
Software Requirements Specification

for

MapGo

Version 1.1

Prepared by

Group: #6

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Course: CS253

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Abhinav Garg Chouhan Jayesh Harshini Dola Mondem Shanwitha Yadav Nirmal Prajapati Prachi Choudhary Priyanshu Meena Rohan Ravi Sumit Kumar Bairwa Ujjwal Gautam Yashas D	Initial version with information about the requirements to be fulfilled by the application.	27/01/23
1.1		Added description for the user interface and hardware , software interfaces and changed a few functional requirements.	23/04/23

1 Introduction

1.1 Product Scope

MapGo is a website developed for the IIT-K junta, which provides the user an all-in-one go-to application to navigate through the campus as well as schedule, organise and announce events.

The application provides a personalised maps where they can mark their areas of interest, and use it to navigate through the large campus.

Organising bodies get to use this application to announce their events, along with entire details of the event like timings, venue, description, images etc.

These events are announced under the label of verified channels, to which a user can subscribe to in order to get the updates specific to that organising group.

This feature is also useful to the business and shop owners who can advertise their businesses while also declare if their opening and closing times.

This is not for only campus junta it can be useful for visitors as well in finding the correct locations using the visitor mode.

1.2 Intended Audience and Document Overview

- Intended Audience
 - In the early stages the developers, project managers can use this document.
 - In the later stages the testers may use it for testing.
 - The final user may use it as a user manual.
- Document Overview:
 - This document consists of brief information on constraints, requirements and usage.
 - It has five sections that the person carrying this document can use according to their needs:
 - Section 1: Introduction to this document.
 - Section 2: Brief Description of functionality, assumptions and constraints for project managers and marketing staff.
 - Section 3: External interface and functional requirements, and use case model for developers to go through before starting the project.
 - Section 4: All the non-functional requirements for the developers to make their choices on design and marketing staff to be aware of threats in this project.
 - Section 5: other requirements.

1.3 Definitions, Acronyms and Abbreviations

- Channel: A Channel refers to a group of events hosted by a particular organisation's account. Every event hosted by the organization is said to be posted on that organisation's channel.
- Subscriber: a user who has chosen the channel to receive information about the events hosted by that organisation.
- Tags: attributes associated to an event and channels.
- Groups: a group of users who shall share events amongst each other.

1.4 Document Conventions

- Formatting Conventions:
 - Font used is Arial font with size 12 and a 15% lighter gradient of black.
 - The document uses single spacing and 1-inch margins throughout.
 - Italics highlight has been used for comments.
 - Section headings are written in Arial font with size 14 in black.
 - The sub-headings or main points in each section use solid black bullets of circular shape.
 - Outlined circular bullets with a 5-space tab indentation are used for points or sub-headings to the sub-heading with solid black bullets of circular shape.
 - Solid black square bullets with a 5-space tab indentation are used for points or sub-headings to the sub-heading with Outlined circular bullets.
- Naming conventions
 - IITK junta: campus community of the Indian institute of technology, Kanpur. This includes the students, staff, residents, shops and business owners inside the campus.
 - Super user: the developers with special access.

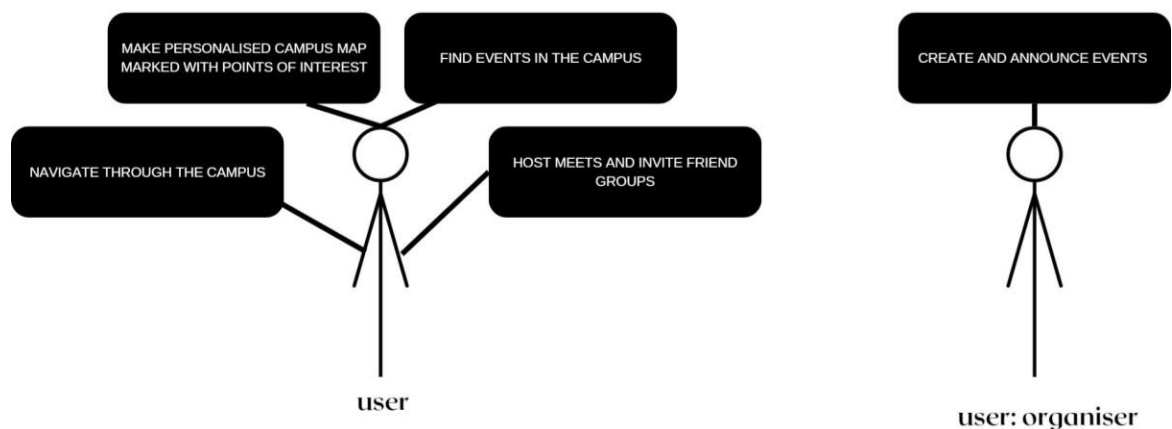
1.5 References and Acknowledgments

- The following tools/websites were used in making this document.
 - User interface: Google Docs
 - User designing: canva.com
 - Use case diagram: PowerPoint Presentation
- Acknowledgments: We would like to earnestly acknowledge the sincere efforts and valuable time given by Prof. Indranil Saha for teaching us the concepts and giving us an opportunity to work on this document. Also, we would like to mention the support of our T.A. Anirudh Nanduri for his constant guidance in making this document.

2 Overall Description

2.1 Product Overview

- For the campus community and outside visitors coming to our campus, it's easy to get confused by different venues and might face difficulty navigating through IITK's extensive campus.
- Also, at the time of fests and hosting events, multiple events happen at the same time, creating even more confusion about the timings and venues. Organizers can announce their events directly on the application to theme them available to interested users.
- MapGo provides a solution to the problem by providing a 'know-all' about any event happening inside the campus.
- Event specifics: venue, timings, description, host, etc., are provided in one place, hence giving everything necessary to know about an event.
- This function can be extended to meet day-to-day uses as well, like navigating through campus, scheduling events, knowing the availability of facilities, and personalizing points of interest in the campus map.



2.2 Product Functionality

- Any user can access the navigation feature of the application to navigate from point A to point B on the campus and personalize the map with points of interest. Hence the application provides a use-for-all navigation feature.
- Users registered with IITK credentials or event-specific credentials get access to information about the events they subscribe to.
- Information about a particular event is provided to a user by marking their time schedule and also highlighting the location on the map UI.
- Hosts are granted permission to write and publish details about their events through verified channels.
- Users can choose channels with the host names they are interested in and even search for channels based on their interests.

2.3 Design and Implementation Constraints

- Navigation features implemented must need the use of mapbox API. Service providers could limit the number of API calls under the free use of the service.
- Geographical changes made to the campus must be updated by the api service providers, but super user can add layers to provide correct information nevertheless.

