[Members]

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[Abstract]

This is the final report for group 4 on the work we did over the course of the Spring 2022 semester in SWE 5003. Our app was "Band Builder". This document includes an Intro to the project, personas, user stories, use cases, data descriptions, non-functional requirements, UI prototype, V-V section, Use-case section.

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[Intro]

This app is intended to help musicians find and form bands. We call the bands "collaborations". A collaboration is started by a single person, then that person posts a "jam request" to the "Find Jam" page. From here, anyone can see the requests, and filter them based on their interests. Once a person finds a jam request from a collab they like, they can request to join that jam. The collab leader can decide to add that member to the collaboration. Once inside the collaboration, a new member has access to the private group chat and calendar that is used to communicate, share files, and find times to meet up IRL. Once a collab is ready to find/play a gig, they can post about it on the "Community" page. Here, anyone can see collabs and their respective posts. There's more functionality but this is the gist of the app.

[User Personas and Stories]

Billy Bones is an aspiring rapper from Birmingham AL. He grew up idolizing Eminem after watching the movie 8 Mile. Billy writes his own music and performs it live at small venues but wants to either travel to Atlanta or to the West Coast to increase his chances of getting noticed. Billy strives to be the best person he can be while also pursuing his dreams. The app must have the functional capabilities for Billy to post about his new mixtape and promote his local shows. A desired non-functional capability is the ability to "like" posts for the purpose of social validation.

Tiffany Kim is a college student from Florida and an aspiring pianist. She enjoys finding new skills and hobbies to master. She first gained an interest in piano after discovering her new favorite song on YouTube. She wanted to learn how to play it but didn't have any experience on piano. She bought a piano and would now like to find a community of other pianists. Within this community, Tiffany hopes to learn from others and possibly find a professional tutor. The app must have the functional capabilities for Tiffany to find or create a social community and to communicate with other users within the community.

Bimble Berkenstock is a professional vegan and full-time jam sessionist. Sometimes she has difficulty finding the time to form a hippie drum circle. Her goal, besides abolishing capitalism, is to form a hippie super group that travels the world spreading peace, man. The ideal group of musicians for Bimble consists of freethinking individuals with a propensity for group-thought. The app must have the functional capability to make posts looking for group members with specific attributes. A desired non-functional capability is the ability to block posts from users she deems problematic.

Ivana Ivanova is originally from Russia and frequently travels to the US to attend Rock n' Roll concerts. Ivana is a heavy rocker who likes to jam with fellow heavy rockers. During the day Ivana is a prep cook and bartender at a local biker bar. Recently Ivana formed a band, and they began playing shows at bars. She wants a quick and effortless way to connect with musicians that she will mix well with while traveling. The app must have the functional capability to find local musicians to jam with and post advertisements about her gigs.

Style Jackson is a professional stage performer who can play the guitar, bass, and the drums. Style is constantly involved with side projects so he needs an effective way to find some funky musicians that can travel to his local studio. Style is trying to coordinate his style of music with other groovy artists to really shake up the music scene. The app must have the functional capability of sorting musicians by genre and location.

Jody Highroller is a 40-year-old rapper from Miami Florida. He lives with his two dogs and brother. Jody has an in-house studio where he records all his music. Right now, he is in the process of finding a new and upcoming artist to do features with. He hopes that this new app on the market called "Band Builder" will help him find some upcoming talent to work with him. The app must have the functional capability of matching with users in the hip-hop genre.

Jimbo Hubbert is a casual musician he does not need anything too complicated. He is a good ole boy that loves bluegrass music. For him it can be difficult to find people that are interested in the same style as him. He is an above average musician but willing to play with anyone of any skill level. He would love

an easy-to-use application that can connect him with those people to either know or have a desire to learn bluegrass.

