19 3:00 PM*	*12/17/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Test Member 3	*20 hours*	*2.5 days*	*12/12/19 3:00 PM*	*12/17/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
25	user interface test	40 hours	2.5 days	12/17/19 10:00 AM	12/19/19 3:00 PM			0 days	
	Test Member 4	*20 hours*	*2.5 days*	*12/17/19 10:00 AM*	*12/19/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Test Member 5	*20 hours*	*2.5 days*	*12/17/19 10:00 AM*	*12/19/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
26	system testing	40 hours	2.5 days	12/19/19 3:00 PM	12/24/19 10:00 AM			0 days	
	Test Member 5	*20 hours*	*2.5 days*	*12/19/19 3:00 PM*	*12/24/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Test Member 1	*20 hours*	*2.5 days*	*12/19/19 3:00 PM*	*12/24/19 10:00 AM*	*Flat*	*0 days*	*0 days*	*Rate A*
27	integration testing	60 hours	2.5 days	12/24/19 10:00 AM	12/26/19 3:00 PM			0 days	
	Test Member 3	*20 hours*	*2.5 days*	*12/24/19 10:00 AM*	*12/26/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Test Member 4	*20 hours*	*2.5 days*	*12/24/19 10:00 AM*	*12/26/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
	Test Member 5	*20 hours*	*2.5 days*	*12/24/19 10:00 AM*	*12/26/19 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
28	final review	40 hours	5 days	12/26/19 3:00 PM	1/2/20 3:00 PM			0 days	
	Software Test Leao	*40 hours*	*5 days*	*12/26/19 3:00 PM*	*1/2/20 3:00 PM*	*Flat*	*0 days*	*0 days*	*Rate A*
29	Product Release	0 hours	0 days	1/2/20 3:00 PM	1/2/20 3:00 PM			0 days	



4.4 USE CASES

Use Case 1:

Title	**User Registration**
Stakeholders	User
Description	The user provides basic user details in order to sign up.
Flow	**1.** The user opens the web application/ mobile application portal. **2.** The user clicks on sign-up. **3.** The user fills his information along with a password. **4.** Once the user clicks on "submit", the registration is successful.

Use Case 2:

Title	**User Login**
Stakeholders	User
Description	The user attempts to login into the web/mobile application.
Flow	1. The user opens the web application/ mobile application portal. 2. The user clicks on login. 3. The user utilizes his/her name and password he/she used for registration as the login credentials. 4. If the credentials match along with the ones stored on the database, he/she is logged in. 5. Otherwise, an error window pops up informing that the username or password is incorrect.

Use Case 3:

Title	**User – Forgot Password**
Stakeholders	User
Description	The user has forgotten their login credentials.
Flow	1. The user opens the web application/ mobile application portal. 2. The user clicks on "Forgot Password?" 3. A recovery link is sent to the user's email and phone number and it can be recovered by setting up a new password.

Use Case 4:

Title	**View Information**
Stakeholders	User
Description	The user can view information.
Flow	1. The user has an array of different kinds of important information available at his/her disposal and it is ready to be viewed.

Use Case 5:

Title	**Register for Events/Others**
Stakeholders	User
Description	The user can view and register for events available.
Flow	1. The user can register for various activities taking place in the city using the links provided in the portal. 2. To participate in certain events, the user must satisfy certain criteria like age, student ID, etc. 3. After joining a particular event, the user will receive a confirmation email from the event organizers.

Use Case 6:

Title	User Shares via Social Media
Stakeholders	User
Description	The user can share data using social media.
Flow	1. The user can link their social media accounts to the portal. 2. The user is allowed to share events they're interested on their Instagram, Facebook or Twitter accounts.

Use Case 7:

Title	User Queries
Stakeholders	User
Description	The user may ask questions.
Flow	1. The user can type their queries in the contact forum related to any topic. 2. When the query has been answered, the user receives an email notification.

Use Case 8:

Title	**Admin Login**
Stakeholders	Administrator
Description	The administrator attempts to login into the web/mobile application.
Flow	1. The admin opens the web application/ mobile application portal. 2. The admin clicks on login. 3. The user utilizes his/her name and password he/she used for registration as the login credentials. 4. If the credentials match along with the ones stored on the database, he/she is logged in. 5. Otherwise, an error window pops up informing that the username or password is incorrect.

Use Case 9:

Title	**Admin Control**
Stakeholders	Administrator
Description	The administrator controls the information on the portal.
Flow	1. The admin can edit the information present on the website. 2. The admin can view the number of visits to the website. 3. Admin can add new data to keep the portal up-to-date.

4.5 Risk Analysis

It is an uncertain condition /event when it occurs has an effect on the project objectives. To avoid or to minimize the impact we have analyzed a mitigation plan for all the possible risks.

Risk Analysis Categories,

- Project Risk
- Management Risk
- Technical Risk
- Events Risk

Risk Analysis Structure,

- Mind Map
- Mitigation Strategies
- Risk Matrix

4.5.1 Risk Management Plan

4.6 Project Risk

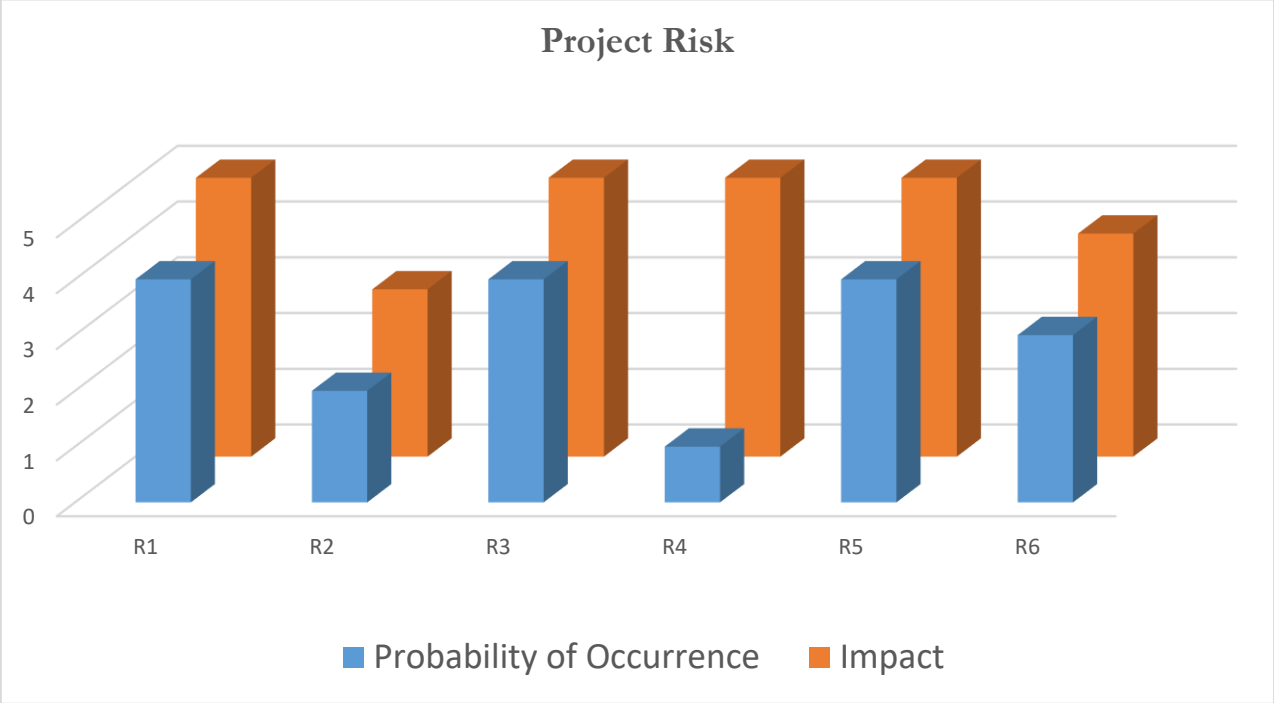
4.6.1 Project Risk Mind Map

Risk	Risk Description	Probability of Occurrences	Impact
R1	Tight Deadline(Estimated durations for task may result in a project which is too tight on timescale	High	Extremely High
R2	Delivery of functionality reduced	Low	Medium
R3	Operational Risk	Low	Medium
R4	Acceptance of our portal	Very Low	Extremely High
R5	Other Venture with same goal	High	Extremely High
R6	Scope Risk	Medium	High

4.6.2 Project Risk Mitigation Strategy

Risk	Risk Description	Control Measures
R1	Tight Deadline (Estimated durations for task may result in a project which is too tight on timescale	Establish clear project plan and try to ensure that tasks are complete on time and it on a regular basis
R2	Delivery of functionality reduced	Define functionality properly
R3	Operational Risk	The project team has outsourced to and experienced programmer, any outcome will be the responsibility of them
R4	Acceptance of our portal	Providing with interesting activities, events, fire drills
R5	Other Venture with same goal	Will have real time updates on the portal and user friendly, easy to access
R6	Scope Risk	Proper requirement analysis will be done beforehand

4.6.3 Project Risk Matrix



4.7 Technical Risk

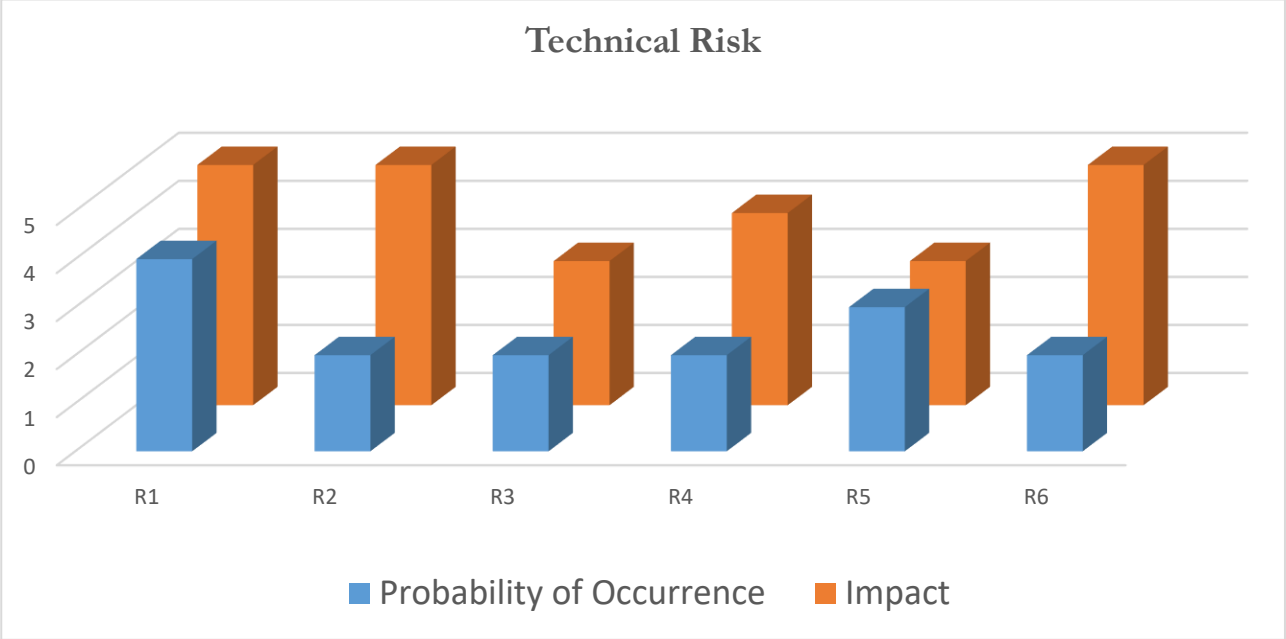
4.7.1 Technical Risk Mind Map

Risk	Risk Description	Probability of Occurrences	Impact
R1	Server Down (Which cause website to be slightly delayed due to application not able to load)	High	Extremely High
R2	Technical Issues: Mainstream internet browser or bootstrap may get an update that will suspend support for our utilizing responsive bootstrap	Low	Extremely High
R3	Cross-platform compatibility	Low	Medium
R4	Poor programming	Low	High
R5	Changes in project functionality	Medium	Medium
R6	Data loss	Low	Extremely High