2.4 Assumptions and Dependencies

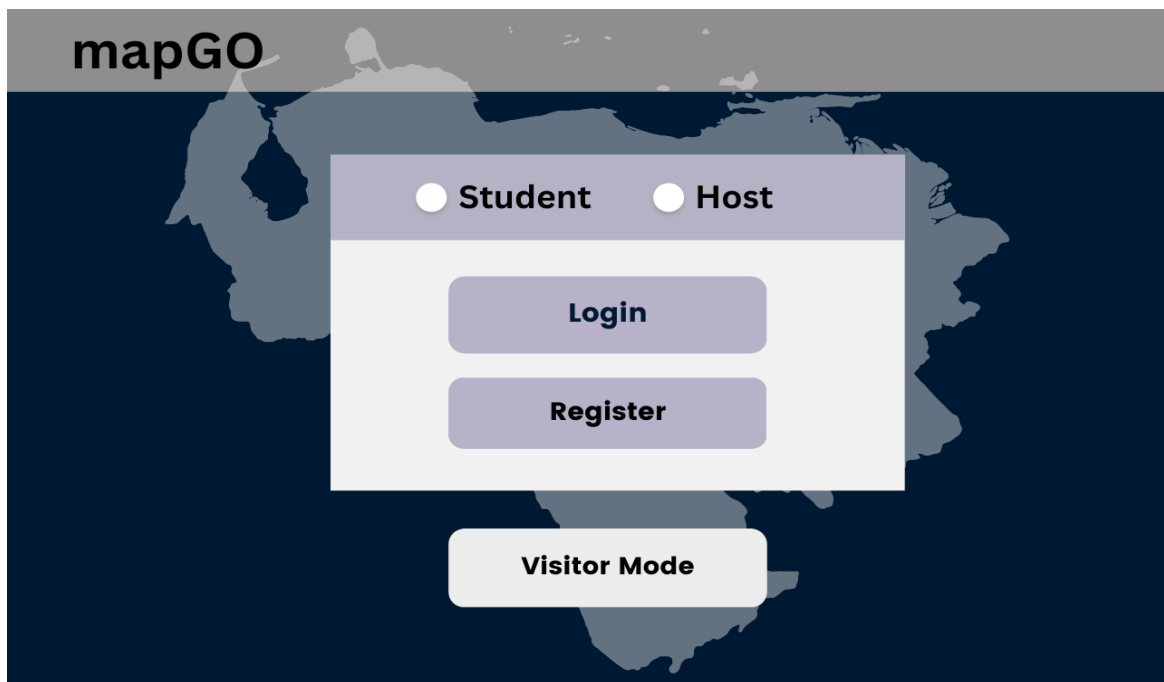
- Upstream systems, including the user database controlled by the server manager, must ensure optimal performance even in case of an expected maximum of 2000 users, not necessarily concurrent.
- The web application uses an API service, whose functionality is maintained by the owners of the service, should provide accurate location and navigation data.
- The geographical information available with the mapbox API is assumed to be accurate, but in case of changes made in the campus geography, necessary changes adjustments should be implementable.