Joseph H. Dirt works as a janitor during the day and rocks out at night. Joe is currently trying to slap a band together for the county fair next month. He's hoping to meet some rock n' rollers who party as hard as he does. Joe barely owns a guitar and needs someone to hook him up with gear rentals. He intends to check out the community section of the app to see if local musicians are trading or renting any gear. The app must be able to connect Joe to a community of musicians. A desired non-functional trait, is for the app to have badges available to pin to profiles.

David Lago is a guitarist from Mexico, he would like a straightforward way of connecting with people of a similar musical background that have a passion for the music from his home country. David works as a data Scientist and in his downtime, he loves to jam on his guitar. When David feels homesick, he likes to play tunes that remind him of home. The app must be able to have settings for Spanish mode as well as English mode.

Alex Zacharias is an aspiring intermediate-level saxophonist; he is hoping to find a group of jazz musicians that match his passion can push him to the next level. There are limited options for jazz musicians in his small town. It would be nice to have a way to connect with the jazz community of the larger cities. He currently is working on his father's farm but has a desire to become a professional jazz musician. The app must be able to match Alex by years of experience with other jazz musicians. A desired trait is to have an option for listing your favorite band in the profile section.

Sandra Reyez works in IT and is a very skilled classical pianist. Sandra would like a way to make a little extra money on the side by selling piano lessons. She wishes there were an app that would allow her to promote her music and meet potential piano students. Sandra loves playing piano for her guests, but also enjoys teaching others to play as well. The app must be able to host posts for tutors and students.

Scott Roach is a dude whom works in the music industry. He's looking for a way to connect with likeminded musicians to add to his friend group. Scott has been around instruments his whole life. From being involved in his church to working at guitar center. The app must be able to match musicians based on genre. A desired trait of the app is having the Christian music genre available.

Natasha went directly into the military out of high school. She is using it to build a career and have the government pay for her college. She first found a love for instruments when she was stationed in Hawaii and witnessed the islanders' playing ukulele. That moment sparked an interest in Natasha to dig deeper and really explore the culture. Natasha is coming up on the last remaining portion of her contract she signed with the military. From there she will be pursuing her education in audio engineering and understanding how music is made from the beginning

Susan Pollock has always had a lover for songwriting. She wants to form a band but is unable to find band members to play songs that she wrote. The first time she sang for her family they were impressed by how beautiful her voice is. She is now looking to relocate to Nashville to start her career. The only problem is she needs to find a band first. The app must be able to match players based on location and be able to host community pages.

Jim Fisher is a blue-collar type country boy from Texas. He loves angus beef and country music. His friends and coworkers are all classic Yeehaw southerners that support Jim in his music endeavors. Jim

worked in the oil fields to save up money for studio time so he could make his dreams a reality. Now that Jim owns his own home-studio, he wants a group of country musicians to come record music at his house! The app must be able to share links to his website and Spotify.

[Use Cases]

Billy Bones –

"The app must have the functional capabilities for Billy to post about his new mixtape and promote his local shows"

"A desired non-functional capability is the ability to "like" posts for the purpose of social validation"

Steps:

UCS01-01

Title - Posting to your profile:

1. The user will select the "Post" button on their profile page
2. The program will navigate to the create a message page
3. The user will select the "Title" text box
4. The user will type a "Title" message
5. The user will select the "Body" text box
6. The user will type the content in the body
7. The user will select the upload button
8. The program will open the users home directory for file uploads
9. The user will navigate to the desired file to upload
10. The user will click the "Upload" button
11. The program will check if the file is an accepted format
12. The program will upload the file to memory and close the directory box
13. The user will then select the "Post" button
14. The program will store the post data in the database
15. The program will display the post object with the given user inputs on the user profile

UCS01-2

Title - Liking a message on user Profiles:

1. The user will select the "My friends" button
2. The program will navigate to the "My Friends" page
3. The user will select a friend from the list
4. The program will navigate to the friend's profile page
5. The program will display the friends posts under their profile
6. The user will select the "Like" button
7. The program will add 1 to the total likes variable
8. The program will update the new total likes variable in memory
9. The program will display the new total likes under the post