4.7.2 Technical Risk Mitigation Strategy

Risk	Risk Description	Control Measures
R1	Server Down(which cause website to be slightly delayed due to application not able to load)	Periodical check will be performed on the server status
R2	Technical Issues: Mainstream internet browser or bootstrap may get an update that will suspend support for our utilizing responsive bootstrap	Monitor any update on popular web browser or bootstrap and make sure all UI design work as intended on upload web browser or responsive bootstrap
R3	Cross-platform compatibility	We will try to ensure that our website have standards compliant and optimized for at least the major latest /current platforms and version
R4	Poor programming	Adapt project scope to programming capabilities of project members
R5	Changes in project functionality	Analysis data gathered ,meet with supervisors to discuss changes applied to overall functionality

4.7.3 Technical Risk Matrix



4.8 Management Risk

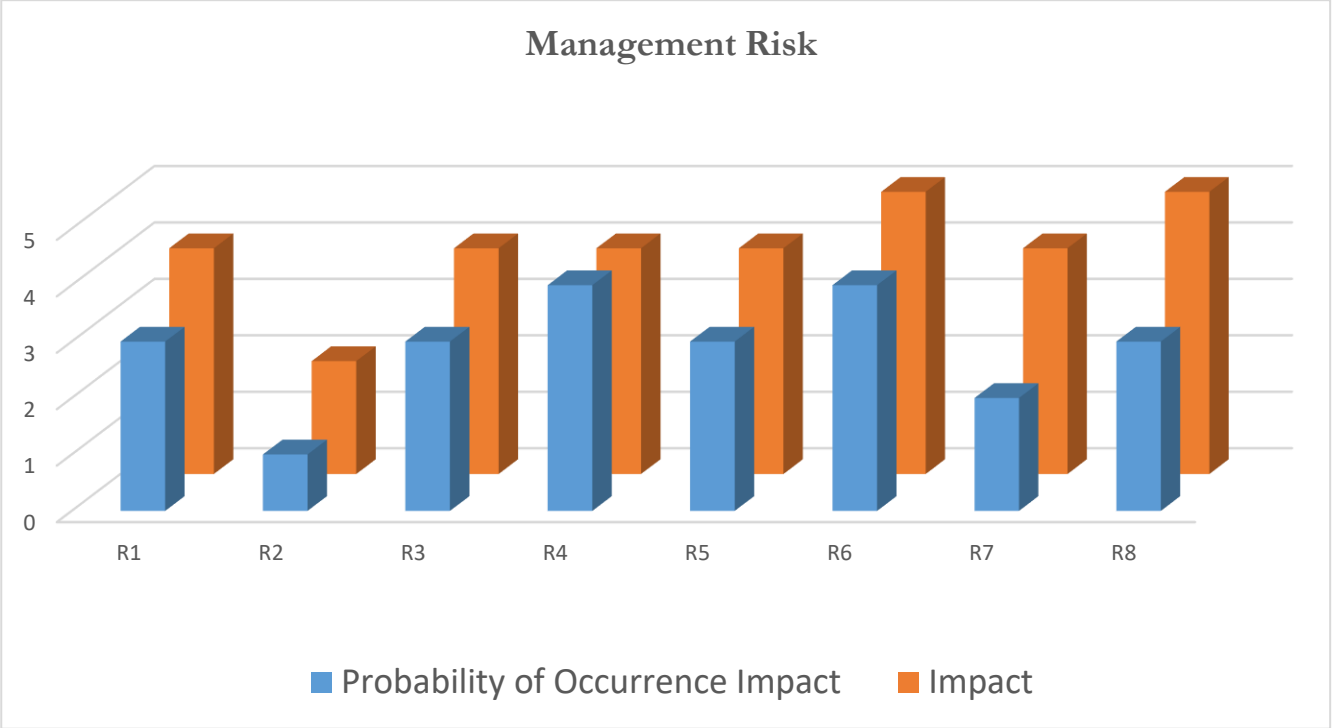
4.8.1 Management Risk Mind Map

Risk	Risk Description	Probability of Occurrences	Impact
R1	Too many stakeholders ,committees	Medium	High
R2	Requirements Gathering late	Very Low	Low
R3	UML experience	Medium	High
R4	Work overloaded	High	High
R5	Low Motivation	Medium	High
R6	Financial Cost	High	Extremely High
R7	Security	Low	High
R8	Application Vulnerability	Medium	Extremely High

4.8.2 Management Risk Mitigation Strategy

Risk	Risk Description	Control Measures
R1	Too many stakeholders ,committees	Project manager /representatives are sufficiently empowered and supported to make decisions
R2	Requirements Gathering late	Set goals for each week
R3	UML experience	Consult supervisors more often
R4	Work overloaded	Set clear tasks for each working day and give appropriate time to it
R5	Low Motivation	Concentrate on positive effects. Try and motivate team members
R6	Financial Cost	Partnership with different organizations
R7	Security	By implementing and installing firewalls to protect data and all our data will be stored in the cloud
R8	Application Vulnerability	Code review tool can be used to detect implementation error then vulnerability scanning and fuzzing is conducted.

4.8.3 Management Risk Matrix



4.9 Event Management Risk

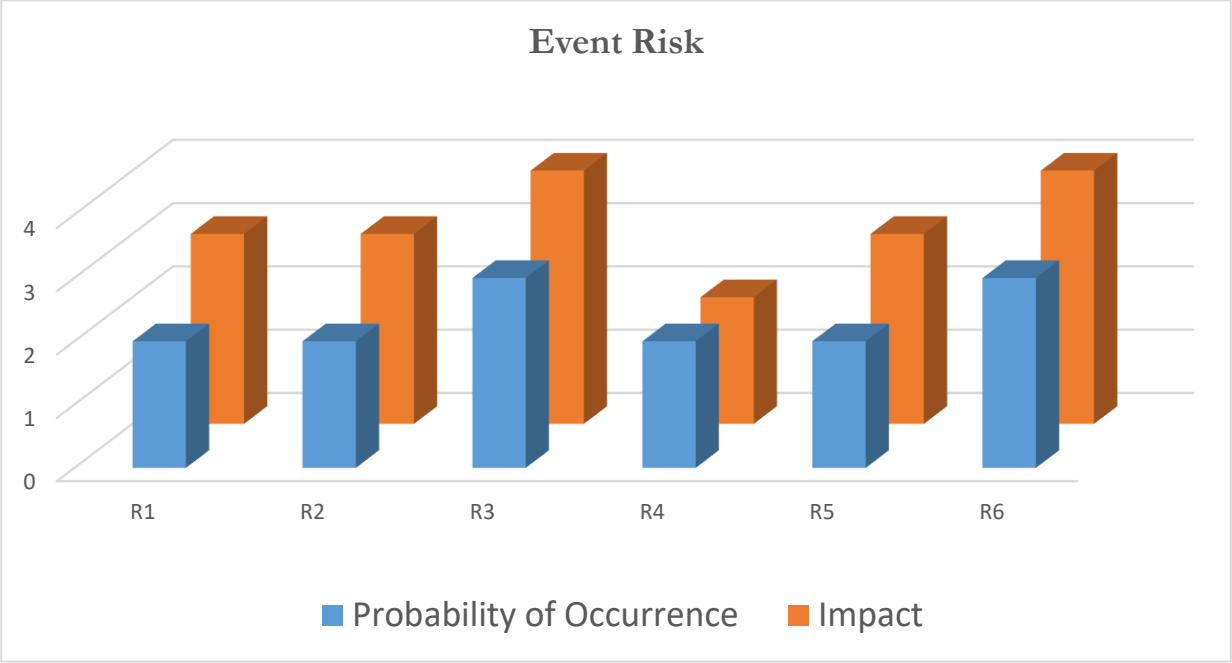
4.9.1 Event Management Risk Mind Map (On/Off Campus)

Risk	Risk Description	Probability of Occurrences	Impact
R1	Capacity of the venue	Low	Medium
R2	Transport	Low	Medium
R3	First Aid injuries	Medium	High
R4	Slips and trips	Low	Low
R5	Electricity	Low	Medium
R6	Fire	Low	High

4.9.2 Event Management Risk (On/Off Campus) Mitigation Strategy

Risk	Risk Description	Control Measures
R1	Capacity of the venue	The setting won't enable the reason to surpass its ability. Committee will know about this and help the staff if happens
R2	Transport	Safe taxi organizations, trams, bus details will be provided at the event and in the page with timings and the stops
R3	First Aid injuries	Prepared staff present at both the events to manage issues this way. First Aid kit will be present at every venue of the event.
R4	Slips and trips	The committee members of social orders will be on obligation to guarantee any slips and trips are managed suitably.
R5	Electricity	Electricity ports will be used by staff .They will be advised not to overload a socket. Only correct compatible electrical equipment will be used.
R6	Fire	Members of societies will know the nearest fire exit and will take charge and direct. Building has measures in place to mitigate the risk

4.9.3Event Management Risk Matrix



4.9 SWOT Analysis

Strengths	Weakness
• **Student Event Portal** helps our users to explore more about various events which are happening around them apart from regular courses and curriculum. • **Multifunctional** one app which helps users to fulfill the different purposes like events, social network, leisure, transportation, library etc. • Data Security and Maintainability • **Strong management** enables us to reach our highest potential by utilizing our strengths and thereby eliminating weaknesses.	• **Lack of Efficient Marketing Skills** from the management team**.** • As the traffic to the website increases, the performance of the page decreases.
Opportunities	**Threats**
• **International Recognition** offer us new opportunities to expand the business world over. • **New Services** help the application to better meet their customer's needs, which in turn may expand our business or organization and diversify our customer base. • **Number of International Students** in Germany is increasing every year that will increase the number of visitors to our website.	• **Other Application competitors** are difficult to combat because they can provide more information than us that might give them an advantage over us. • Changes in **Laws and Regulation** Can negatively affect the application. • **Security Issues like** loss of user information.

5. Technical Analysis

5.1 Navigation

- **Sub-Category - Route Suggestion**
  - **Tool:** With regards to suggesting user a route which is a part of route navigation, there is by all accounts an ideal choice accessible which is Google Map API library. It doesn't make a difference on which stage the application is built.
  - **Techniques:** Google map API library has predefined functionality which allow the user to locate current location with help of the Wi-Fi provider. It is easy for developer to make use of the application for the users, to find the desired place on the base of their input. Based on the current position, starting from current position ending with a place which is at user desired distance, google map API helps a user in suggesting routes on which he or she wish to travel.
  - **Plugin:** Google map API library needs to have the google plugin downloaded.
  - **End state:** Until and unless user wants to exit app, this service will be keep continuing in the background. Basically, it has no end state while it keeps processing in the background.

- **Sub-Category- Route Saving/ Favorite**
  - **Tool**: Google Map API library encourages a developer to store two arrangement of longitude and latitude. Also, Cloud Firebase will save those static parameters.
  - **Techniques**: Google Map API library gives two arrangement of longitude and latitude, in which one set represent to the longitude and latitude of beginning stage and closing point. Another set represents to longitude and latitude of an end point.
  - **Plugin**: Set of longitude and latitude will be stored on firebase with push technique and will be recovered with once strategy.
  - **End State:** Put away arrangement of map parameters will be put on the map dependent on the beginning and completion point and Google Map API library will set up the route.