3 Specific Requirements

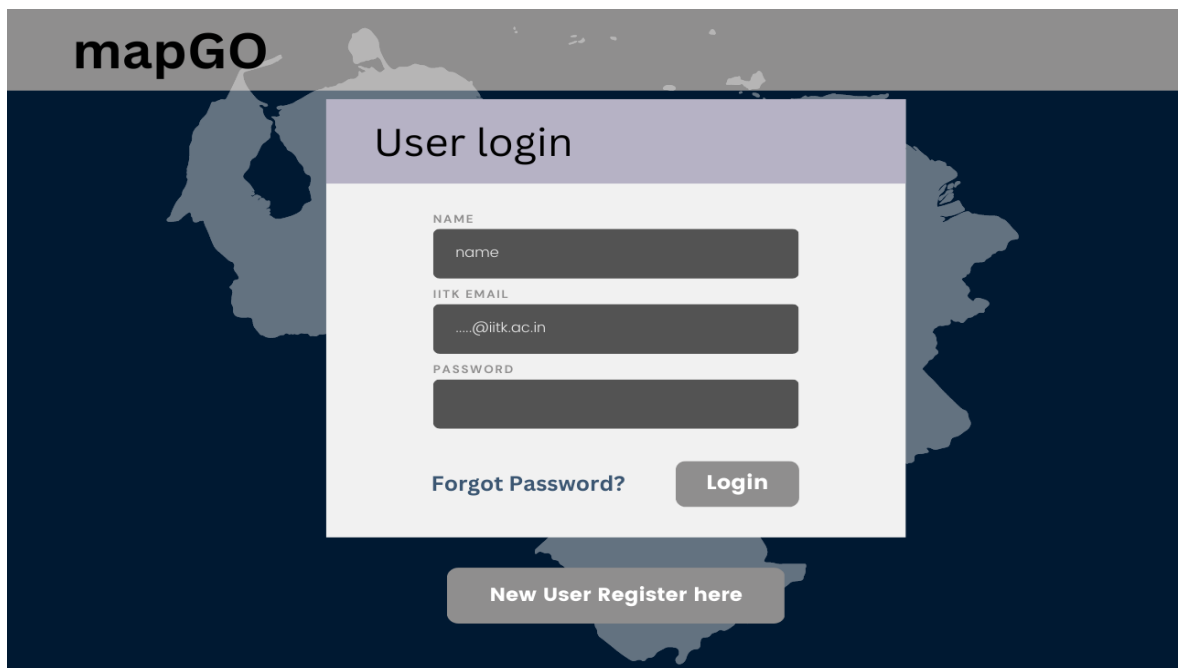
3.1 External Interface Requirement

3.1.1 User Interfaces

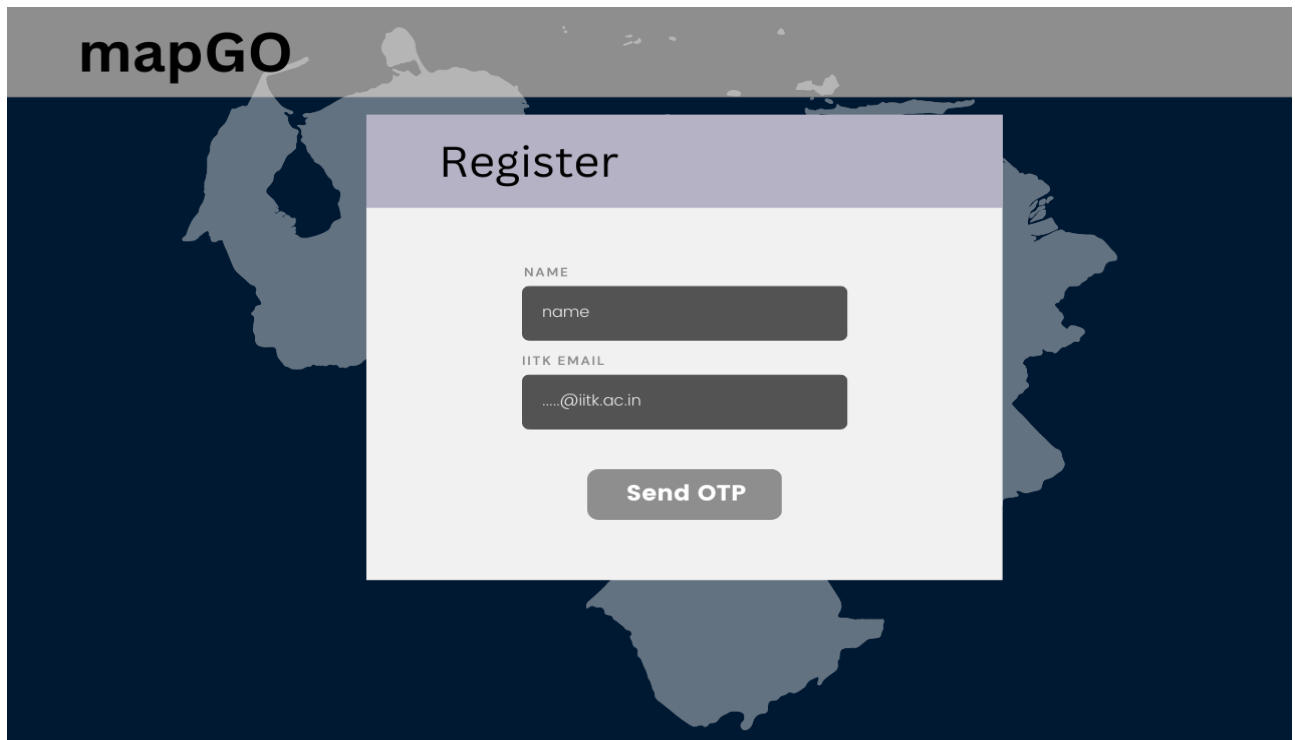
- First page that pops up when mapGo is opened



- User Login Page



- Registration Page



The image shows a web page for 'mapGO' with a dark blue background featuring a world map. A white registration form is centered on the page. The form has a purple header with the word 'Register'. Below the header, there are two input fields: 'NAME' with the placeholder text 'name' and 'IITK EMAIL' with the placeholder text '....@iitk.ac.in'. A 'Send OTP' button is located below the email field.

mapGO

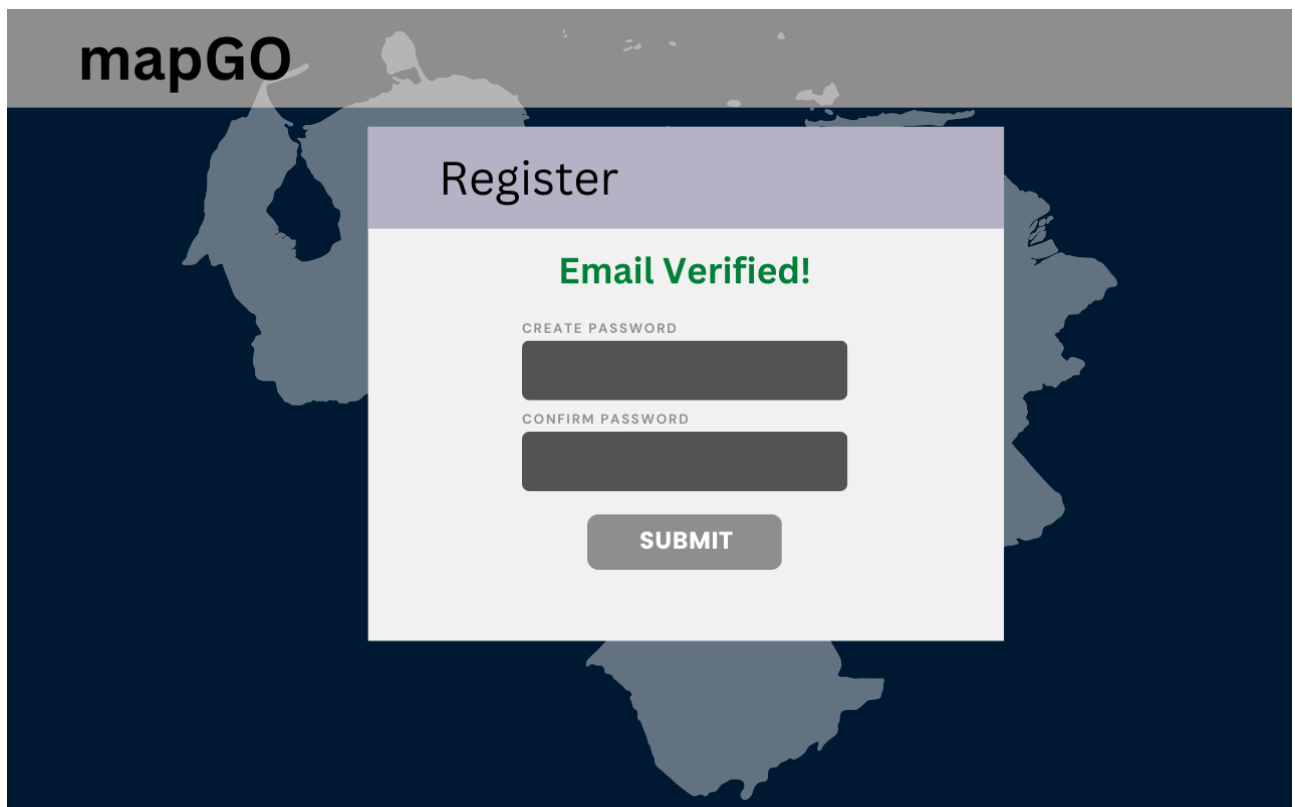
Register

NAME
name

IITK EMAIL
....@iitk.ac.in

Send OTP

- OTP Verification Page



The image shows the same 'mapGO' web page, but the registration form now displays a green message 'Email Verified!'. Below this message, there are two input fields: 'CREATE PASSWORD' and 'CONFIRM PASSWORD'. A 'SUBMIT' button is located below the confirm password field.