Tiffany Kim –

"The app must have the functional capabilities for Tiffany to find or create a social community and to communicate with other users within the community"

Steps:

USC02-1

Title - Building a community

1. The user will select the "Build a community" button from the home page
2. The program will navigate to Build a community page
3. The user will type a Community name, and description
4. The user will select the "Upload profile Pic" button
5. The program will open the users home directory for file uploads
6. The user will navigate to the desired file to upload
7. The program will check if the file is an accepted format
8. The program will upload the file to memory and close the directory box
9. The user will select the "Build it!" button
10. The program will store the community data into the database
11. The user will be assigned the community owner
12. The program will display the community object

USC02-02

Title - Messaging in a Community

1. The user will navigate to their community page
2. The user will select the "Post" button
3. The program will display the "New Post" page
4. The user will type a "Title" for the message
5. The user will type the content of the message
6. The user will (optional) upload a video/image/sound file
7. The user will select the "Post" button
8. The program will store the post object into a database
9. The program will display the post on the community message board

Bimble Berkenstock –

"The app must have the functional capability to make posts looking for group members with specific attributes"

"A desired non-functional capability is the ability to block posts from users she deems problematic"

Steps

UCS03-1

Title - Create Jam Request:

1. The user will select the "Create Jam Request" button
2. The program will navigate to the "Create Jam Request" page

3. The user will type a title/category/description for the group
4. The user will select a location for the group to meet
5. The program will store the location data
6. The user will type the experience required for the group members
7. The user will type the meeting time requirements
8. The user will select the "Post Listing" button
9. The program will store the listing data
10. The program will display the listing in the "Active Requests" page

UCS01-3

Title - Unfriend/unfollow:

1. The user will select the "My Friends" page
2. The program will generate a listing of friends
3. The user will select a friend's profile from the list
4. The program will display the friends profile page
5. The user will select the "Unfriend" button
6. The program will remove the friend from the user's friend list
7. The program will store the updated friend data
8. The program will return the user to the home page

Ivana Inanova –

"The app must have the functional capability to find local musicians to jam with and post advertisements about her gigs"

Steps:

UCS03-02

Title - Search/request Jam Sessions:

1. User will select the "Search Jam Requests" button
2. The program will display the "Search for active jam requests" page
3. The user will type/select filter options for location/genre/years of experience
4. The program will display the requests that meet the user's criteria
5. The user will select a jam request from the list
6. The program will display the jam request page
7. The user will select the "Request to join" button
8. The program will display the "request" page
9. The user will type a message about themselves / list their qualifications
10. The user will select the "Send Request" button
11. The program will send the user's profile information / request to the jam session owner

Style Jackson –

"The app must have the functional capability of sorting musicians by genre and location"

Steps:

UCS01-04

Title - Updating User Profile:

1. The user will select the "My Profile" button
2. The program will navigate to the user's profile page
3. The user will select the "Edit Profile" button
4. The program will update the profile page to allow for editing
5. The user will select the parameter(s) they desire to change (location radius/genre preferences, favorite band, badges etc.)
6. The program will unlock the parameter text box for the selected parameter
7. The user will type / select the updated value
8. The user will select the "save edits" button
9. The program will store the changed data
10. The program will exit "Edit" mode and display the updated data

Jody Highroller –

"The app must have the functional capability of matching with users in the hip-hop genre"

Steps

UCS02 - 03

Title - Search for a Community:

1. The user will select the "Find Community" button
2. The program will display the community search page / filter options
3. The user selects the filter options (location radius/genre)
4. The user selects the "Search" button
5. The program will determine which communities best match the filter criteria
6. The program will display the communities that match the user's filters, sorted by strongest match
7. The user will select a community from the list
8. The program will navigate to that community page