5.2 User Profile

- **Sub-Category- Login/Signup**
  - **Tool:** We can use form API it as lot of interface, utility classes and show that when consolidated toes there enable module developer to create a form that gather, approve and process client submitted information.
  - **Techniques:** The user can enter the basic information for signup form and login using their username and password after the successful complication of signup and information stored in database. When we use form API, the HTML file will be displayed to the user on the browser for collecting input and data process will take place on backend when user submit the form.
  - **Plugin:** Form API is an abstraction large around standard HTML forms and HTTP form handling.
  - **End State:** The form will reach to the target state, when user enter all the necessary information and click on submit button on webpage, it directly takes him to the home page of the web application

- **Sub-Category- User Information**
  - **Tool:** All the user information is fixed and stored on cloud. The only tool or method which requires for getting those data from cloud with help of MySQL database.
  - **Techniques:** The actual user information, for example his or her personal information is fixed or static. Based on the usage of application, user information can be updated overtime depends. It does not matter how frequent the dynamic data get changed because firebase has real time data storage, it will help for developers to use firebase and firebase provides all the necessary code snippet to integrate it into the application.
  - **Plugin** - For recovering information from cloud once strategy must be utilized. Firebase gives a JavaScript scrap and a JavaScript record which must be incorporated into Coding part. What's more, the developer needs to include 'Firebase' in dependencies.
  - **End State** - Whenever a user needs to have look on his present circumstance of experience focuses and identifications and his own

data, he will tap on user data and hence that information will be there. He can likewise update his data.

- **Sub-Category- Enquiry**

  - **Tool** - Most enquiry data are fixed and get expanded when the quantity of messages increments. So, these things must be on cloud. The main device or strategy which requires for getting that information from cloud and putting away that information to cloud are once and push.
  - **Techniques** - Info box will be given to client to compose an inquiry or a question to producer. It will be sent to cloud with push and production will answer with information box also and message will be stored on cloud with push too and with once strategy it will be appeared simultaneously to client. This procedure continues endlessly until they arrive at a resolution.
  - **Plugin** - For recovering and writing information from and to cloud once strategy must be utilized. Firebase gives a JavaScript snippet and a JavaScript document which must be incorporated into Coding part. What's more, developer needs to include 'Firebase' in dependencies.
  - **End State** - It closes just when one consents to another's point or the two people reach a typical resolution.

5.3 Social

- **Sub-Category- Social Network**
  - **Tool:** Effectively created plugins or button will be utilized. These plugins or button will be downloaded or embedded from various social media website.
  - **Techniques:** If user needs to share his information via social media he just observes his information and taps on offer and user will be asked on which social media platform he needs to share the information.
  - **Plugin:** Code Snippet of various online social media website. For instance, to share information on google in addition, client more likely than not signed in and when he taps on google+ button he will be diverted to that site in modular and there he can share information. Or on the other hand if he needs to share his point on the Facebook, at that

point condition is just that he ought to be signed in before doing as such. On the off chance that he will be, he will be diverted to the Facebook with a modular spring up and there he will share his post on the Facebook. For the Twitter it is something very similar, in the modular spring up, he will tweet about information. As a module here, all the code bits will be utilized.

- **End State:** On the off chance that a client shares information on specific social media effectively, modal pop up will be shut and he will be diverted to home once more. If there is any error, he will stand up to that error and model pop up will be shut.

5.4 Cloud

- **Sub-Category - Cloud Data Storage**
  - **Tool:** Firebase with once () and push () method in order to store and retrieve data in and from cloud.
  - **Techniques:** A developer needs to utilize push and once strategy which stores and reads information in and from cloud. Every user will be saved with his username, password and other information. Will be stored under the parent hub as various kid hubs of it. While composing information on cloud, developer needs to refer to the correct tree way which ensures the information is going at ideal spot. This tree way or course must be the equivalent while perusing the information from cloud with once strategy.

  - **Plugin:** For recovering information from cloud once strategy must be utilized. Firebase gives a JavaScript scrap and a JavaScript document which must be incorporated into Coding part. Also, developer needs to include 'Firebase' in dependencies.
  - **End State:** It has no end state since information needs to continue moving from cloud to client's gadget. On the off chance that it stops some place, client won't have the option to get a few highlight features in working manner.

5.5 Website Profile

- **Sub Category:- Information on Webpage**
  - **Tool:** we can use text editor such as HTML/visual studio code for adding information to website and Photo Snack tool for adding the image, videos or slideshow.
  - **Techniques:** The user can view all the information on the web page with help of text editor. In this developer can change the font style, layout, design, color schemes, page background. User can view any photo, slide show and videos it can be develop by using Photo Snack tool, by this tool user can have the live experience of any information available on the webpage.
  - **Plugin:** Text editor and Photo Snack.
  - **End State:** It will reach end state when developer develop website and it will be displayed to the user to view in all compatibility browser.

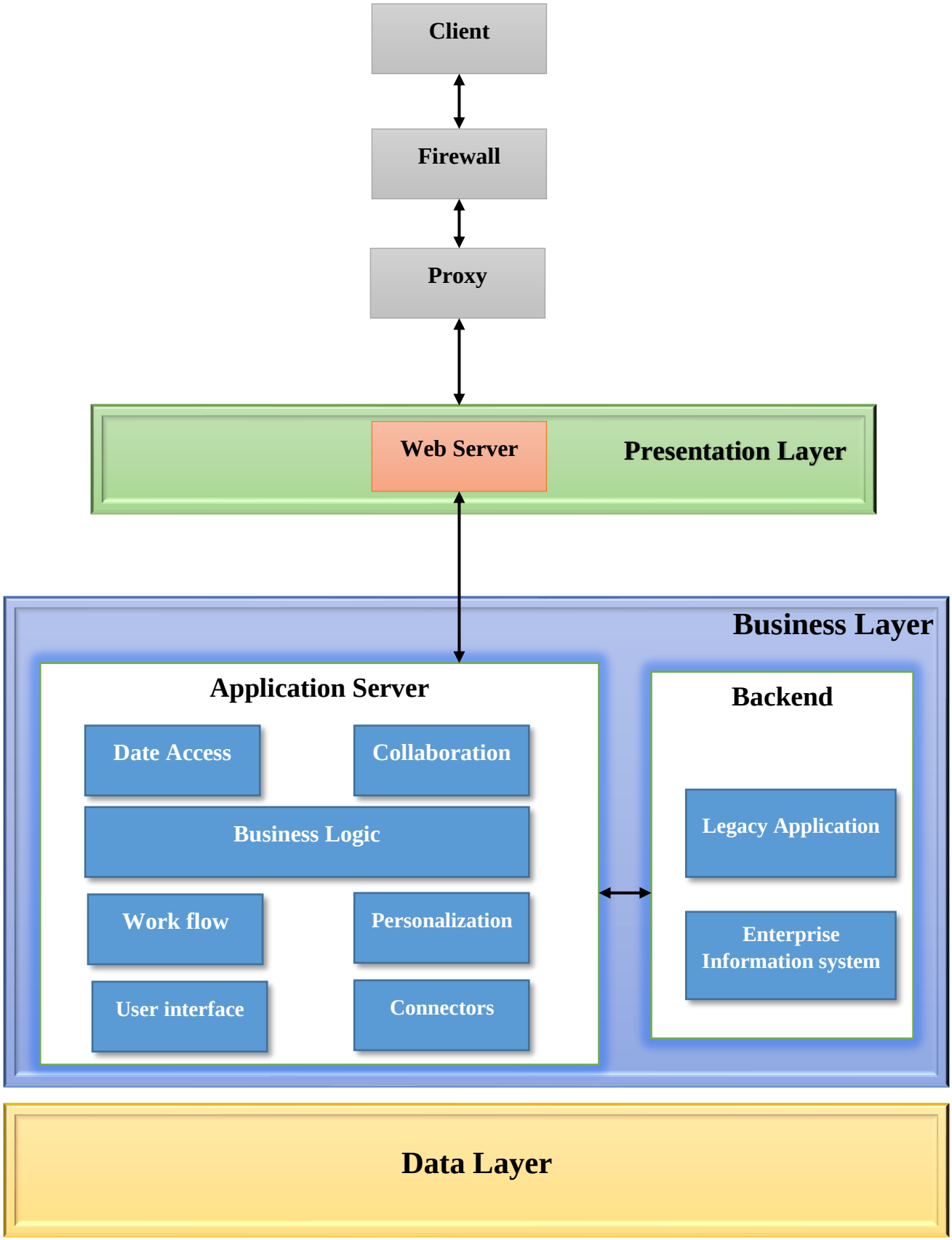
- **Sub Category:- Error Detection**
  - **Tool:** Run time error detection tools is only used for detecting error in the controlling execution flow of the web application and it is software verification method that analysis an application.
  - **Techniques:** It is basic to perform run-time error detection for high respectability applications. In any case, this sort of error detection is testing phase, since it includes anticipating each possible execution of your product. This implies testing every possible combination of inputs or every possible decision path at least once using testing tool. Run time error is a software verification method, which is used to analyze an application execute and report the defects that are detected during the execution of the website. The one more solution for error detection tool is Polyspace static analysis to identify the error effectively during run time.
  - **Plugin:** Poly space static analysis and testing all the possible path using test tool.
  - **End State:** All this technique bridges the gap between Polyspace static analysis techniques and dynamic testing by verifying the

dynamic/run-time properties of web applications during compilation time.

- **Sub Category: - SEO (Search Engine Optimization)**
  - **Tool:** Google AdWords, is a keyword planner which provide a more functionality for keyword tool. Instated of making use of google ads, we can make use of simple organic keyword.
  - **Techniques:** Google AdWords search for new keyword and then its ad ideas to group. The search volume identifies the list of keyword and group them into ad group. After getting all the list of keywords. We can estimate the traffic, then multiply the list of keywords will be used for getting new keyword ideas. It is necessary to keep change on daily bases and significant update to improve the website in consistent and continue.
  - **Plugin:** Google AdWords and keyword planner.
  - **End State:** The user expects the result to last forever and user play a key role in success.

6. Technical Process

6.1 Architecture



The web application arranged over protocols and uses a client-server model, so it is natural that layered architecture would be suitable for developing the web application. We are using three-layer architecture, because it overcome the scalability of two layered client-server architecture. The main advantage of using layered model in software development, because it is easier to know exactly what each part of the application does and it also easier to build the application, to investigate it and to keep up and reuse the code. Web application is classified in to three-layer architecture.

1. Presentation Layer
2. Business Layer
3. Database Layer

Presentation Layer - The presentation layer or view layer is outer most layer and this model deals with the presentation of the content and interaction with the user. Following the example for international student event portal, user can see detailed information about university campus, occasions, areas, trips, traffic rules, Indian café and market, sports, medical clinics, and so on.…

The technology involved in this layer on the web development context are implemented and percussed by the browser using HTML/XHTML/HTML5, the style sheet using CSS (Cascading Style Sheets) and client-side script are implemented using JavaScript/Flash. All these technology can be produce a rich environment for user interaction and content display we can say that server-side script can be used to generate content, but at the end this script produce the HTML that will be shown of on the web browser, so the development role is subdivide. The content generation is created by the business layer and then it is passed to the presentation layer. The JavaScript code can be used to validate form data or even to create drag and drop interface. HTML5 is the latest tool for web application development is praised for its flexibility, because it has ability to change the content position according to screen size.

Business Layer: It is central layer of the architecture model and it receives information from upper level and transforms it using inner application logics and also retrieve the data from data base and uses it to the logics. The business layer contain application logic and it include:

- Performing all required calculation and validation
- Manage workflow
    - Session the Board: to recognize among application instance.
    - State the Executives: to monitor application execution.
    - User Identification
    - Administration Access: to give application benefits in a predictable way.
- Manage all data access for the presentation layer.

The business layer is implemented inside application server and it self-regulate services like transactions, security, persistence, connection pooling, messaging and name services. The tools used in this level are usually server-side script like PHP, Asp.NET, Ruby, Node.js CGI or CGI. The CGI (Common Gateway Interface) script is older technology that communicate between a server and content-generated program is called as CGI script that is Perl language.

PHP is related to Perl and it is one of the most popular language used in management systems as WordPress. Ruby as highest popularity especially with framework Ruby on Rails. There are many other technologies and we use in different way, one example is C used as CGI or Java server pages (JSP).

Data Layer: Inside data layer many technologies can be used and most of the web application uses relation database, but current trend of the market is NoSQL (non-relational database). Some of the key characteristics of NoSQL are as follows:

- Relational model will not be used.
- Running well on cluster.
- Open source.
- Mainly designed for 21st century web development.
- Authentication.
- Remote configuration.
- Crash reporting.
- Real-time messages/notification (pushup).

