LocalSquare

Capstone Project - Aedan Beisly

Introduction

LocalSquare is a social media application that aims to connect physical communities and groups. It is not a replacement for current social media platforms but fills a unique niche that most social media applications don't target. We know that physical social connection is lacking in our communities, and many community board plans list community connectedness and involvement as an issue that needs to be addressed.

Purpose

Problem:
Digital technologies have made our lives better and easier in many ways, but have also disrupted how we interact and connect with those around us. One effect has been an increase in loneliness, and lack of social connection, which has been shown to be very important to mental and physical wellbeing. This among other factors, such as an increase in remote work, has made it more difficult for people, especially young adults, to connect and integrate with their community.

Value:
Social connection is incredibly important for our well-being. Specifically physical social connection. Loneliness has been associated with an increase in depression, anxiety, and even mortality. Loneliness is greater in the younger generations who are more connected to the digital world and social media, which makes the two appear connected. A social media platform that works to connect physical communities will create great value for everyone in the community, including overall well-being.

Current State:
Social connectedness is currently in a bad state, with high levels of loneliness, and digital technologies encouraging digital connectedness rather than physical connectedness.

Desired State:
My vision of the future is a world where digital technologies are harnessed to create real, meaningful, physical connectedness between people and communities. A world where barriers for integrating into a new community, or connecting with your existing one are removed. A world where we use technology to reduce loneliness and build meaningful connections. A world where it is easy to find groups in your area that share the same passions.

Current Solutions:

There are solutions that cover certain aspects of social connectedness, but none that are an in-depth platform for communities and groups to connect and find information on a day-to-day basis.

Meetup has physical events you can join covering a wide range of topics.

Nextdoor connects neighbours to each other, but does not have provisions for more generalized groups, and is not available in New Zealand.

Facebook Groups supports hosting groups but is limited in its functionalities, basically just a news feed for the group with support for events, overwhelmingly cluttered, and is part of the greater Facebook website which is designed to capture your attention when you visit the site, making it easy to go on to check a group and end up spending far too long consuming unrelated content.

Discord does well at supporting online groups, but is not designed with physical communities in mind, and is mostly a collection of chat rooms. It would be the closest to what LocalSquare is attempting to achieve, with excellent modularity for its groups, and a healthy business model that doesn't require a ton of ads.

Industry / Domain

Social Media / SAAS

Current State:
The social media industry is relatively mature as far as emergent technologies go. Most players rely heavily on ads for monetization, which creates a very aggressive business model, requiring maximum user retention. The platforms are designed to keep the user's engagement for as long as possible, and addicting the user to scrolling through feeds which are very often irrelevant to the user's life, and often contain very little value.

Value-Chain:
Social media creates value for their users with entertainment and digital connection with others, and creates profit by pushing ads to users while they consume content.

Key Concepts:
- Get as many users as possible.
- Hook users with content curated to keep them engaged.
- Run ads to the users in between the content they consume to generate profit.

Relevancy to Other Industries:
LocalSquare has the potential to connect to many other industries through community connections to businesses (e.g. restaurants, retail, activity providers, tourism, etc.).

Business Model:
LocalSquare's business model would be a B2C model. Anyone can create a group, and there would be payment tiers based on the size of the group. There would be a free tier to help build an ecosystem of smaller groups that may be connected to the bigger groups.

Groups would have the option to support the cost of their group by having things such as sponsors, paid content, etc. One example would be a community group having a local businesses page where the businesses that are displayed on the page pay a small fee to have their business displayed on the community page. This method of payment would allow the costs of the group to be distributed to where the financial value is being created (in this example local businesses who could get more custom from locals).

Stakeholders

Community leaders:
People who are interested in running and connecting the community.

These stakeholders could use LocalSquare to create and run community or group pages. They would be in charge of creating the groups, defining the group settings and tabs, managing the group join requests, managing content posting requests where permissions are required, moderating the group content, and more.

The community leaders would expect to be able to easily create and manage a platform where their community members could interact with the community in specified ways.

Community members:
People who are or want to be part of a community or group.

These stakeholders could use LocalSquare to find and interact with communities and groups that are relevant to them.

The community members would expect to be able to easily interact with the community in the ways defined by the community, no matter their demographics, and not have the platform try and use aggressive tactics to hook them into staying on the platform.