mapGO

Register

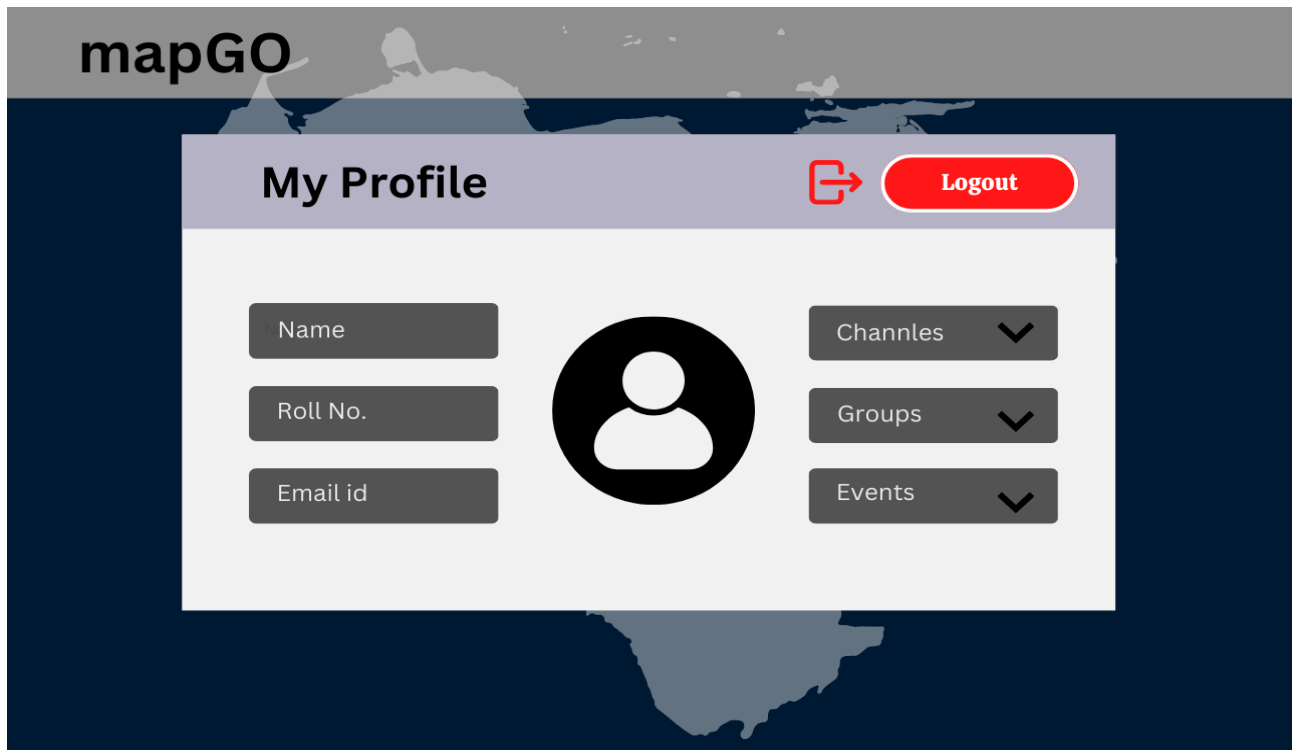
Email Verified!