Nowadays most of them are using NoSQL, because relational database is heavy slow and non-scalable, and it is also not best solution for problems.

6.2 Development

We are using WordPress 5.2.4(latest version) since it is free and open source software and developer friendly. Also, by using WordPress software provides easy development environment, easy integration for predeveloped design and in distribution. If user requested for any changes in the data, it can be modified in easy way.

6.2.1 Code Aspect

- Instant Run
  - When we enter the international student portal URL on the browser, instant run feature pushes code and resources changes to the run web application.
  - It intelligently understands the changes made by the client and often delivers result without restarting the application, so that effects can be seen immediately.

- Fast and Feature-rich emulator
  - The web browser identifies the website URL and start the application faster than real device and allows to prototype and web application is tested on various device configurations such as phones, tablets, laptop and personal computer.

- Intelligent code editor
  - The code developer helps to write better code, work faster and be more productive by offering advanced code completion, refactoring and code analysis
  - The code will be divided into two part: front end and back end developer both work clean coding to have high quality of web application and delivered on time.

- Code templates and plugins
  - In WordPress software we can impact code templates and plugins that make it easy to add well established patterns to the web site view pages

- Moreover, it can import fully functionality of website, right form the create project screen

➢ Testing tools and framework.
- The testing team will test the web application functionality on all the possible way by using different test cases. Once the testing is done, they record all the test code by recording the interactions with web application on other devices or emulator.
- It is possible to run the tests on a device, an emulator, a continuous integration environment or in firebase test lab.

6.2.2 Configuration

➢ Robust and flexible build system.
- WordPress offers build automation, dependency management and customizable build configurations.
- We can define variants that include different code and resources, apply different code shrinking and application sign/login configuration.

➢ Optimized for all devices
- Web application provides a undefined environment where it is possible to application compatibility for phone, tablets, laptop and personal computer.
- Structure code module allow to us to divide the project into units of functionality that can be independently built, test and debug.

➢ Designed for teams
- WordPress is integrated with various tools, so it’s possible to keep the team in synchronized with project development and build any changes made by client.

6.2.3 Cloud

- Firebase and Cloud integration.
- The Firebase Assistant helps to connect the web application to Firebase and add services such as Analytics, Authentication, Notifications and more with step- by-step procedures right inside web site.
- Built-in tools for Google Cloud Platform also help to create and deploy a backend for the web application, using services such as Google Cloud Endpoints and project modules especially- designed for Google cloud computing.

6.2.4 Additional features

- Multiple Language Website Support.
- Auto Data Upload using Google Data Sets & Machine L
- Face Recognition Login.
- Voice Recognition.
- Finger Recognition.
- Translation Editor.
- Events uploaded automatically to Website.
- Mobile App.

6.2.5 Distribution

- Promoting the website in Ads.
- Earn revenue from Google AdSense.

6.3 Project Process Model

6.3.1 Introduction

Any Project, big or small, will be better and efficiently executed when it flows through a process. In a project a well-defined process model is an abstraction of the process which helps to incorporate various approaches towards the implementation and delivery. Therefore, a better understanding on a process model is necessary.

Definition - Project Process Model is a description of sequence of activities that is carried out in any Project by following a defined process-framework in order to achieve successful execution and timely delivery of the product or service.

Description - A Project Process Model goes through several stages right from concept analysis until it is delivered to customer. Furthermore, it includes major common phases such as planning, organizing, executing and finally delivering a product and/or a service to an end customer. There are several Project process models available for efficient execution of a project. However, the two most widely used ones are;

- Waterfall Model
- Agile Model

6.3.2 Waterfall Model

As the name itself indicates, this process flows from one phase to another only after completion of the previous phase. This process has totally six phases- Requirements, Design, Implementation, Verification, Deployment and Maintenance.

Requirements - This phase involves discussion between the Customer, Stakeholders and the respective Manger. All the functionalities the customer wants to have is captured in requirement analysis document or tools.

Design - In this phase the Project team designs the software as per the requirement document. It includes logical design which involves the graphical representation of data flow and physical design which decide the hardware for example the storage and network hardware.

Implementation - Actual coding takes place in this phase. Often the software is built in component wise and then it is finally integrated.

Verification - This phase involves the testing of the software against the customer requirements, if it does not satisfy then it is sent to implementation phase and respective changes are taken care.

Deployment - Releasing the newly built software into actual IT environment.

Maintenance - Once the software is released, the initial issues like any defects or bugs found in live environment is fixed in this phase.

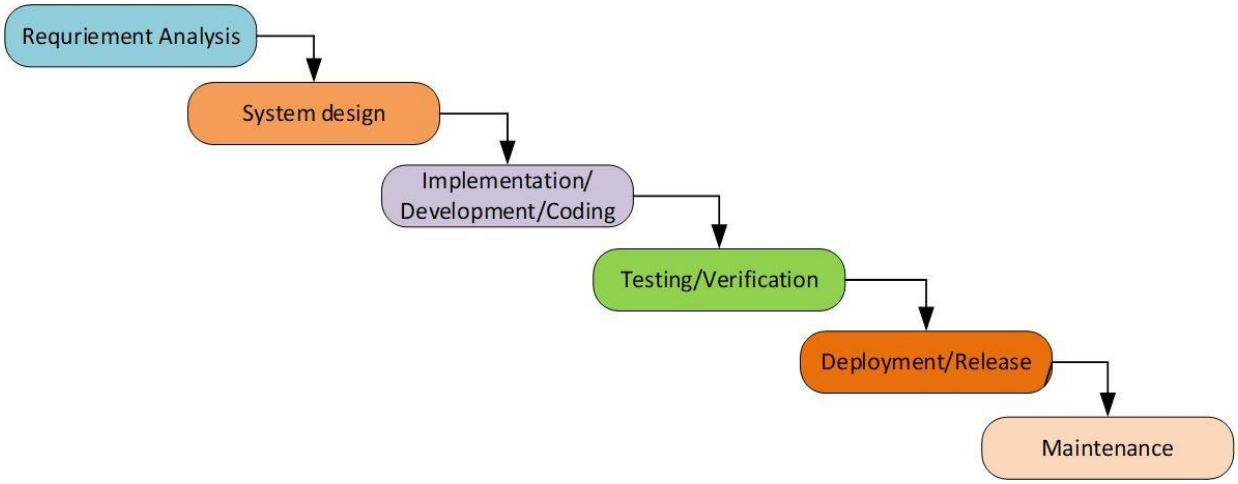


Figure 6.3.2 Waterfall Model

The advantages and disadvantages of waterfall model are as explained below:

Advantages	Disadvantages
The model is simple, easy and straight forward to adopt and use	No working product is delivered until deployment stage is reached
Minimizes planning overhead since it is done upfront	High amount of risk and uncertainty
It works well for smaller projects which has clearly defined requirements	Not suited for complex projects and for projects with changing requirements
It is easy manage since one phase is focused and processed at a time	Not suited for long duration projects
	Inflexible, as next phases cannot start until previous phase is completed.
	Difficult to track back the defects and bugs identified during later stages of the model

Table 6.3.2 Pros & Cons of Waterfall Model

6.3.3 Agile Methodology

Definition - Agile process is a framework wherein the development and delivery are an iterative process which involves continuous collaboration with customers and stakeholders.

Description - In Agile methodology the continuous iteration of development, testing, integration and validation is performed throughout the process. In every iteration, a feature increment is released to the customer. Each feature increment shall update the final deliverable to satisfy customer requirements.

Agile Core values,

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Agile Process Block diagram,

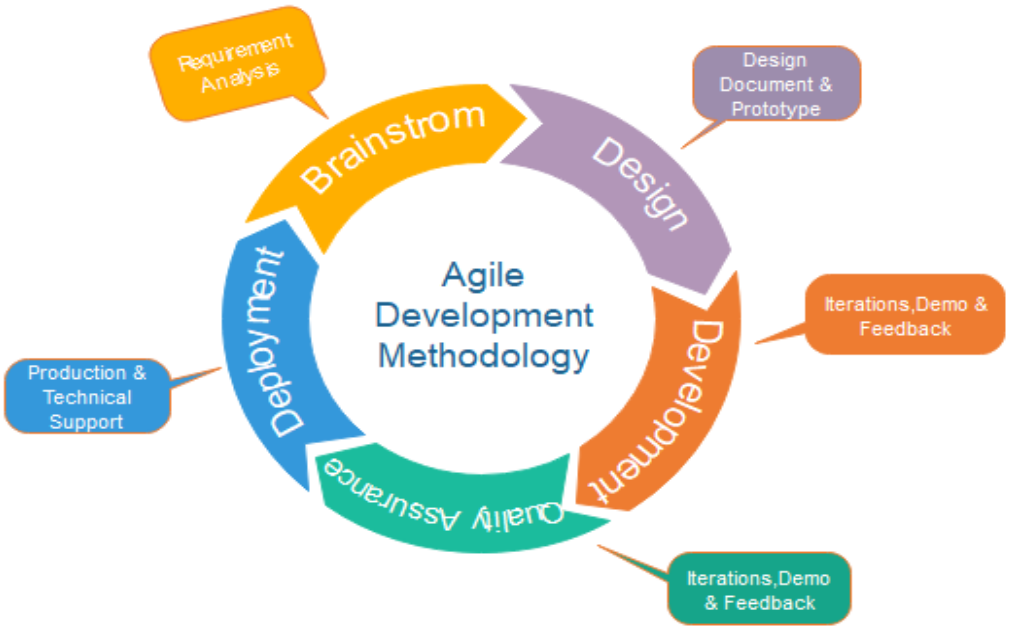


Figure 6.3.3 Agile Methodology

6.3.4 Selection of Process Model for Our Project

Our project must go through all the stages of a process life cycle i.e., Development, Code Review, Testing, Integration, Validation and Deployment. Therefore, we have added agile methodology on top of Waterfall Model. The main reasons to use Agile is as described below,

- Transparency - The feature implementation is clear and visible throughout the process to the stakeholders, project team and customers.
- Adaptability - Any change in customer requirement are considered during the development stages.
- Delivery - The process helps for clear and timely delivery of the product or service.
- Business Value - With continuous collaboration and feedback from the stakeholders and customers enables the project team to determine the priority of the feature increment.
- Quality - With clearly defined process improves the quality of the deliverables.