Product Description

Architecture
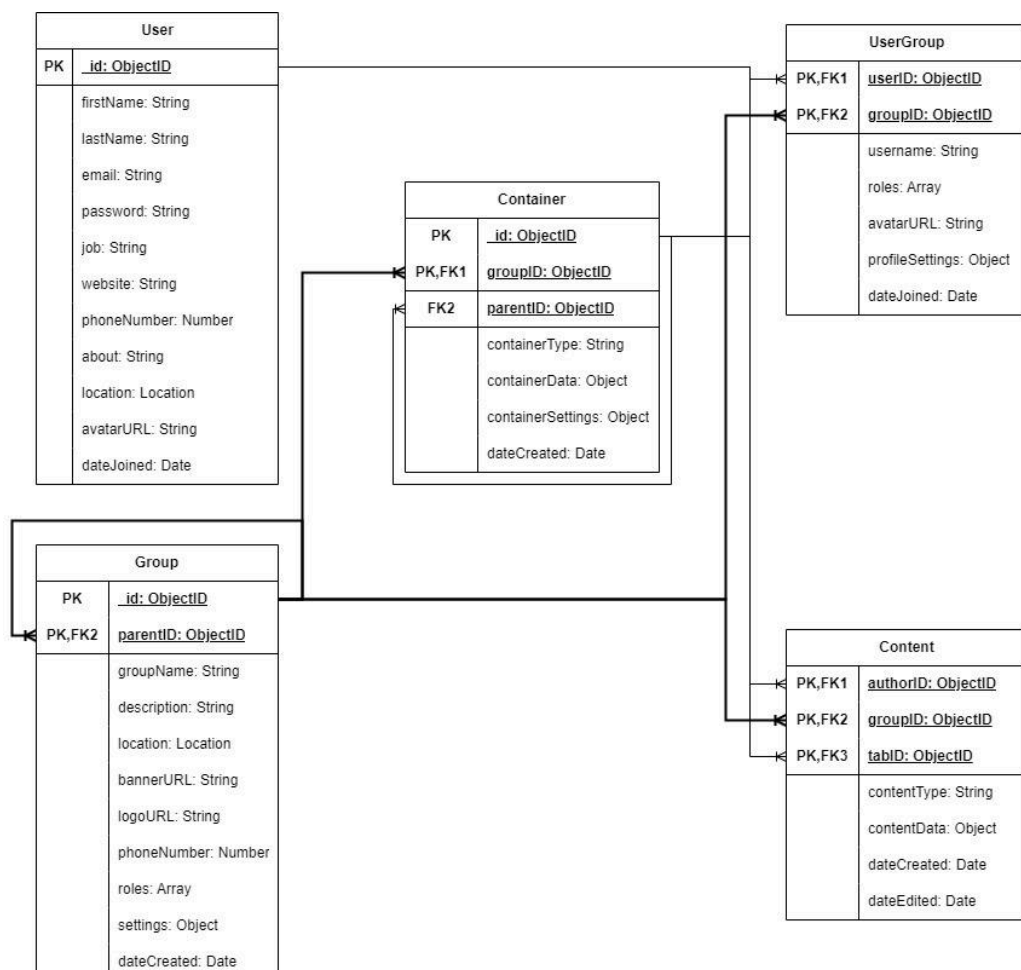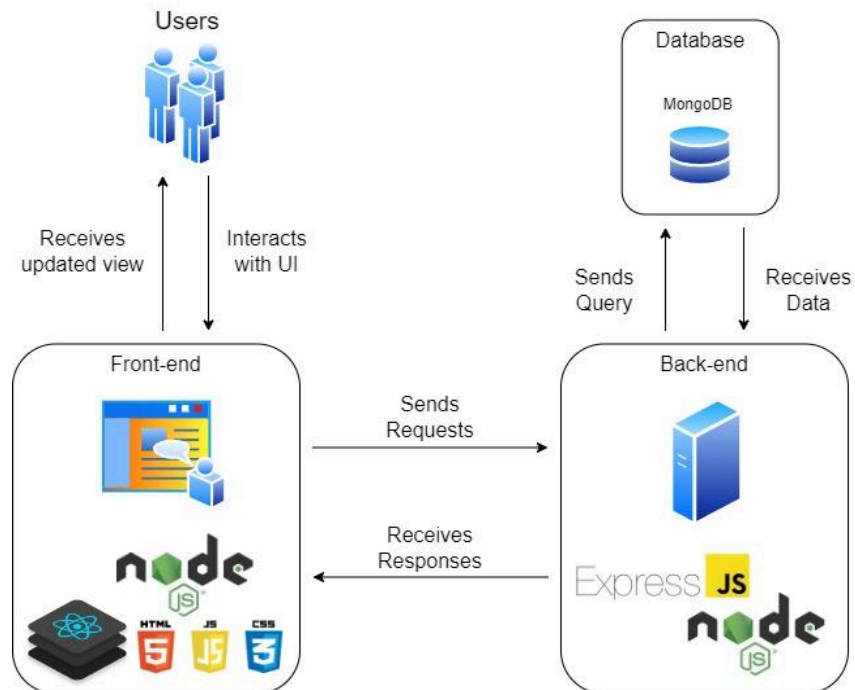
User Stories