CREATE PASSWORD

CONFIRM PASSWORD

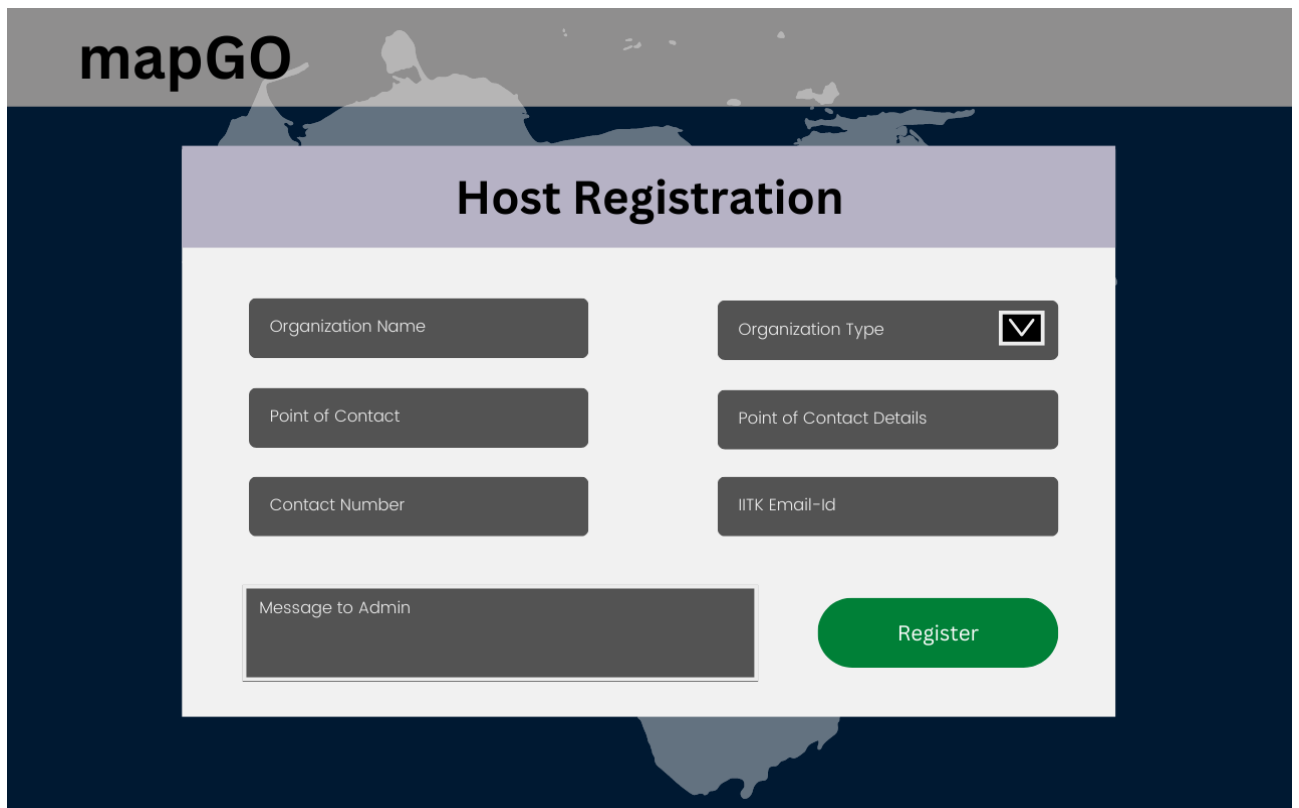
SUBMIT

- Profile Page



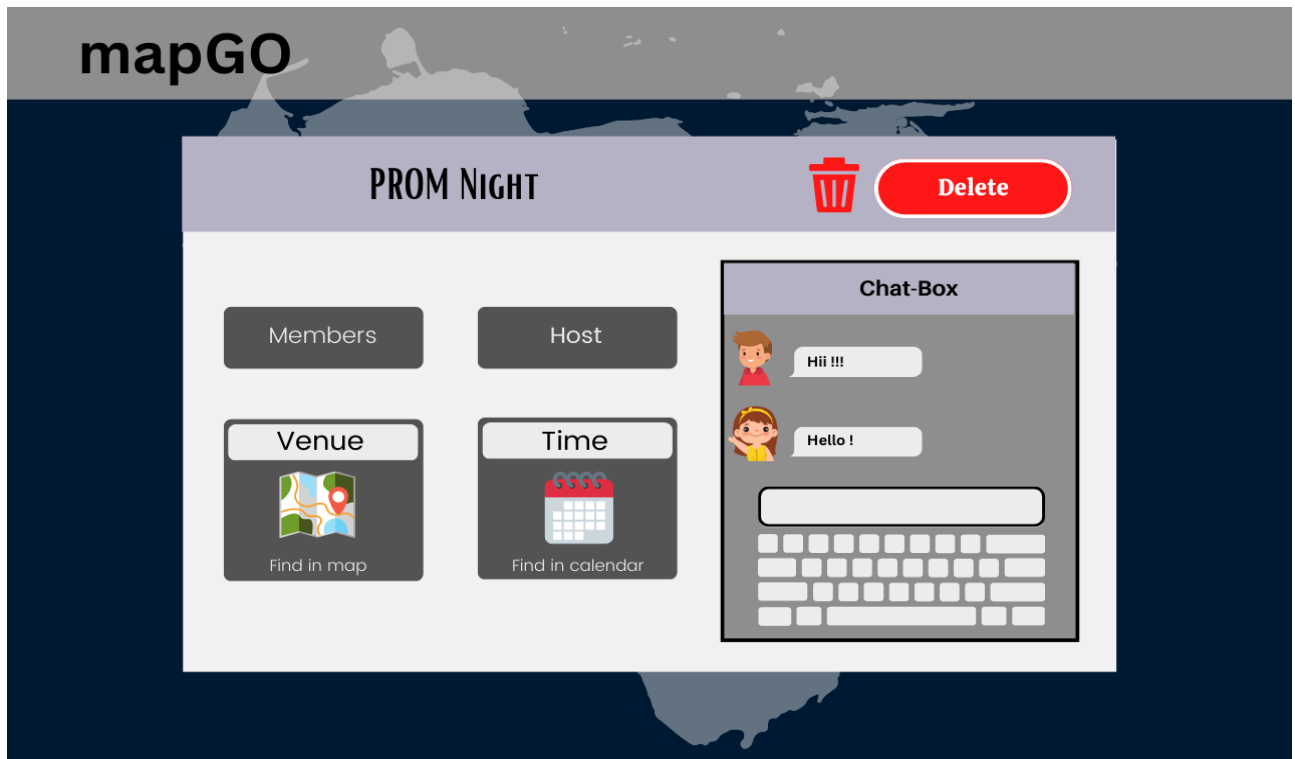
The mockup shows the 'mapGO' logo at the top left. Below it is a 'My Profile' section with a light purple header. In the top right of this section is a red 'Logout' button with a red exit icon. The profile area contains three input fields on the left: 'Name', 'Roll No.', and 'Email id'. In the center is a large black circular profile picture placeholder. On the right are three dropdown menus labeled 'Channles', 'Groups', and 'Events', each with a downward arrow icon.

- Host Registration Page

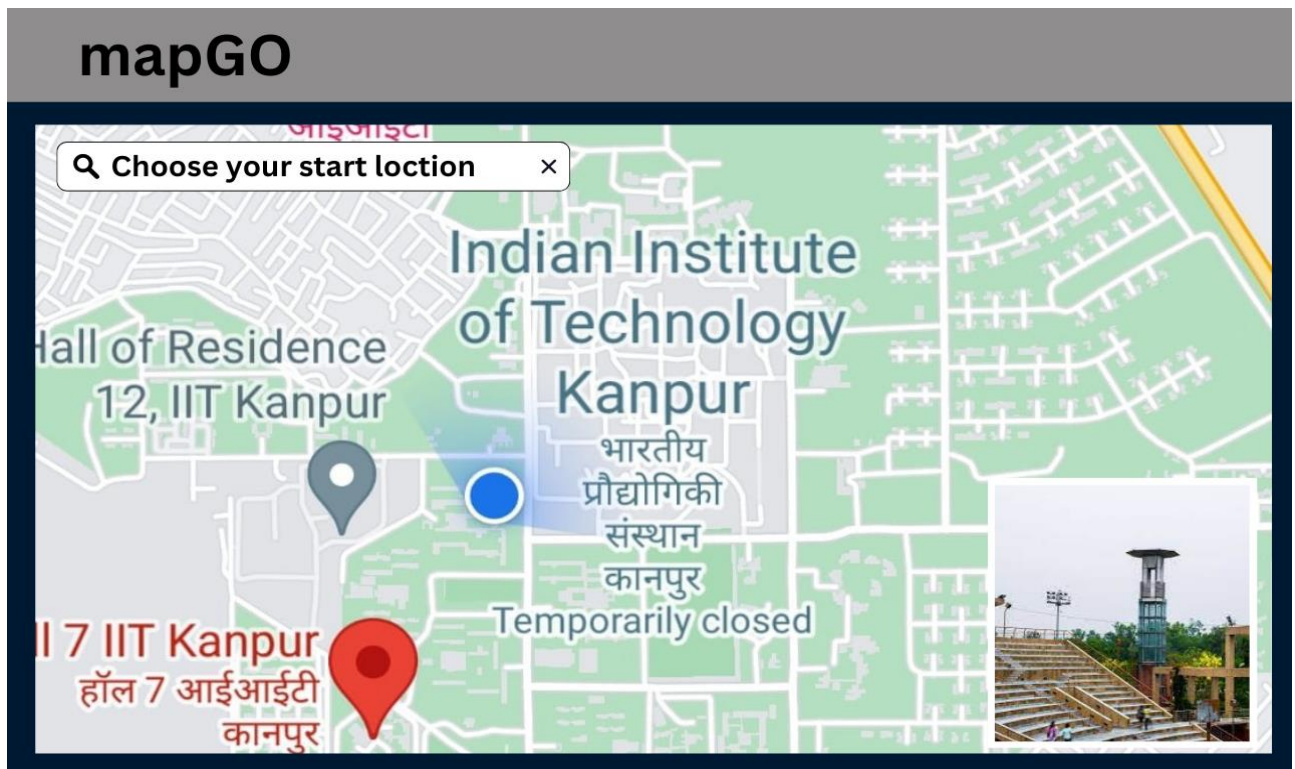


The mockup shows the 'mapGO' logo at the top left. Below it is a 'Host Registration' section with a light purple header. The registration form contains several input fields: 'Organization Name', 'Point of Contact', 'Contact Number', and 'Message to Admin' (a larger text area). On the right side, there is a checkbox for 'Organization Type' which is checked, a 'Point of Contact Details' field, and an 'IITK Email-Id' field. A green 'Register' button is located at the bottom right of the form.