In the overall project, the scrum (Agile Process) can be adopted in a waterfall model during the project execution phase is as shown in the below diagram,

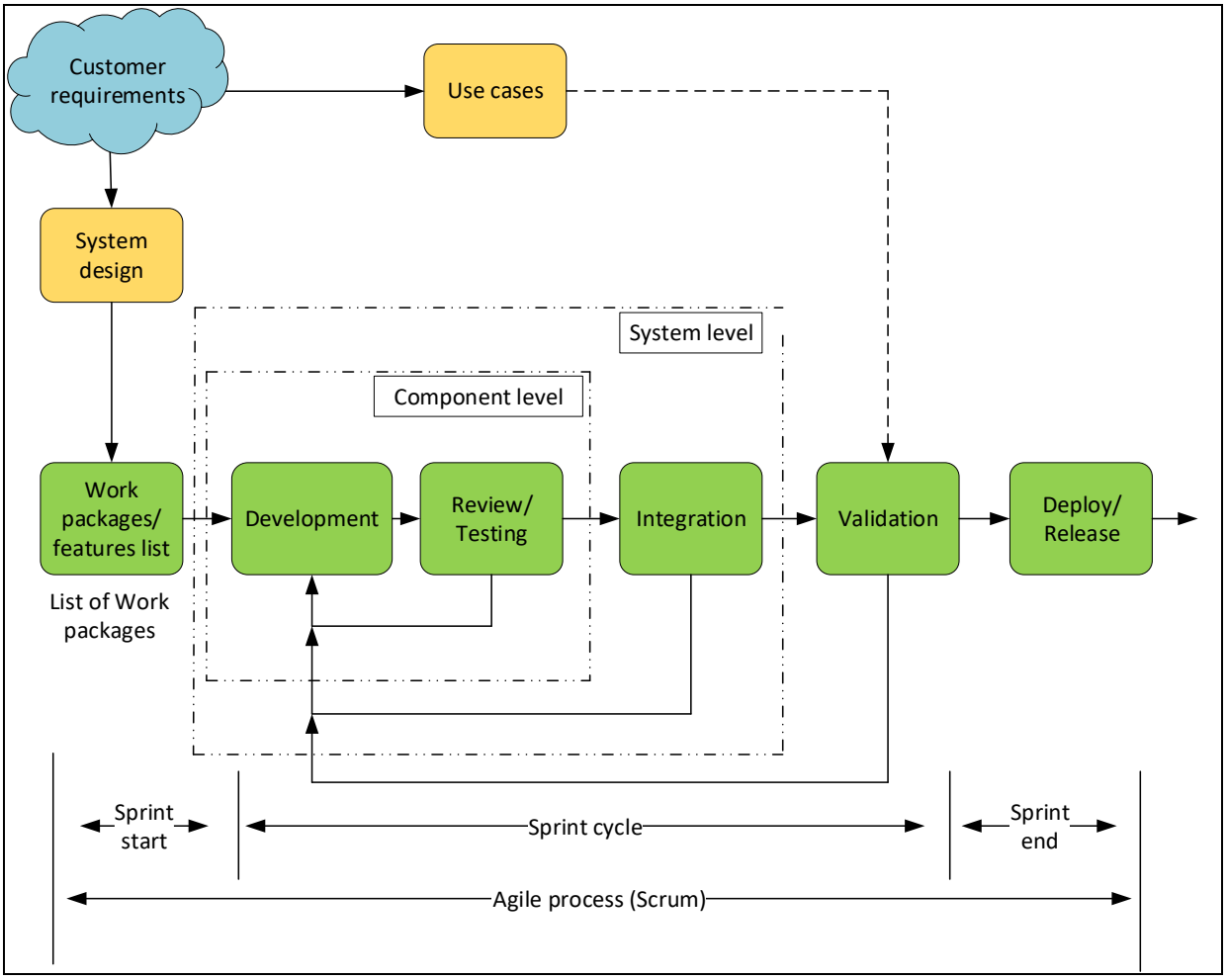


Figure 6.3.4 Scrum Process Flow of Our Project

Let us go through the agile terminologies (Scrum) for better understanding in the following section.

6.3.5 Scrum

Definition - Scrum is a framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value.

Description - Scrum is a framework supporting agile methodology for developing delivering and sustaining complex products. It provides the software development team to work as a self-organizing team working towards a common goal i.e. delivering feature increment within a pre-defined time period and satisfying customer requirement.

The Scrum process flow is as described in the below diagram,

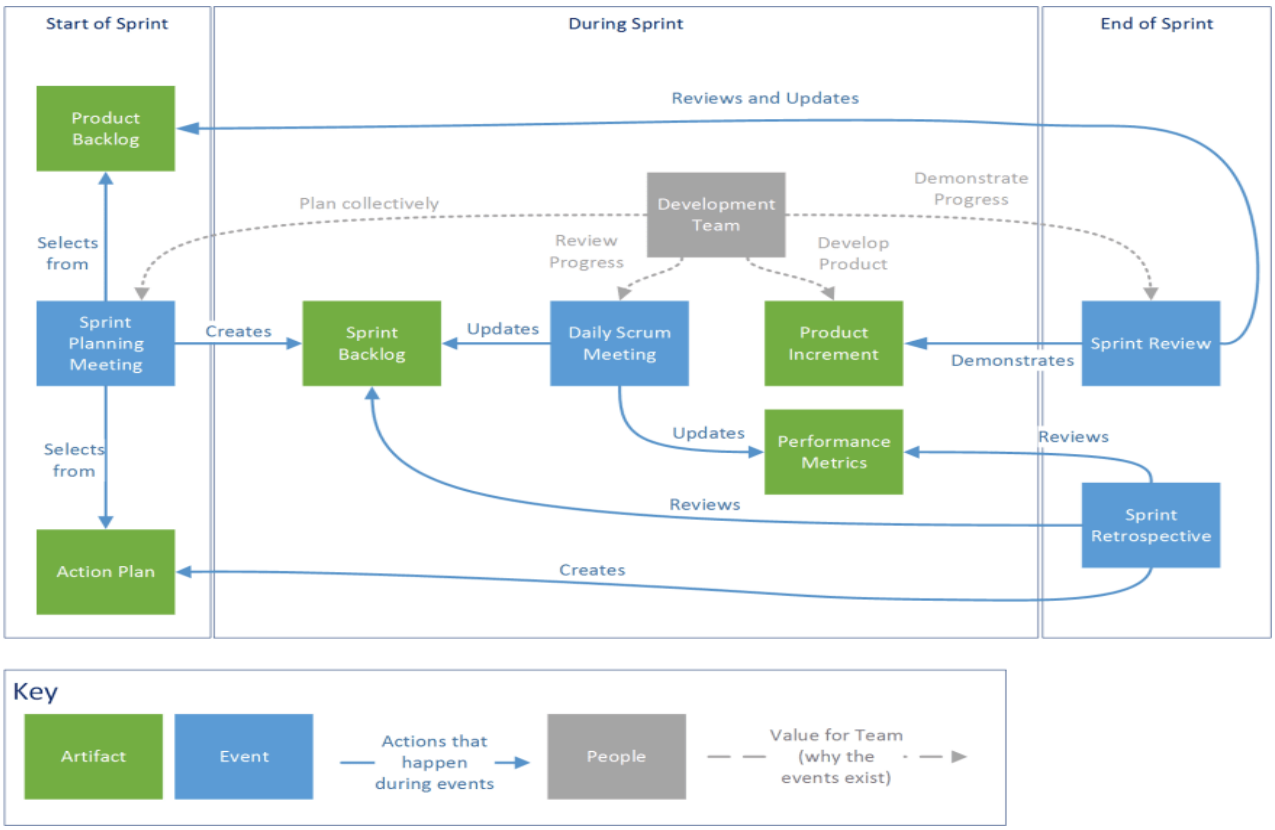


Figure 6.3.5 Scrum Development Process Flow Diagram

In order to adopt scrum into project process model the following scrum terminologies should be understood. Thereby let us go through each block from the above diagram and understand how it is adopted in our project.

6.3.6 Product Backlog

It is a list of all tasks that the project team should do, which is ordered in terms of priority and placed here as work packages. This includes the list of all features, functions, upgrades and fixes to do be done by the project team. This list is derived from requirements and Product Owner owns this Product Backlog.

The below diagram explains how the product backlog is created and the various inputs factoring the product backlog is described. From the diagram we can see that the input to the Product Backlog is the requirement analysis and it also is expected to change whenever there is a change in requirement from the customer and/or when there is feedback from the sprint review.

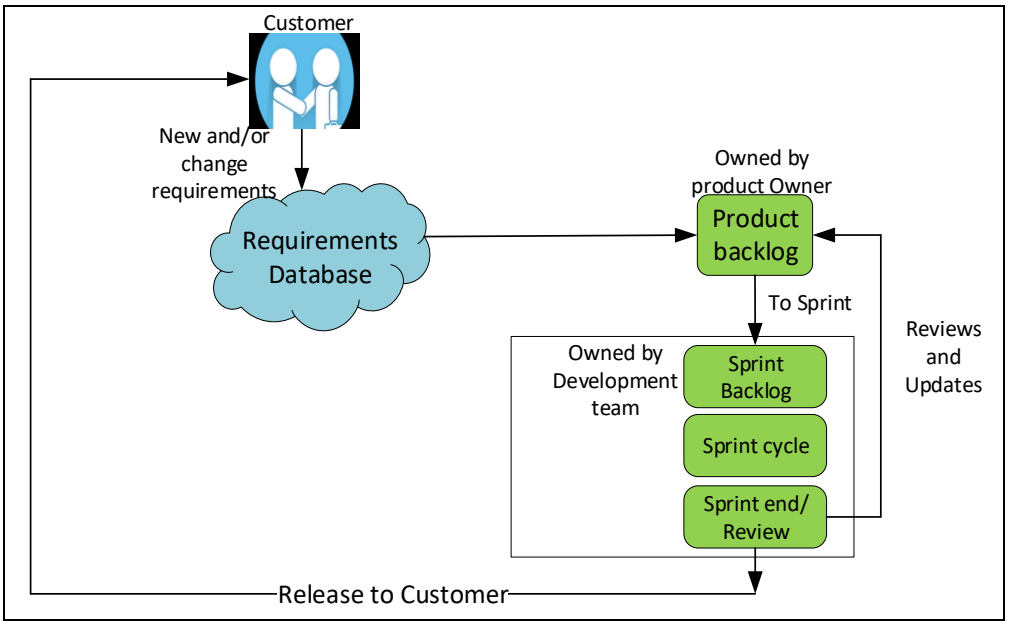


Figure 6.3.6 Product Backlog Creation Flow

The complete list of work packages/stories for our project, keeping customer satisfaction in mind, are as described in the below table

Feature ID	Product Backlog (stories)	Estimation	Priority
1	User Registration: Create a new account (Login ID/Password) - - Login Page - Logout page	3 days	1

	- Store User credentials into Database		
2	User Login – - Check for successful login. - Webpage to reset Password/Login ID. - Create Homepage for successful login. - Create Main page/Login page for successful logout	4 days	2
3	Create Help page - User Queries has to be answered	5 days	3
4	Provide a link to nearby Services - - Transportation. - Hospital. - Library. - Language Courses	5 days	4
5	Design Home Page Menu List: - Social Networks Events - Leisure - Fitness Activity - Services - Volunteer Activities - Help Menu(User Q and A)	3 days	5
6	Provide Link to Social Network – - Facebook - Instagram - Twitter Create an option to find and follow friends in the above three social network	5 days	6
7	Create a link to nearby Social Events – - Live Music Concerts - Programs related to Art and Culture	5 days	7
8	Create a link to nearby Leisure Places – - Café - Pub - Disco - Restaurants - Nightlife	5 days	8

	- Shopping Malls		
9	Create a link to nearby Fitness Activities – - Gym - Sports - Hiking - Swimming	5 days	9
10	Design Volunteer Activities Page - Fire Drill, First Aid	5 days	10
	Total	**45 days**	

Table 6.3.6 Product Backlog List

6.3.7 Sprint

It is defined as time duration in which the agreed number of work packages/features are implemented, tested and delivered as a releasable product increment.

Before the start of any sprint the following three vital roles are to be defined:

1. The Product Owner - He/ She is the one who is responsible in creating the product backlog from the requirements and thereby increasing the product value by collaborating and coordinating with the stakeholders and customers.

2. The Scrum Master - He/she is responsible in promoting and supporting scrum as defined in the official scrum guide. He/she helps the development team and the product owner to make sure that they both have the same level of understanding over the features and functionalities they are implementing.

3. The Development Team - This team does the implementation of feature and delivery of the product.

We have defined the following roles and responsibilities for our project as per the scrum guide.

Sl. No	Scrum Roles and Responsibilities	Assigned to
1	Customer	SRH Hochschule Heidelberg
2	Product Owner	Any person from the team
3	Scrum Master	Any person from the team
4	Scrum Development Team	ACS Project 4-Team 2
5	Scrum Team	= Product Owner + Scrum Master + Development Team
6	Sprint Cycle	5 Days
7	Sprint planning	30 Minutes on Sprint start day
8	Estimation of each story (Work package)	Done on Sprint planning
9	Scrum Meeting	Daily 15 Minutes
10	Sprint end/demo	30mins on Sprint end day (Demo given to customer)
11	Product increment delivery	After Sprint end and on approval from Product Owner
12	Sprint retrospective	15-30mins after Sprint end (Only for development team)

Table 6.3.7 Scrum Roles & Responsibilities

6.3.7.1 Sprint Start/Planning

This phase is the start of the sprint wherein the development team collaboratively select the work packages from the product backlog.