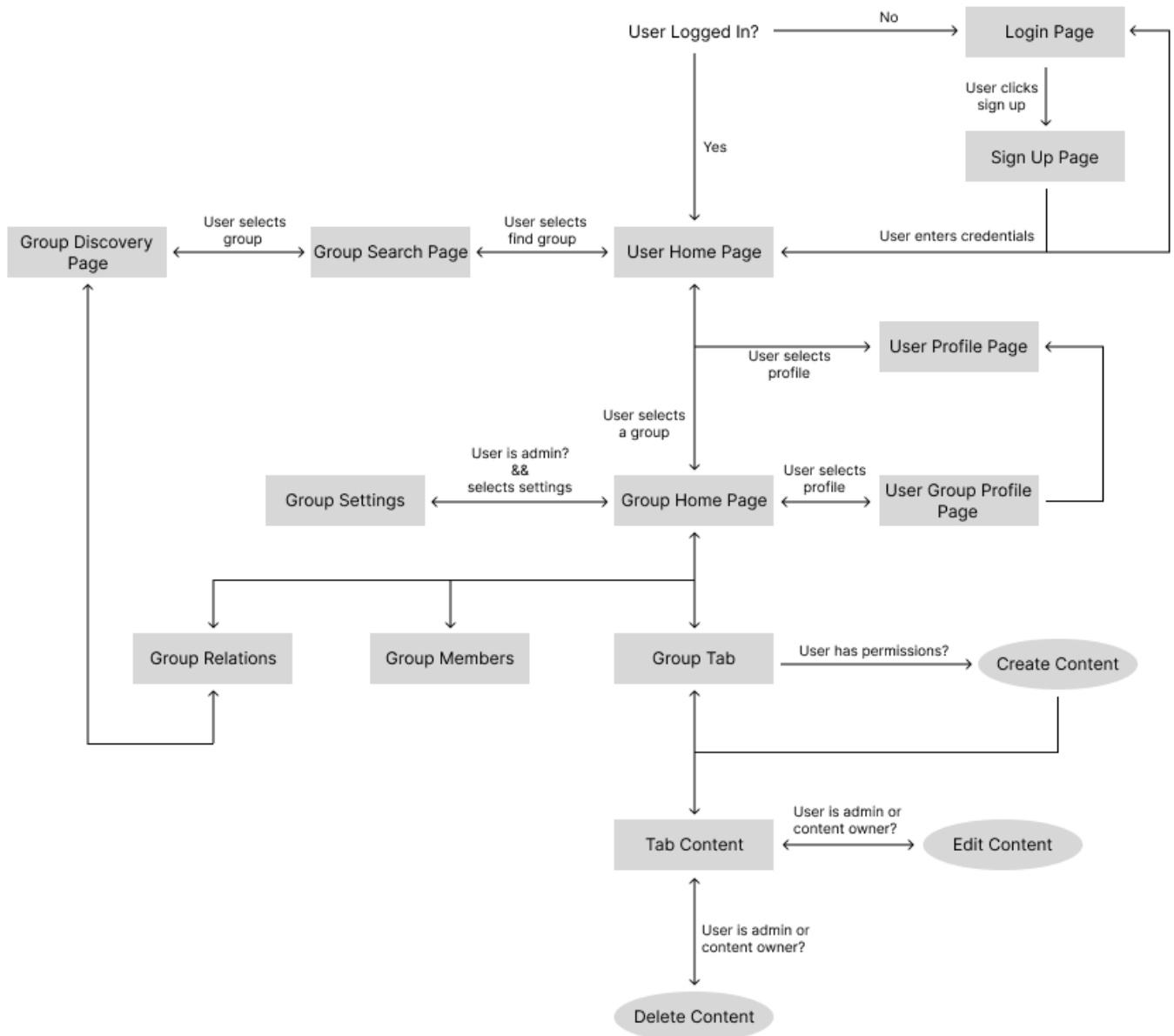| #	User Story Title	User Story Description	Priority	Additional Notes
1	Signing Up	As a user I want to be able to sign up to LocalSquare	High	
2	Logging in	As a user I want to be able to log in to my existing account and have an option to keep me logged in.	High	
3	Creating a group	As a user / community leader I want to be able to create a group with default or custom settings.	High	
4	Finding a group	As a user I want to be able to be able to search for groups based off filters, tags, and location.	High	
5	Joining a group	As a user I want to be able to request to join groups	High	
6	Accepting join requests	As a group admin I want to be able to accept group join requests.	High	
7	Adding a tab	As a group owner I want to be able to add a tab to the group, and select what I want the content of the tab to be.	High	
8	Adding content	As a user I want to be able to request to add content if I need permission, or add content if it is open for anyone to add content.	High	
9	Edit content	As a user I want to be able to edit content I have posted.	Moderate	
10	Accepting content requests	As a group admin I want to be able to accept content requests where permission is needed.	Moderate	
11	Moderating content	As a group admin I want to be able to edit and delete content that does not fit the community goals.	Low	
12	Traversing groups	As a user I want to be able to be able to easily find connected groups.	Low	
13	Adding group parent	As a group owner I want to be able to request to add a parent group to my group.	Low	
14	Accepting group connection requests	As a group owner I want to be able to accept or deny requests from other groups to be their parent group.	Low	
15	Setting group profile	As a user I want to be able to set my profile for the group based on my current profile and custom data, such as my role in the group.	Moderate	
16	Setting permissions	As a group admin I want to be able to set permission settings for different aspects of the group.	High	