Jimbo Hubbert –

"He would love an easy-to-use application that can connect him with those people to either know or have a desire to learn bluegrass"

See: **Search/request Jam Sessions: UCS03-02** or **Search for a Community: UCS02 - 03**

Joseph H. Dirt –

"The app must be able to connect Joe to a community of musicians"

See: **Search for a Community: UCS02 - 03**

"A desired non-functional trait, is for the app to have badges available to pin to profiles"

See: **Updating User Profile: UCS01-04**

David Lago –

"The app must be able to have settings for Spanish mode as well as English mode"

Steps:

UCS01-05

Title - Update User Settings:

1. The user will select the "My Profile" button
2. The program will display the user's profile page
3. The user will select the "Settings" button
4. The program will display the users setting page
5. The user will select the "Edit" icon next to the setting they want to change
6. The user will input the new value for the setting they want changed (e.g. Language Preference)
7. The user will select the "Save Changes" button
8. The program will store the updated data
9. The program will implement/display the settings for the user profile(setting language, light/dark mode)

Alex Zacharias –

"The app must be able to match Alex by years of experience with other jazz musicians"

See: **Search for a Community: UCS02 - 03**

"A desired trait is to have an option for listing your favorite band in the profile section"

See: **Updating User Profile: UCS01-04**

Sandra Reyez –

"The app must be able to host posts for tutors and students"

See: **Messaging in a Community or Posting to your profile: UCS01-01**

Scott Roach –

"The app must be able to match musicians based on genre"

See: **Search/request Jam Sessions: UCS03-02** or **Search for a Community: UCS02 - 03**

Natasha (no last name)–

"The app must be able to match musicians based on genre / culture / etc"

See: **Search/request Jam Sessions: UCS03-02** or **Search for a Community: UCS02 - 03**

Susan Pollock –

"The app must be able to match players based on location and be able to host community pages."

See: **Search/request Jam Sessions: UCS03-02** or **Search for a Community: UCS02 - 03**

Jim Fisher –

"The app must be able to share links to his website and spotify"

See: **Posting to your profile: UCS01-01**

[Non-Functional Requirements]

1. The software must be able to track user's current locations
2. The software must be able to maintain and protect user's personal information
3. The software must be able to quickly and accurately match users based on their musical abilities/ambitions
4. A 2TB server will be sufficient for the initial app deployment and can expand as needed
5. The site must have settings to improve accessibility (colorblind, text to speech, etc.)
6. The app must be cross-platform (iOS, windows, etc.)
7. The application must maintain a near 100% availability
8. The application must include a large variety of language preferences
9. The application must verify a users age; App usage requires ages 18+
10. The application must provide the user's a mandatory terms and agreements form
11. The application must maintain robust security measure to prevent malicious server attacks

[Verification and Validation]

Section 1: Validation of UI storyboard with use cases

a.   Errors of Omission:

1. Within the storyboard profile page, there were no clearly defined methods to post messages/videos/images etc. to your profile. In the UI prototype, a "Posts" page will be implemented that is separate from the user profile page to better provide that capability.
2. The user stories indicated a desire to "like" posts, which was not displayed in the original storyboard.
3. The user storyboard was missing a component for users to interact with their friend groups and view their friend's profiles. The functionality to view/manage friends and groups need to be implemented into the UI prototype.
4. The UI storyboard was missing functionality to close out a jam request once the group members have been filled.
5. There weren't filter options available for the jam request search page to allow users the ability to query for specific jam sessions that meet their qualifications.
6. When a user selects the "Request to Join" button on the jam session request page, there needs to be a way for the requestor to justify their qualifications to the jam session manager. A way to send a simple message to the jam session manager is needed.
7. There was nothing depicted in the storyboard that allows the jam session owner to accept and review the jam requests.