6.3.7.2 Sprint Backlog

It is the list of work packages/stories which are selected by the project team for the given sprint from the product backlog list. This backlog gives a forecast by the development team on the features/functionalities that will be part of next product delivery.

In Agile methodology the agile/scrum project plan or template is based on list of features/work packages to be delivered to the customer. This project plan provides a rough estimation on when a working feature that can be delivered to the customer. This project plan is continuously changing. Once it is created, the project team is responsible to maintain it and update the status and timeline accordingly. This plan contains the complete list of features in prioritized order with start date, end date, estimated days, sprint number and current status for each feature.

The following table gives full agile project plan for our project. It also shows the sprint backlog for roughly selected for each sprint cycle.

Project Name	Project Manager	Start Date	End Date
International Students Event Portal		14-10-2019	03-01-2020

International Students Event Portal

Work ID	Sprint No	Start Day	Stories/features	Feature Type	Estimation	Responsible	End Day	Status
Sprint plan for Pre-development activities								
ID1	1	Day 1	Project Start – Paper creation, Project Approval		3 days		Day 5	Completed
ID1			Requirement Analysis- Team building activities, Market analysis		2 days			
ID3	2	Day 6	Requirement Analysis- contd Competitive analysis Hardware and cloud analysis, software requirement analysis business plan, Project kick off		5 days		Day 10	In Progress
ID4	3	Day 11	Add share button for Social Network (link to Facebook, Twitter and Instagram)		5 days		Day 15	Not Started
Sprint plan for Development, review and testing activities								
ID5	4	Day 16	Create Menu- Events like Live concert, Music, Art and culture	Feature	3 days		Day 20	Not Started
ID6			Integration of above all	Integration	2 days			
ID7	5	Day 21	Create Menu- Leisure And link Nearby Pub, Disco, Café, Restaurants	Feature	5 days		Day 25	
ID8 ID9	6	Day 26	Again, under Leisure menu- link nightlife and shopping Integration of above all	Feature Integration	3 days 2 days		Day 30	
ID10	7	Day 31	Create Menu Fitness Activity- link nearby Sports, Gym,	Feature	4 days		Day 35	

ID11			Hiking and Swimming Integration of above all	Integration	1 day			
ID12 ID13	8	Day 36	Create menu Services-link nearby Transportations info, Hospital, Language Courses and Library Integration of above all	Feature Integration	4 days 1 day		Day 40	
ID14 ID15	9	Day 41	Create Menu- Volunteer Activities link nearby Fire Station and First Aid Integration of above all	Feature Integration	4 days 1 day		Day 45	
ID16	10	Day 46	Create Help menu-User Queries	Feature	5 days		Day 50	
ID17	11	Day 51	Integration of all other features	Integration	5 days		Day 55	
ID18	12	Day 56	Testing Deployment	Validation Deployment	5 days		Day 60	

Table 6.3.7.2 Agile & Scrum Project Plan

6.3.7.3 Sprint Process Flow

In the below diagram, the scrum process for our project is explained considering initial three sprint cycles.

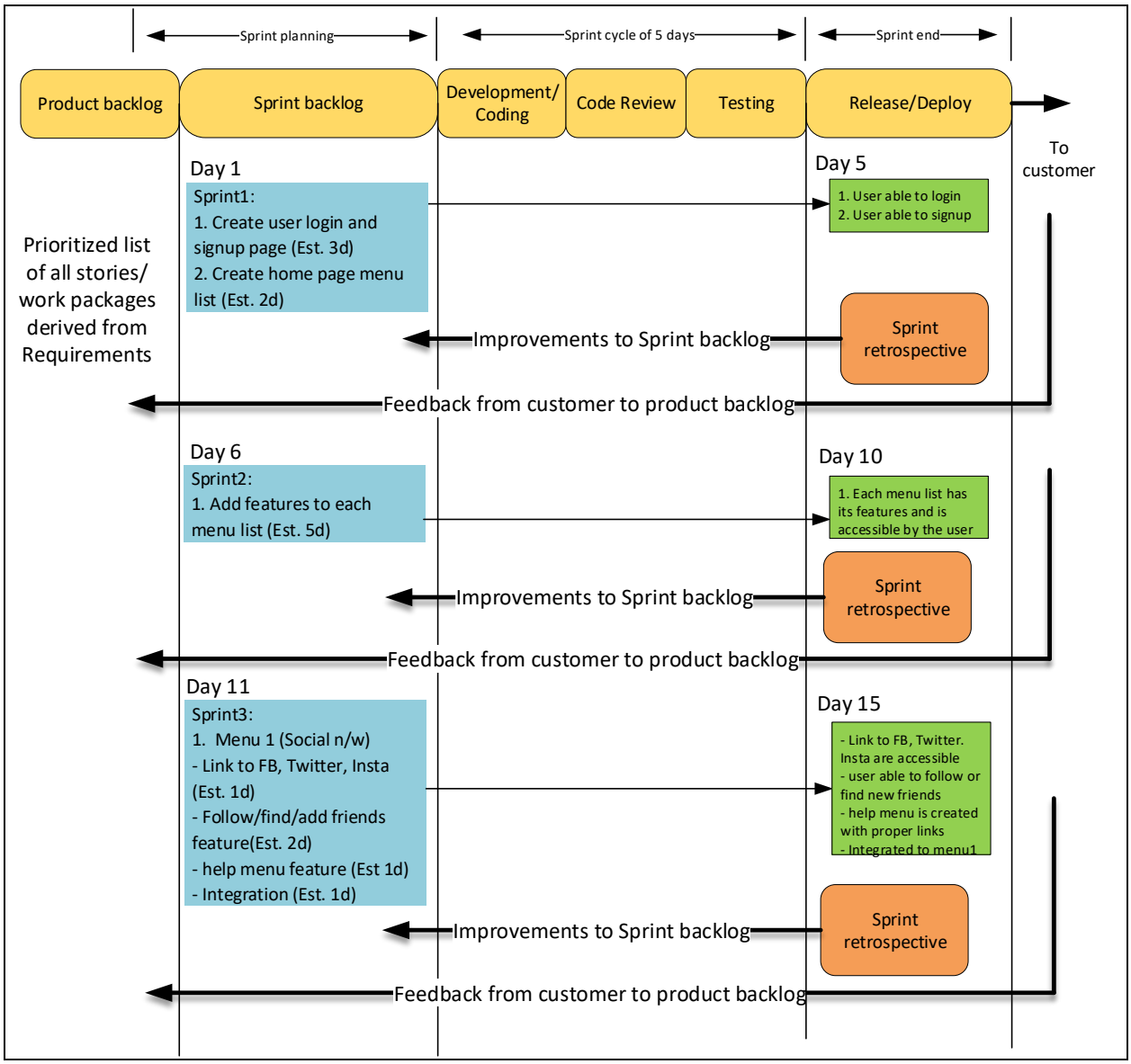


Figure 6.3.7.3 Scrum Process Description for First Three Sprints

Step-1: Sprint Planning: Development team to discuss with product owner and select the features for the sprint. Product owner must clearly define the feature to be implemented.

Step-2: Development team to estimate the selected features.

Step-3: Sprint cycle starts and the development continuous with the implementation/review/testing.

Step-4: Do sprint end by demonstrating the product output to the product owner, stake holder/s and to customer (if available).

Step-5: Deliver the product increment to the customer after getting the approval from the product owner.

Step-6: Do sprint retrospective to find any improvements required for the development process. If any improvements identified should go to sprint backlog and should be adopted in the next sprint cycle.

Step-7: Any feedbacks/updates or change in requirements received from the customer, add it to the product backlog.

Similarly, the rest of the sprint cycles will be carried out.

Sprint End/Review

In this phase the implemented feature is demonstrated/deployed to the customer. The feedback/review from the customer on the delivery is considered and added to the product backlog for the subsequent sprint.

Sprint Retrospective

This phase occurs after every sprint end. In this phase the development team inspects themselves and create a plan for improvements needed for the next sprint.

Burn Down Chart

A burn down chart is graphical representation on the rate at which the development team can accomplish a story during sprint. This chart gives an idea on the number of stories completed and the remaining number of stories in the current sprint. This chart can also be used to make right estimation during the next sprint planning.

An example of Burn down chart is as shown in the below figure,

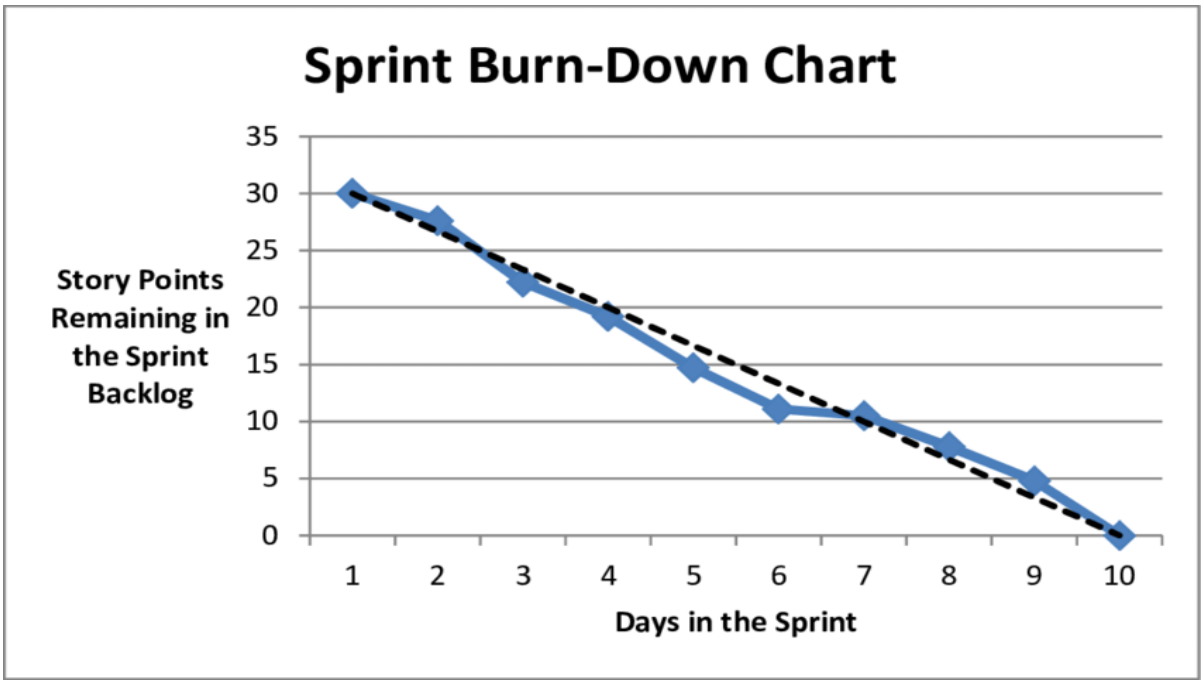
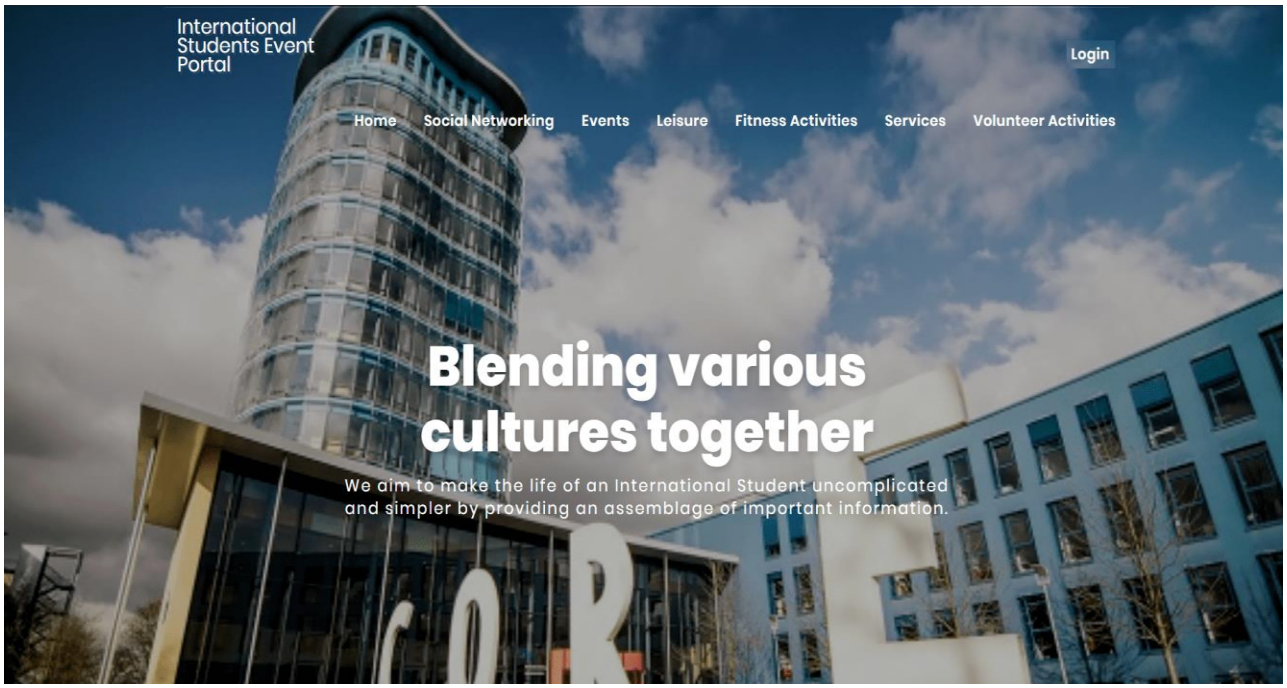
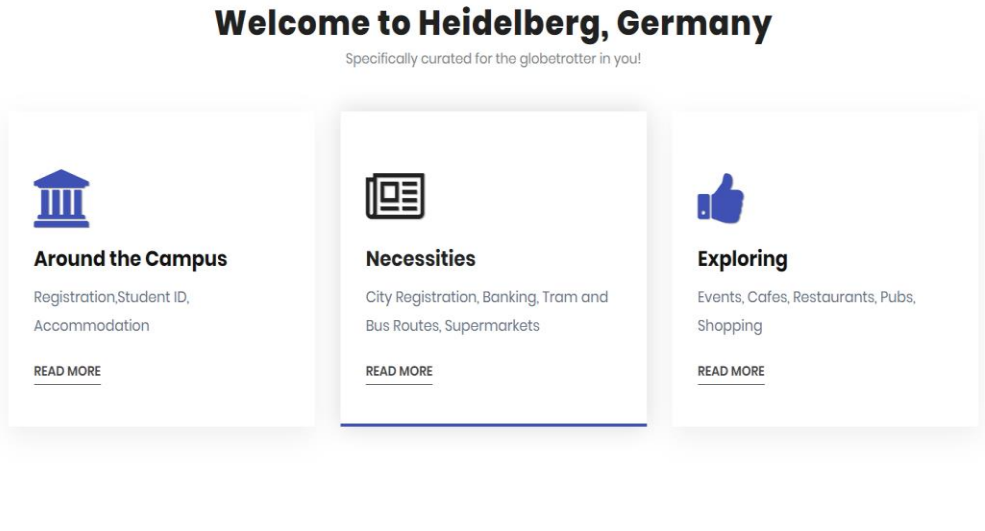