17	Creating welcome package	As a group admin I want to be able to create a welcome package for new members.	Low	
18	Finding other members	As a user I want to be able to find other users in my community, especially those with specific roles, and get their contact info.	Moderate	

User Flow

Main Application Flow

Login / Sign Up Flow

User accesses the application

Cache contains user login?

No → Login Page

Yes → Accessed Page

Login Page

User clicks sign up → Sign Up Page

Email and Password

Sign Up Form

No

Validation Succeeds?

No

Yes
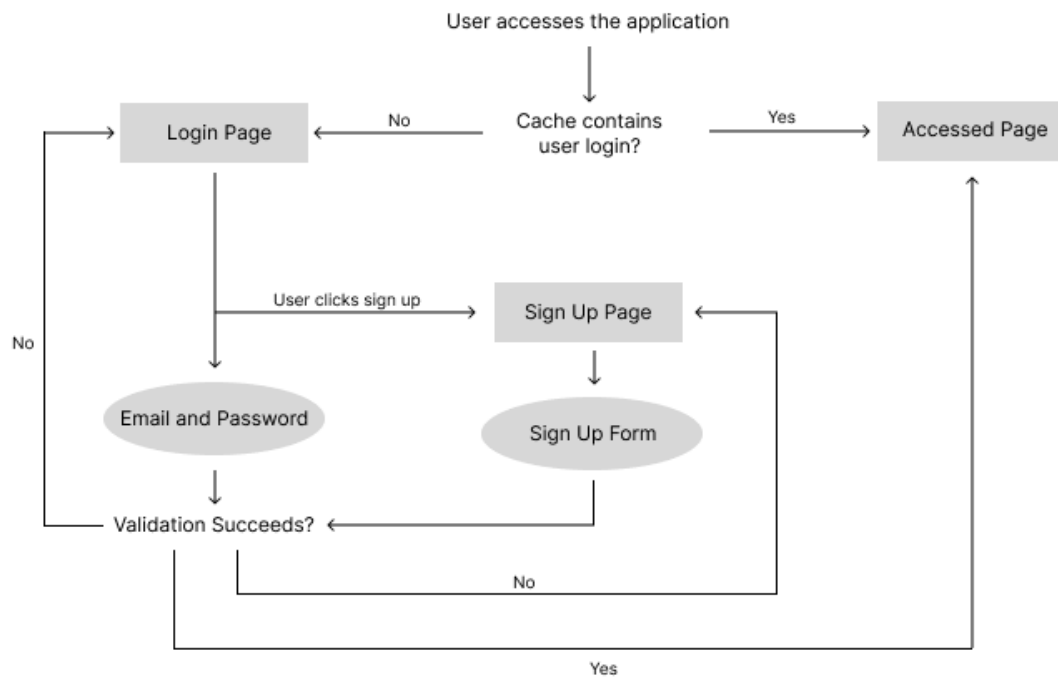
Wireframe Design

Logo

LocalSquare

Don't have an account yet?

sign up

email

password

sign in

Logo

LocalSquare

email

confirm email

first name

last name

phone number

location

next

Already have an account?

sign in

Logo

LocalSquare

browse

next   skip

Already have an account?

sign in

Logo

LocalSquare

password

confirm password

sign up

Already have an account?

sign in

Logo

LocalSquare

Avatar & Settings

You are not signed in

sign in

board game group

Create +

Distance: 30km ⌄   Type: Community ⌄   Members 0-10, 10-50... ⌄   Sort: A - Z ⌄

Your Groups:

we could not find any groups that matched

Other Groups:

Group Banner

Group Title

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Group Banner

Group Title

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Group Banner

Group Banner

Aedan Beisly

Change Profile Photo

Name   Aedan   Beisly

Email   albeisly@gmail.com

Phone   02102608319

Website   aedanbeisly.com

Profession   Software Engineer

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Location   Mossburn

banner image

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Post Image

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Logo

GroupName

Home | Alerts | Chat | Forum | Sports | Activities | Events | FAQ

New Alert +

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Lorem ipsum!!!!   01/07/2027