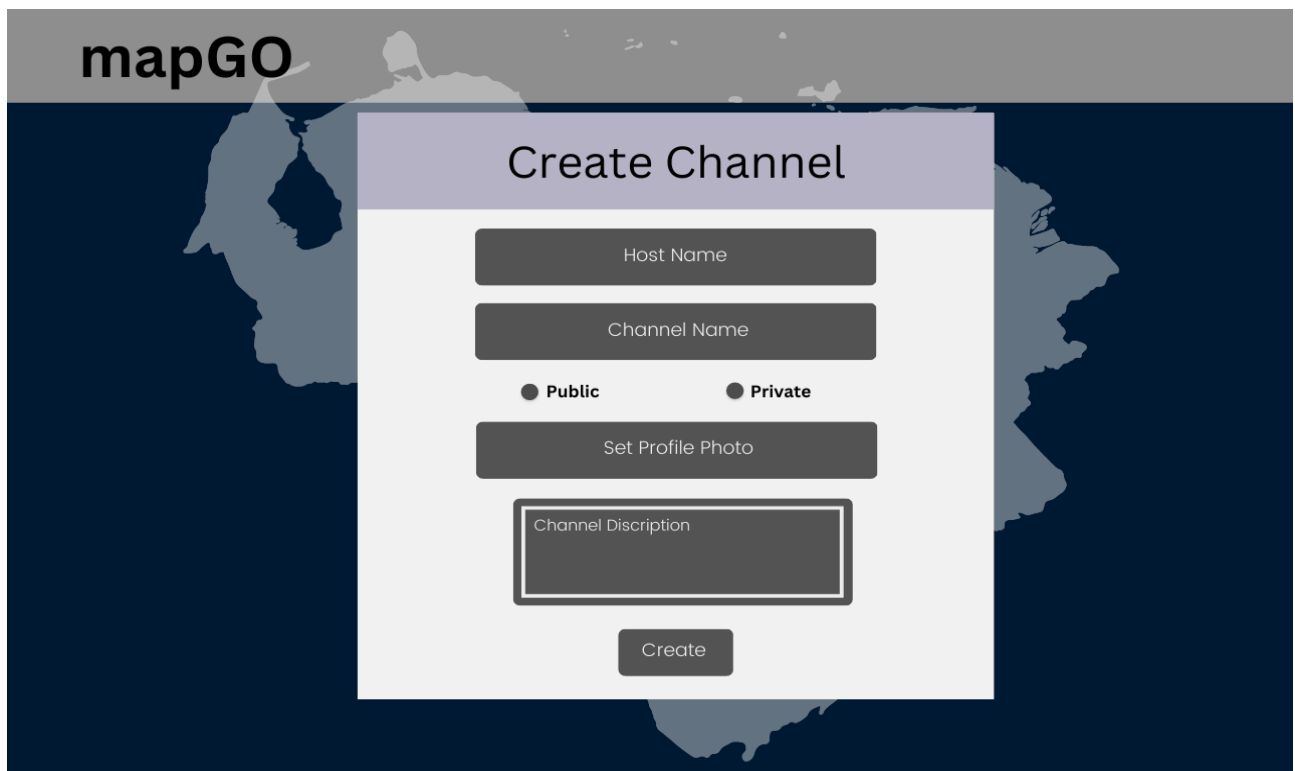
- Page containing details of an event we are interested in



- Navigation using the map



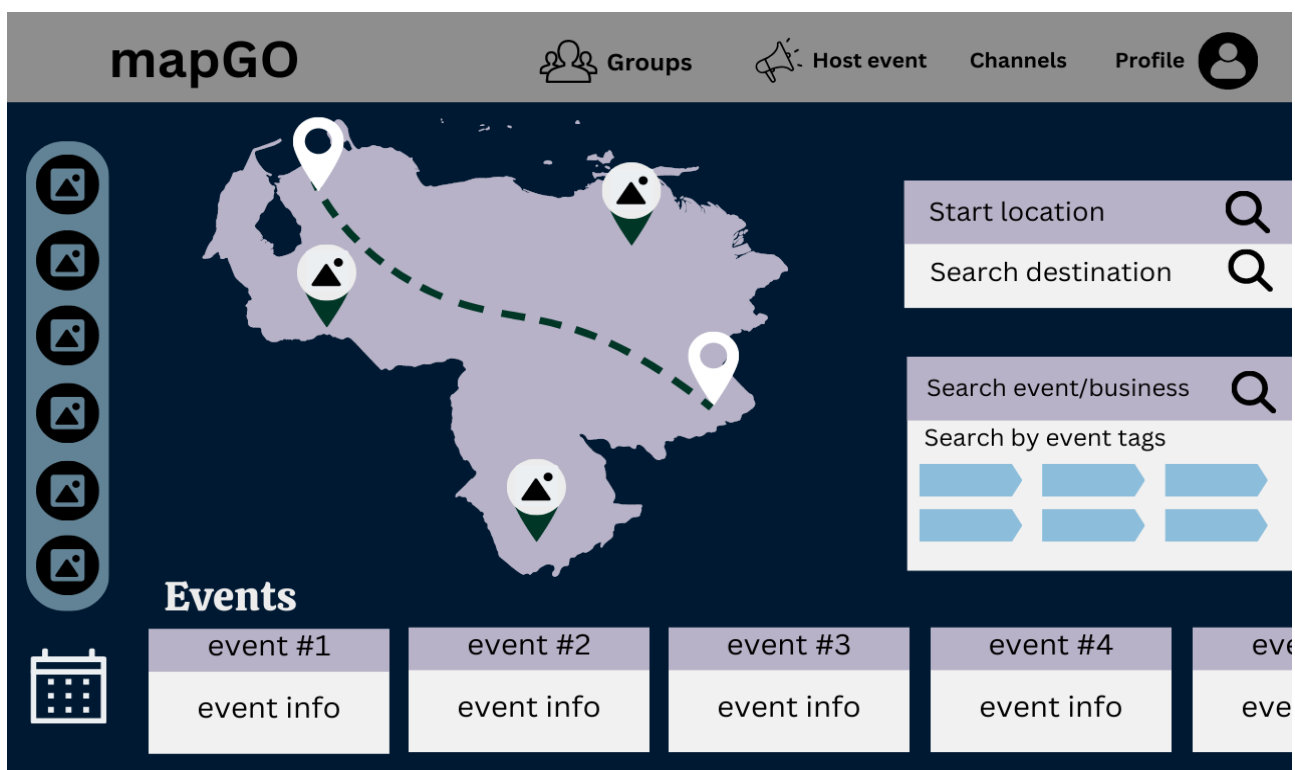
- Creating a new channel



The image shows a 'Create Channel' form overlaid on a map of Africa. The form is titled 'Create Channel' and contains the following fields and options:

- Host Name (text input)
- Channel Name (text input)
- Public/Private toggle (Public is selected)
- Set Profile Photo (button)
- Channel Discription (text area)
- Create (button)

- Home Page that shows everything



3.1.2 Hardware Interfaces

- Hardware is required to have a browser. For example, Google Chrome, Microsoft Edge, Safari, etc.
- Devices includes phone, tablet, desktop or anything with a stable network connection.