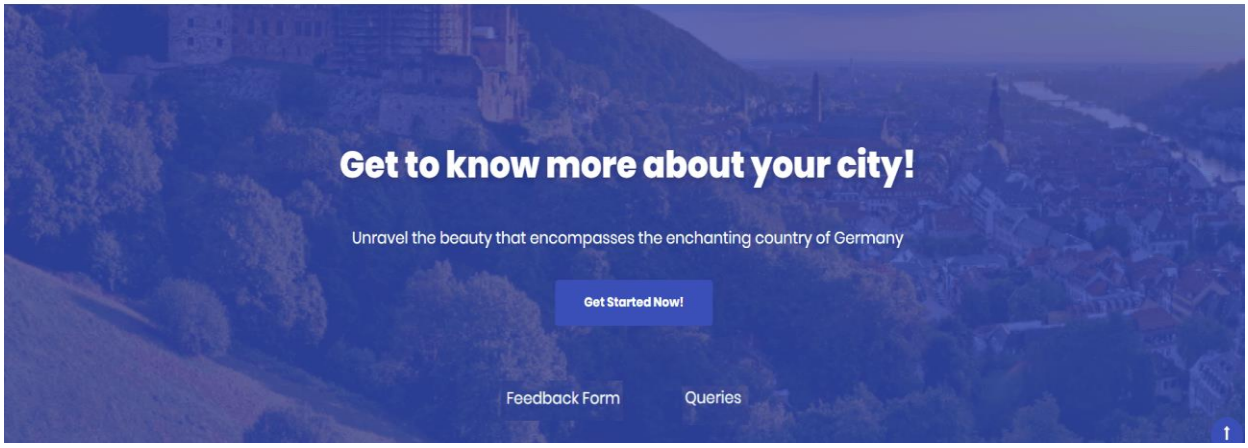
Figure 6.3.7.3 Burn Down Chart Example

7 User Interface / User Experience Design

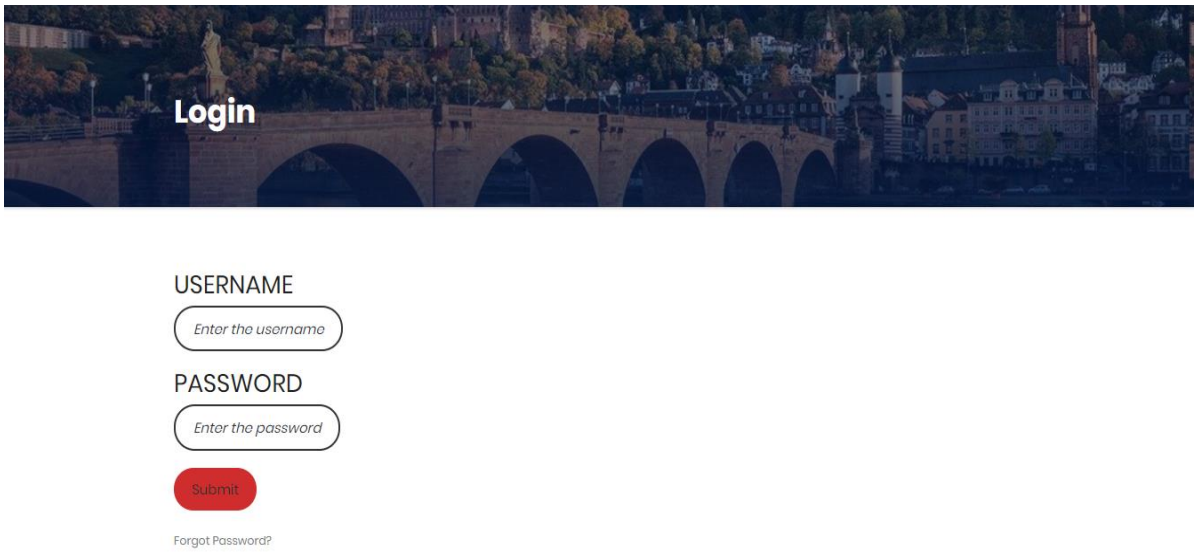
7.1 Home Page



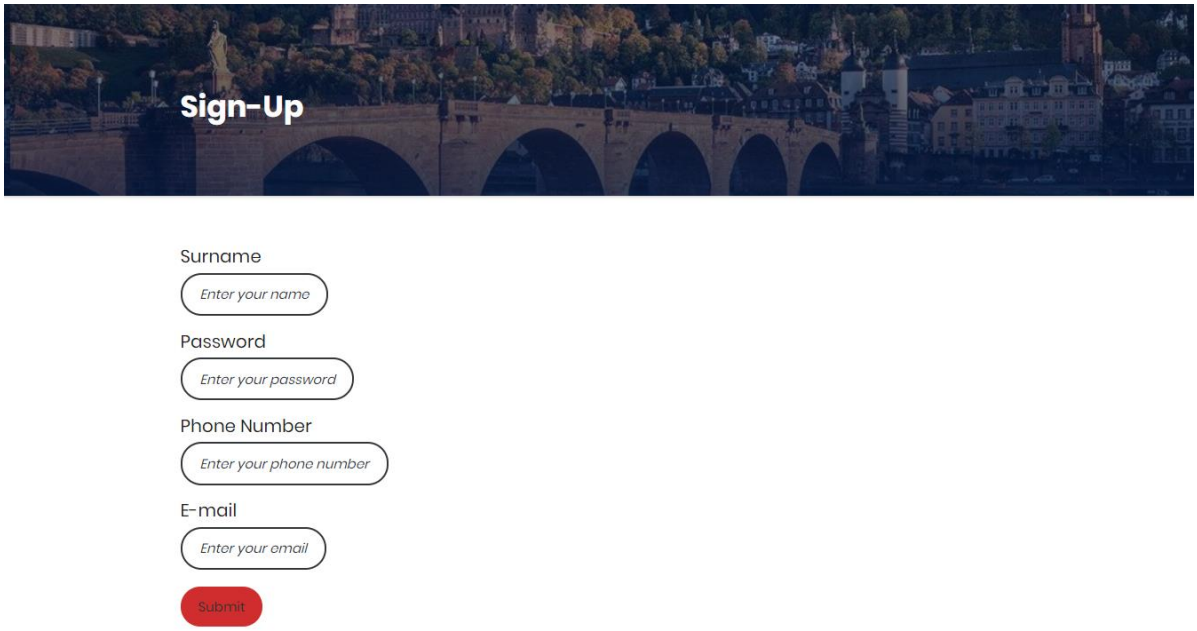




7.2 Login Page

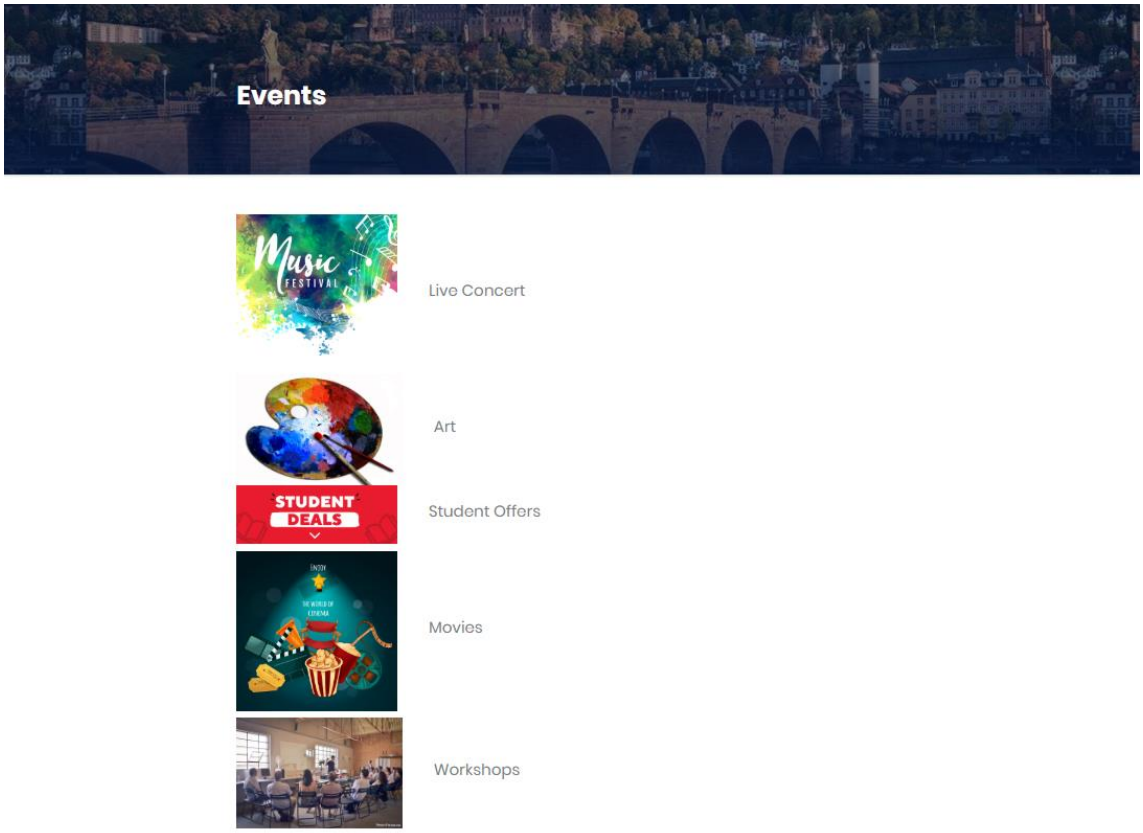


7.3 Sign Up Page



7.4 Events Page

The city of Heidelberg is a cultural hub of Germany that constitutes several events and festivals hosted across the year during all seasons. During the month of February, the Ball of the Vampires- a vampire-themed costume party is celebrated at the castle or the city hall. During Christmas, there is a Christmas market throughout the oldest part of the city. Throughout the year, there is an abundance number of events happening around the city at all times. The International Students Event Portal makes sure to provide this information required for every student interested. We also allow the students to share the details of several events with their friends via social media thus, broadening their exposure. This allows the owners of pubs and restaurants to use our platform in order to promote their business.