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GroupName

Home | Alerts | Chat | Forum | Sports | Activities | Events | FAQ
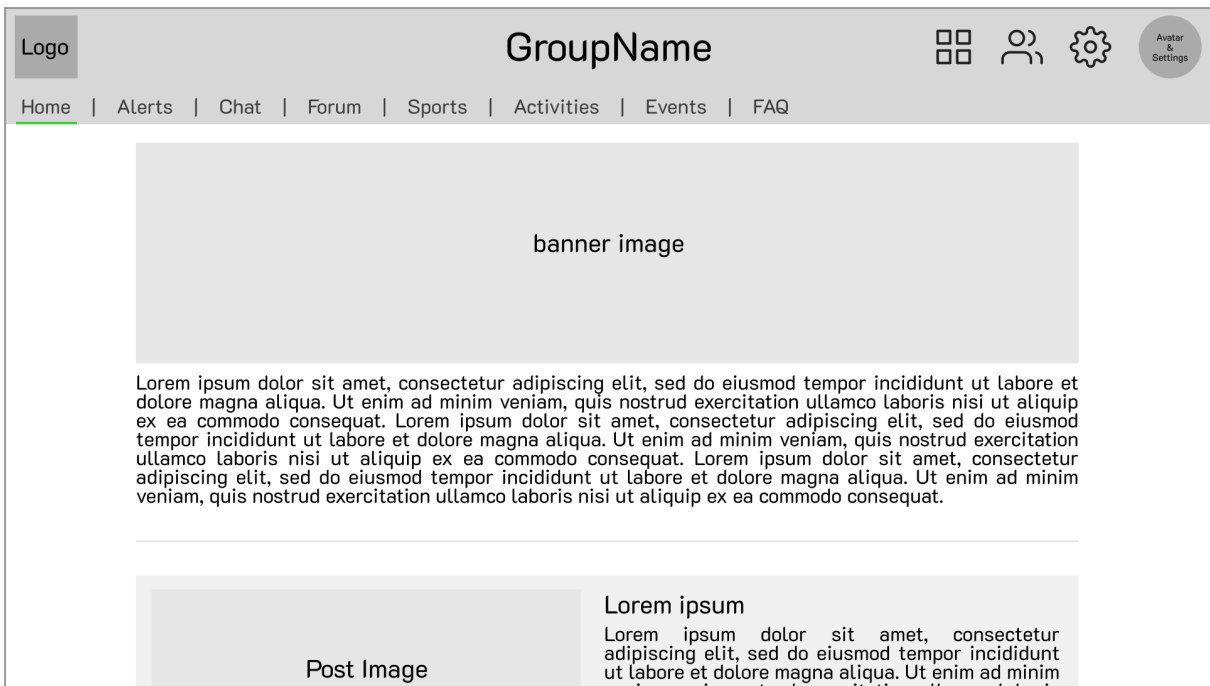