3.1.3 Software Interfaces

During our software development, we have to design both static and dynamic website interfaces, functionalities and database management systems. So the following are the software requirements:-

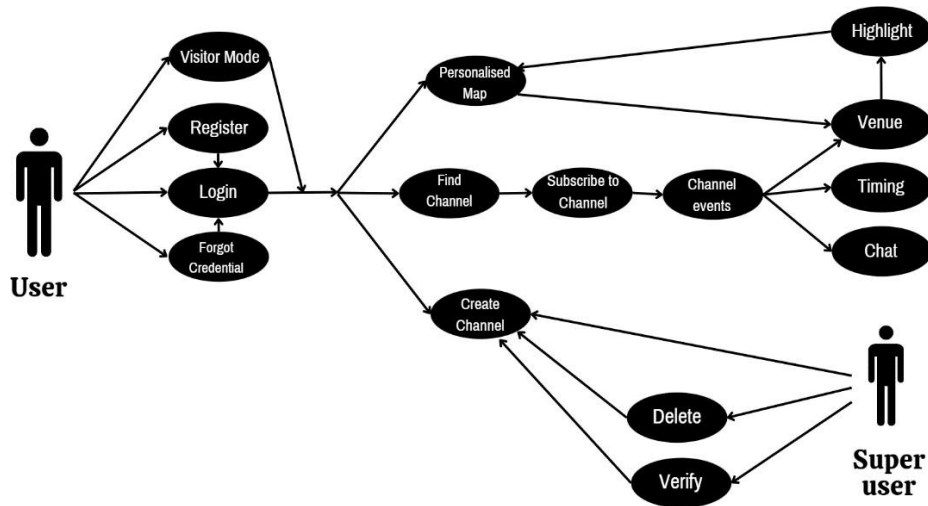
- Web browser (with internet access): Used in the development phase for debugging and testing
- Windows: Operating system for a development environment
- Reactjs: Used in the frontend development for building single page application
- Nodejs: Used to run Javascript on the server side and connect to the database
- MongoDB: it is a non-relational database which provided flexibility in the structure of data stored.
- Visual Studio Code: IDE to perform certain operations - writing code
- Postman: Used to test the various backend routes in an efficient way

3.2 Functional Requirements

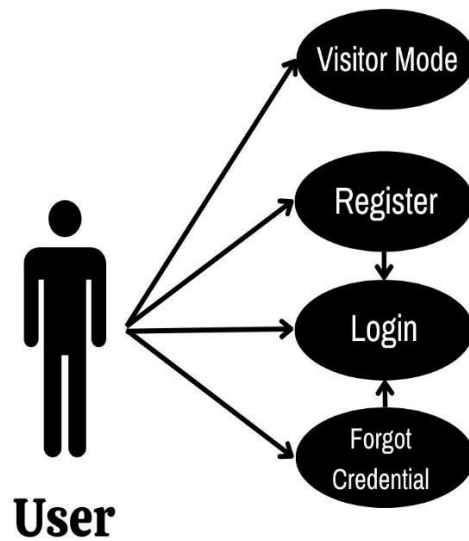
- 3.1.1 Login: The user shall enter a valid email ID and password to login. The system will be able to recognize an invalid e-mail ID and pop an error message. If the password is incorrect, the user will be able to access the “forgot password” option, which shall require verification through the user’s IITK email.
- 3.1.2 Register: The user shall be able to register with the IITK email ID and create a password. Guest users shall be able to use the visitor mode available.
- 3.1.3 On registration, only the users registered using IITK credentials shall be able to subscribe to the events of the different channels they are interested in.
- 3.1.4 Profile: users shall be able to view their profile which shows the channels they are subscribed to ongoing and upcoming events etc.

- 3.1.5 Homepage has the map of the campus on which important and frequently visited areas can be marked and highlighted by the user. users shall be able to find their way around the campus from place A to place B.
- 3.1.6 Users using visitors mode shall use the navigation feature of the map, and also get the update of public events, which are the events that do not require registration.
- 3.1.7 Users who are subscribed to a particular channel get notifications and updates about the same and it will be updated on their personalised maps. Useful for outside guests to easily find the venue and the respective event.
- 3.1.8 The super user shall grant verified user labels to certain accounts for each host, in order to maintain integrity in the events announced under the name of a hosting body.
- 3.1.9 Events shall be deleted once the event timings have passed.
- 3.1.10 The user shall be able to add/edit their channels they are subscribed to in their profile section

3.2 Use Case Model

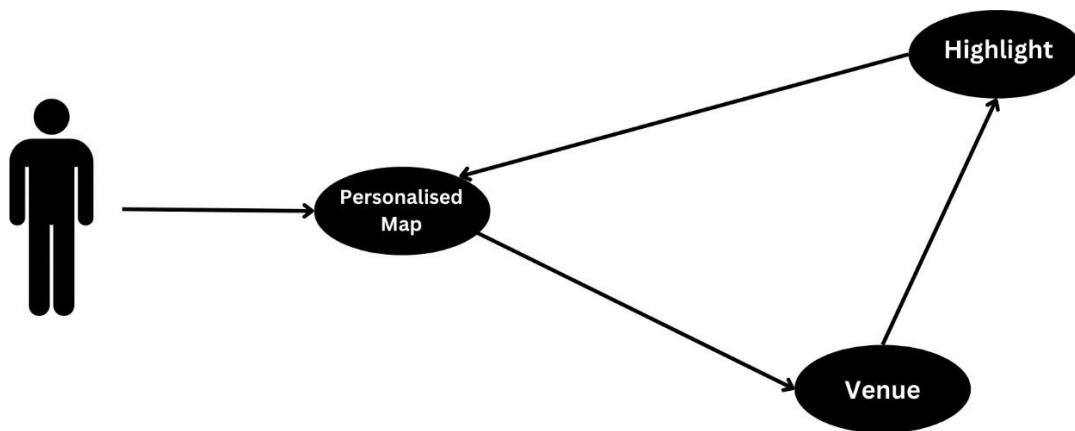


3.2.1 Use Case #1 (use case name and unique identifier – e.g. U1)



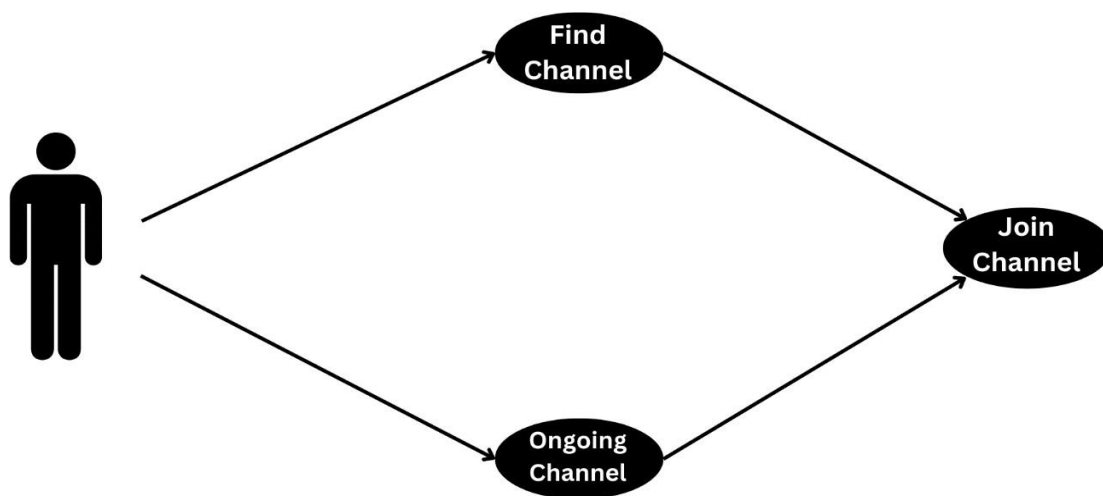
Use Case S.no	Use case #1
Purpose	User registration or login
Requirements Traceability	IIT-K mail id for new users and login info for registered users, guest users access the application in visitor mode.
Priority	high
Preconditions	None
Post conditions	User logs in
Actors	User
Exceptions	None
Includes	None
Notes/Issues	Assumes that the user logs in