7.5 Fitness Activities

As we all know, there will be numerous types of activities in Europe like hiking the mountains, various sports activities, Swimming & the fitness at Gym.

Gym

Hiking

Swimming

Sports

7.6 Leisure

Cafe

Restaurants

Shopping

Night Life

7.7 Volunteer Activities

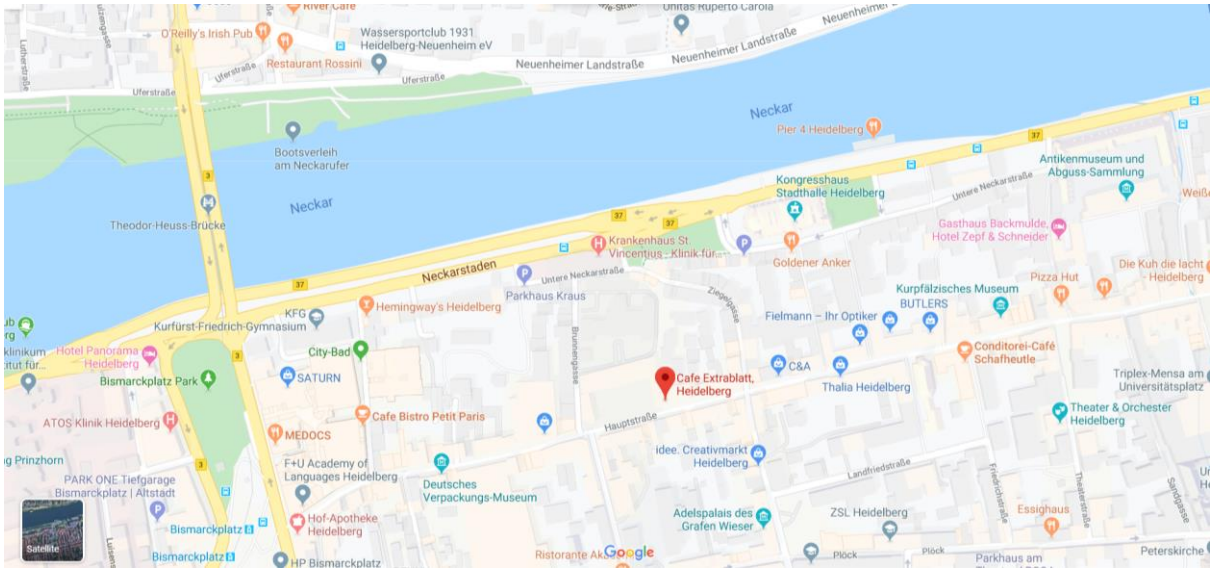
If a student wants to offer a helping hand to the society he/she lives in can do so by participating in volunteer activities around the city. One of the few activities that would require more volunteers would be the fire drill. Assisting people in need would make the world a better place to live in.

Fire Drill

First-Aid

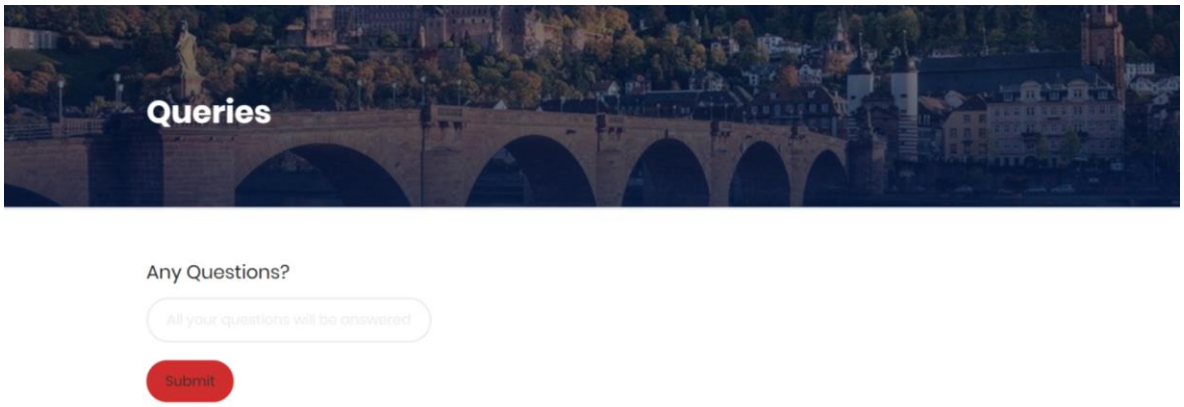
7.8 Navigation

Users can check for the location of any of the activities, events which will be happening around the city & Europe according to the available list in the website.



7.9 Contact Forum

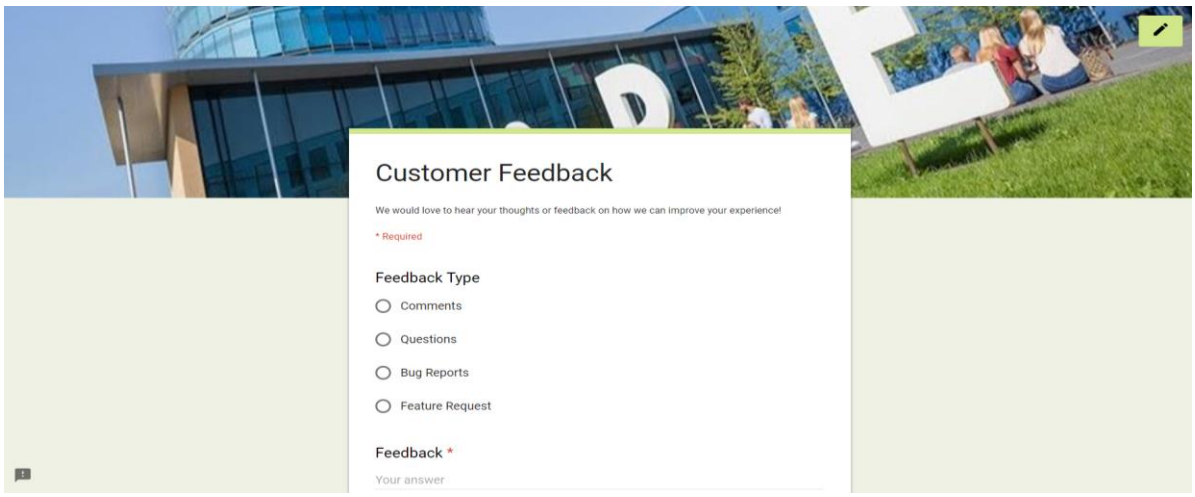
Any kind of questions that a customer has can be asked in a small section of the web application called the contact forum. These queries can be answered by a fellow customer or by the administrator himself. A contact forum provides a platform for the student to clear their confusion and get their answers in a short span of time.

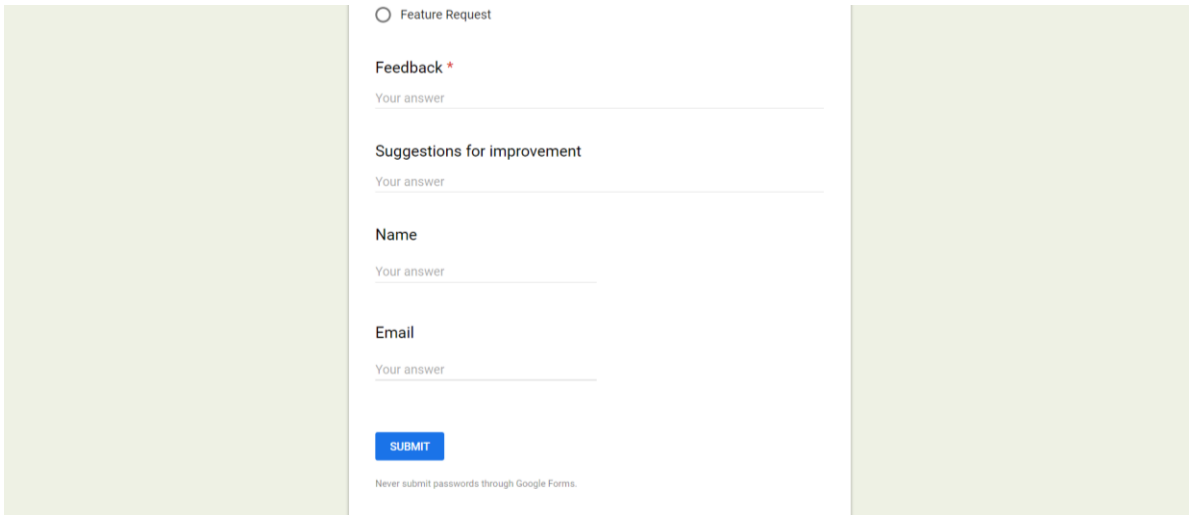


7.10 Feedback Form

The feedback form enables the developers to obtain any constructive feedback from the users. This allows the International Students Event Portal to improve with time and get better. Any scope for upgrading our software is a step towards the progression of the website.

Click to provide any feedback





8 Executive Summary

Problem Statement

The number of international students arriving to Germany every year is increasing by two folds. The requisite information made available to foreigners arriving in the city is very limited. There is a very wide scope of improvement in this field that can be explored by us. In the present situation, international students are devoid of data that is necessary for their initial days. This leads to confusion in the minds of students and ushers them to make uninformed decisions. The major drawback of the vacancy of information is the gap of information that is created in their minds. An overall international student portal aims at solving these problems.

Solution

The international student portal provides an opportunity for newcomers in Germany to explore our site and extract all the data they ever need. It aims to provide a platform to the customers to raise any questions they have and start a discussion. The concept of an overall abundance of information in one site hopes to assist the new students arriving at the SRH Hochschule Heidelberg and anybody who needs it.

The experience that the portal aims to provide is curated for a student specifically and anybody who is at a need for necessary information.

List of Figures

List of Tables

References:

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Roles & Responsibilities

Sl No.	Topic	Owner
1	Introduction	Ankush Akshay & Panchakshariah H S
2	Project Organization Structure	Panchakshariah H S & Rakshit S
3	Project Flow	Ankush Akshay
4	MoSCoW Analysis	Ankush Akshay
5	Business Analysis	Jhesta N
6	Stakeholder's Analysis	Rakshit S
7	Managerial Analysis	Panchakshariah H S
8	Use Cases	Jhesta N
9	Risk Analysis	Silky Sonali
10	SWOT Analysis	Rakshit S
11	Technical Analysis	Panchakshariah H S & Rakshit S
12	Technical Process	Panchakshariah H S
13	Project Process Model	Sharada T V
14	UI / UX Design	Jhesta N
15	Summary	Jhesta N
16	Documentation	Rakshit S & Ankush Akshay