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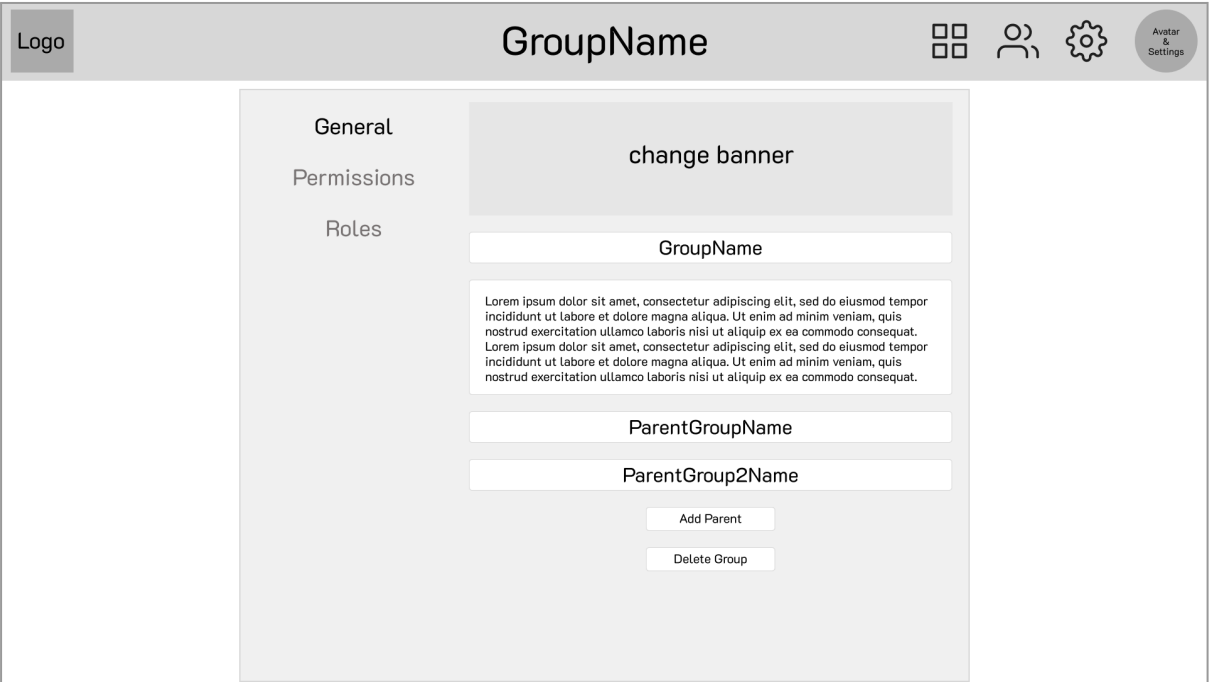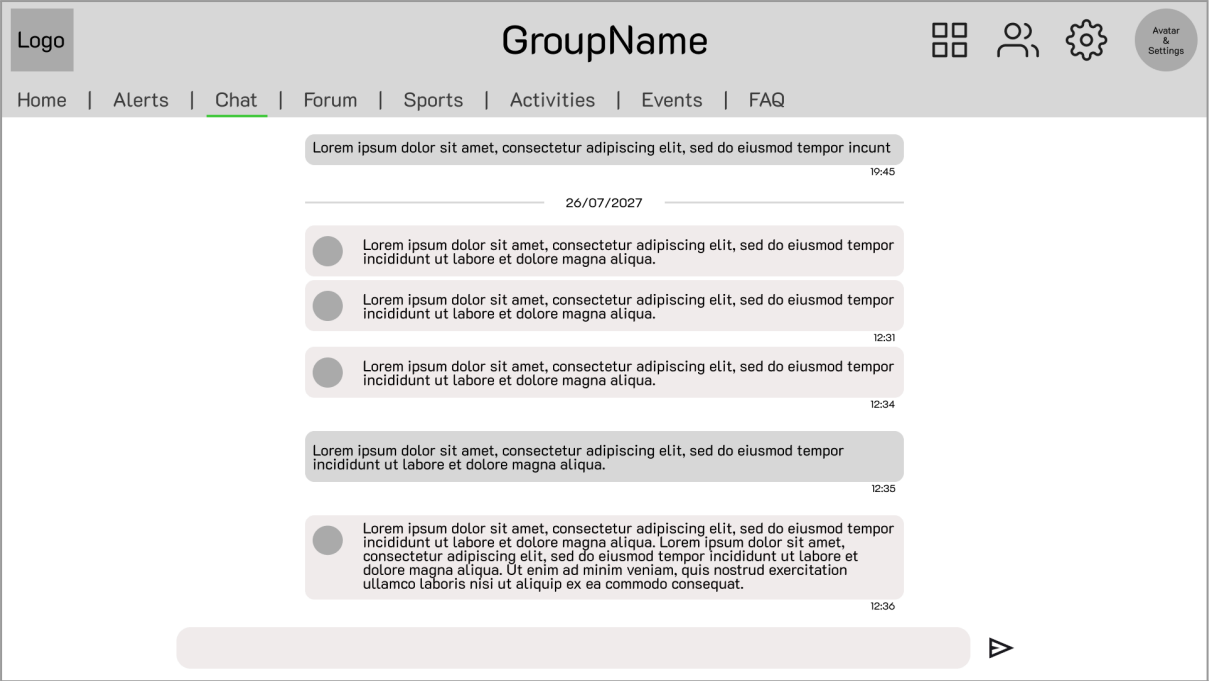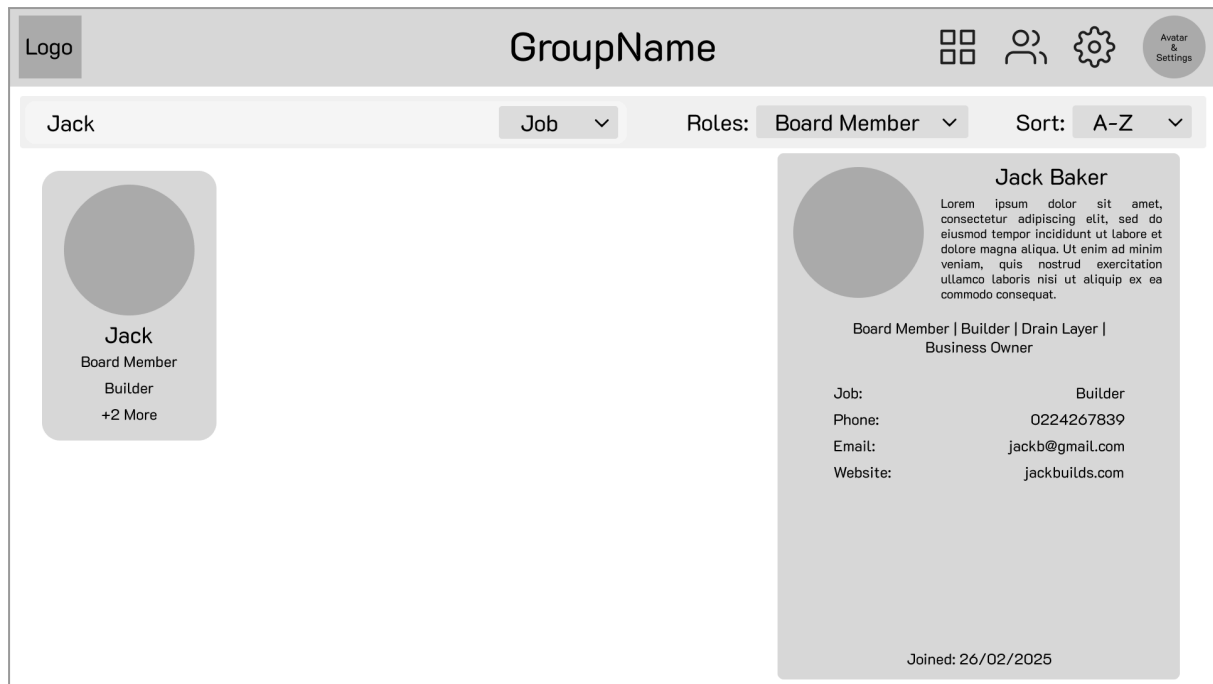Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