3.2.2 Use Case #2



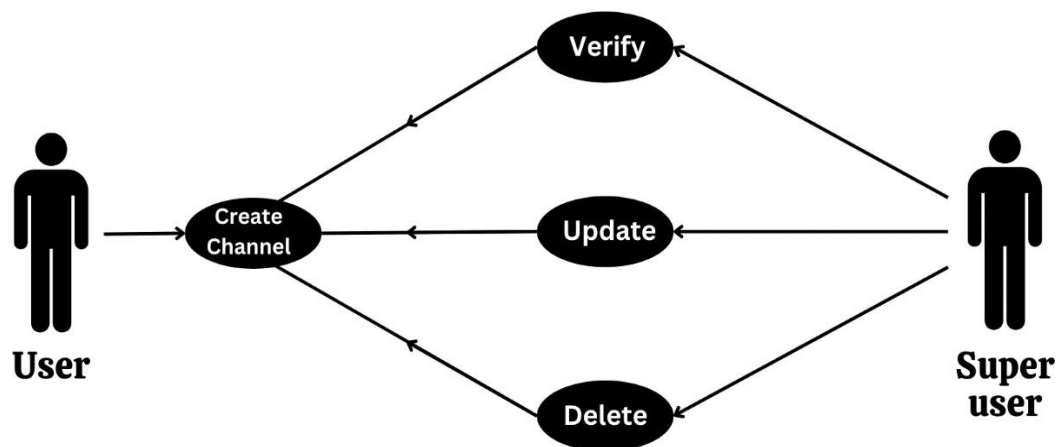
Use case S.no	Use case #2
Purpose	Accessing personalised map
Requirements	User should be logged in
Priority	high
Preconditions	None
Post conditions	The user could see their map marked with events of channels that they subscribed to.
Actors	User
Exceptions	Visitor mode shall display only public events.
Includes	Use case #1
Issues	Geolocation should be accurate.

3.2.3 Use Case #3



Use case S.no	Use case #3
Purpose	Joining a channel
Requirements	User should be logged in
Priority	medium
Preconditions	User is registered using IITK credentials
Post conditions	The user should be able to join the channel they are interested in.
Actors	User
Exceptions	None
Includes	Various ongoing channels
Issues	None

3.3.4 Use Case #4



Use case S.no	Use case #4
Purpose	Create verified channels
Requirements	User should be logged in
Priority	medium
Preconditions	None
Post conditions	The user shall create new events.The super user provides a one-time validation to the user in order to announce an event.
Actors	Users that are organisers,Super user
Exceptions	None
Includes	New channels
Issues	None

4 Other Non-functional Requirements

4.1 Performance Requirements

- Response time: Response time of the servers should be less than 2 seconds.
- Workload: The application is intended for the students of IITK and visitors who come to the campus in very large numbers during events. Expected maximum load on the server is 2000 users. The server should be able to handle this load.
- Platform: the platform should be responsive and be able to load on various screen sizes, while providing accurate information and maintaining its interface.
- Uptime: Since, events are organized in the campus around the clock, the uptime for the application would be 24hrs a day.

4.2 Safety and Security Requirements

- Login : IITK email id or an event specific id is used for verification to register to the application.
- Access to update information regarding the events will be granted to organisers only. Any misuse shall be taken care of by the super user, which may lead to suspension of the account.
- The website should satisfy the ISO13849, the standard which defines all parts of a functional safety analysis and IEC 16511 a process safety standard which mandates the creation of an SRS for all safety instrumented systems.
- The website uses various open source softwares, that should not contain any security vulnerabilities.

4.3 Software Quality Attributes

- 4.3.1 reliability: an additional layer may be inserted on top of the google maps api used, to make the website more reliable. This measure is done to validate the data, to entrust accuracy to the user.
- 4.3.2 Availability: any user can access the application using a device which supports a web browser with stable internet connection.'
- 4.3.3 Maintainability: Recognition and verification of institute level organisations and bodies. Fixing paths and adding new building as they are inaugurated. Taking constant feedback and keeping the web application up to date with modern-day conventions.
- 4.3.4 Extendability: in case of increase in the quantity of users, the website should be hosted on server that shall handle the load.

5 Other Requirements

- Database requirements:
 - The system uses a database of organisation and events.
 - The data needs to be stored in the application and shall be efficiently retrieved by an authorised user.
 - The data shall be able to group various events on the basis of tags.

Appendix A – Data Dictionary

- Authentication
- Calendar
- Channel
- Events
- Groups
- Host
- IITK janta
- Login
- Maps
- Organizer
- Super-user
- Tags
- User
- Visitor
- Visitor Mode

Appendix B - Group Log

The document was produced by a team effort by the Wall-E(s) under the supervision of and with the guidance of their project mentor Mr. Anirudh Nanduri using the knowledge provided by their course instructor Dr. Indranil Saha.

- 20th January 2023, at 10:00am in L20 : CS253 class.
In this meet with the course instructor, the individuals of the group along with several other groups were taught the basics of requirement engineering along with significance and methodology of architecture design.
- 20th January 2023, at 9:30pm over a google meet :
Meet with the mentor. It was an introductory session organised by the project mentor. The project idea was discussed to produce a greater clarity and to bring the team on the same page as the mentor. Wall-E(s) were guided on different architectures that could be used and platforms that could be used to implement them. The requirement of the application was established and the expectations about the final outcome were set.
- 27th January 2023, at 10:00am in L7 : CS253 class
In this meet with the course instructor, the individuals of the group along with several other groups were taught the application of software design and its various components.
- 27th January 2023, at 4:00pm over a google meet:
Meet with the mentor. It was a pre-submission meeting with the mentor where the SRS document created by the team was reviewed by Anirudh. Valuable feedback was obtained by the team that was incorporated before submission.

Note: There were various formal and informal meets organized by the team for work distribution, discussion, etc. to make the formation of the requirement document a collaborative effort.