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Logo

GroupName

Avatar & Settings

General

Permissions

Roles

change banner

GroupName

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ParentGroupName

ParentGroup2Name

Add Parent

Delete Group

| Logo | GroupName | ⊞ 👥 ⚙ (Avatar & Settings) |

| Jack | | Job ⌄ | Roles: Board Member ⌄ | Sort: A–Z ⌄ |

Jack
Board Member
Builder
+2 More

Jack Baker

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Board Member | Builder | Drain Layer | Business Owner

Job:	Builder
Phone:	0224267839
Email:	jackb@gmail.com
Website:	jackbuilds.com

Joined: 26/02/2025

Open Questions/Out of Scope

Any of the user stories with a priority of moderate or low will only be undertaken if time allows.

Deployment will only be attempted if time allows.

Other out-of-scope functions:
- Email Validation
- Login with RealMe or similar authentication providers
- Payment systems for monetization
- User verification (make sure the user is who they say to help keep communities safe)
- Subscribe to the feeds of other group tabs (events could be passed to parent groups' event feed)
- Media storage
- Media compression

Non-functional Requirements

Security:
- Login credentials kept safe
- Personal details kept safe
- Group content only accessible to those with accepted join requests

Scalability:

For the first stage of users and testing, we want to be able to accommodate the following usage:

- Groups: up to 50
- Total users: up to 5000
- Total database transactions: up to 200,000 per day on peak days
- Data: up to 25gb of data stored across all groups and users

Ease of use:

The application needs to be easy and clear to use. A person of almost any demographic should be able to use the application, community connectedness requires all members of the community to feel they are able to participate.

Application speed:

The chat features of the application should be very fast, even on poor internet.

Other content does not have to be as fast, but should not feel clunky or annoying to use based on the speed. Content should be updated and fetched in a timely manner.

Reliability:

The application should be very reliable, and errors should be handled elegantly. There will be many users who are not tech-savvy, and they should not have any issues, or be confused when using the app. Failures and errors should be clearly communicated, and what the user should do should be displayed clearly.

Use of third-party libraries or software:

Use of third parties should be limited to where necessary, as the more third-party dependencies the application has, the higher the chances of having a problem caused by a third party. Third parties also introduce more time required for maintaining the project, as we will need to update the third party software, and do more testing to make sure there are no versioning issues.

Project Planning
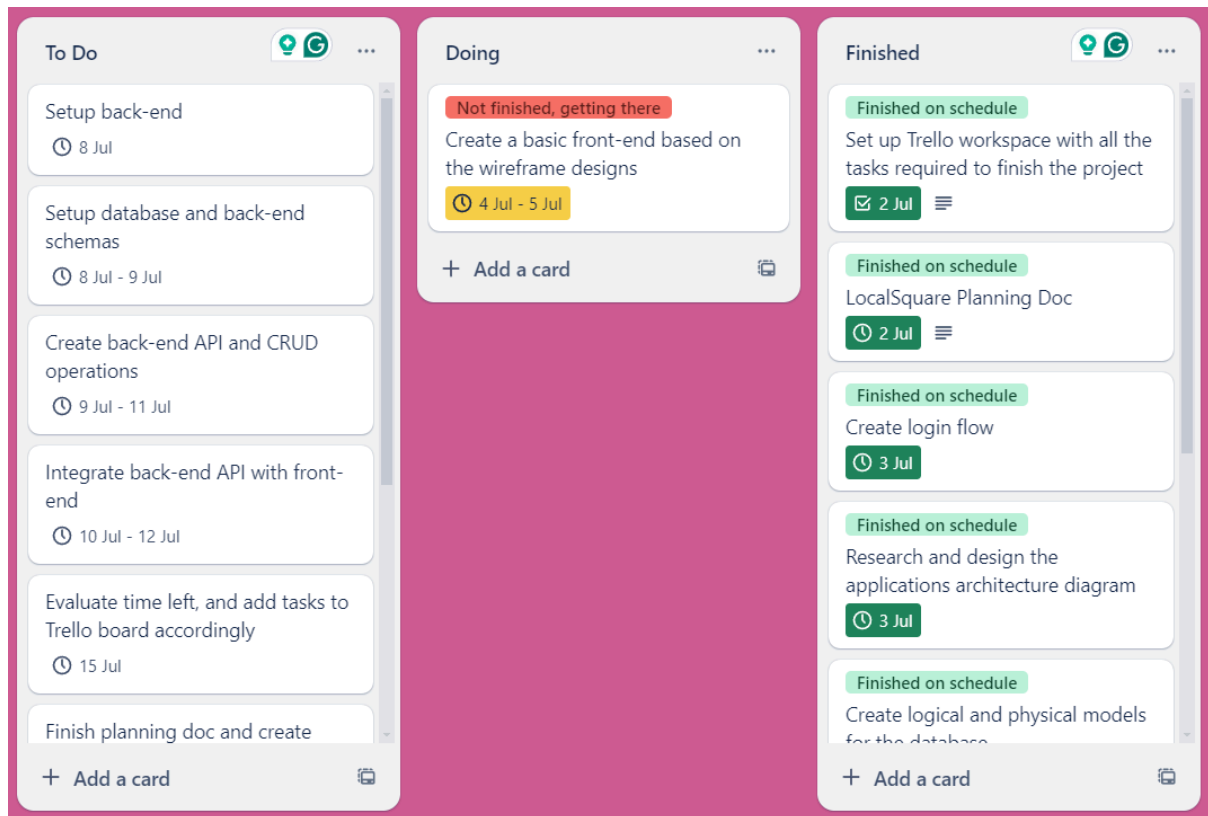
Testing Strategy

Manual testing:
Manual testing was used during development. After each functionality was implemented, the core function was tested and errors were fixed when they occurred. I used console logging to identify issues and debug errors.

Manual testing was also used to test the full application functionalities one by one. A testing instructions document is provided in the GitHub repo. This testing ensured that standard user flows would not encounter any bugs or issues, and to ensure the path to undertake each functionality was clear and well-defined.

Integration testing:
Integration testing was used to test the backend endpoints. Tests were written with standard values and edge cases, such as passing null or undefined or incorrect values. This testing makes sure that when the endpoints are called from the front end, the correct data is returned.

Unit testing:

Unit testing was used to test some backend functionalities.

Implementation

There are many considerations and requirements that would be needed before implementing LocalSquare as a viable application.

Architecture:
- Computing: AWS EC2
- Files: AWS S3
- Caching: Redis
- DNS: AWS Route 53
- Database: Mongo Atlas

Future requirements before implementation:
- Better designed UX
- More options for tabs and content
- Data security / encryption
- Endpoint security / restricted access so that users can only access data that they are allowed to access based on their status with groups
- Mobile options, as this would be the main platform the app is accessed from

End-to-end solution

The application met its required goals to be a viable prototype. It has a clean working UI and has all the high-priority modules functioning. Users can experience the full experience of the application. They can create an account, log in, create groups, join groups, accept requests, create tabs, create content, chat with other members, and find other members in their groups.

References

Code link: [GitHub Repository](#)

Resources Used:
Frontend:
- NodeJS
- React
- Vite
- React-Bootstrap
- Axios
- React-router-dom
- React-Icons
- Socket.io-client

Backend:
- NodeJS
- Express.js
- Mongoose
- Dotenv
- Socket.io
- Axios
- Nodemon

Other:
- MongoDB
- Thunder client
- Chai
- Mocha
- Supertest