8. Functionality to edit the user profile was not included into the storyboard, simple edit icons next to profile parameters will need to be added to the UI prototype.
9. Filter options to search for specific communities were not included in the storyboard.
10. Badges could be earned and added for user profiles for proof of experience / credibility for the user's profile.
11. The UI storyboard was missing a profile setting page for altering the UI components of their profile (light/dark mode, language preference, accessibility options)

a. **Errors of Usability:**

1. Unable to edit user profile easily
2. Communities did not clearly display calendars for each individual community
3. Login process was not clearly defined

Section 2: Validation of UI prototype with use cases

a. **Errors of Omission:**

1. Missing the functionality to build a new community
2. Missing the functionality to create a collabs
3. Missing the component to manage friends
4. Missing User Settings page
5. Missing a Badging system

a. **Errors of Commission:**

1. Added additional functionality to manage team members on the collab page
2. Added functionality to review your recent jam sessions

a. **Errors of Interpretation:**

1. Sandra Reyez had indicated a requirement to host a service to allow for tutoring services. The application provides for users to post their services, but does not incorporate payment services or take responsibility for user's payments.

a. **Errors of Usability:**

1. Missing a button to create a community on the search for community page
2. Missing a button to create a request on the search for jam requests page

3. Inconsistent language use between "collabs" and "jam sessions"

Section 3: Verification of UI prototype with UI Storyboard

a.   Errors of Omission:

1. Missing Create Jam Request Page
2. Missing Build Community Page
3. Missing Messaging System
4. Missing notification system

a.   Errors of Commission:

1. Added functionality to view recent jam sessions to UI prototype
2. Added filters for jam sessions to UI prototype
3. Added Message Jam group button
4. Added Community calendars
5. Added filters in the Community search section
6. Added a list of your current collabs in the collaboration page
7. Added Team member management functionality
8. Added "connect" info to profile page

V-V Elements
1. The top menu was created, but it was created slightly different.
2. The user profile was created, but it was created slightly different.
3. The Login option was created, but it was created slightly different.
4. The Registration element was created, but with more parameters.
5. The bottom menu was created, but more options were made available.
6. A site map was created in the bottom bar, but was missing from the storyboard.
7. Helpful links were added in the bottom bar, which was missing from the storyboard.
8. The site contact information was created, but it was created slightly differently.
9. The jam requests page was created, but additional features were added.
10. Incoming requests were created, but this section was missing from the storyboard.
11. Outgoing requests were created, but this section was missing from the storyboard.
12. My profile contact information was added, but this was missing from the storyboard.
13. Edit profile button was added to the my profile page; this was missing from the storyboard.
14. The personal information in my profile page was created, but it was created slightly differently.
15. The Recent Jams feature was added to the jam search page; this was missing from the storyboard.
16. The "message" button was added to the jam search page; this was missing from the storyboard.
17. The "Request to Jam" button was added to the jam search page; this was missing from the storyboard.
18. Jam categories/filters were added to the jam search page; this was missing from the storyboard.

19. Filters were added to the community page, these were missing from the storyboard.
20. Like buttons were added into the community page; this was missing from the storyboard.
21. Community calendars were created, but slightly different than the storyboard.
22. The jam sessions page was rebranded into the collaborations page.
23. A list of current collabs was added to the collaborations page; this was missing from the storyboard.
24. Edit post options were added to the collaborations page, this was missing from the storyboard.
25. Team members management was added to the collaborations page; this feature was missing from the storyboard.
26. Requests to jam management were added to the collaborations page; this feature was missing from the storyboard.
27. The "add event" button was added to the collaborations calendar; this was missing from the storyboard.
28. Collab chat features were created, but created slightly differently.
29. The create jam functionality was created, but was incorporated into the collaborations page.

[Data Description]

The core entity that "*Band Builder*" is built around is the user. There are many data components the make up the user. Every user will have a profile. Profiles are comprised of the following data types:

1. Their Name (First, Last, Middle, Suffix)
2. A short textual biography about themselves
3. Their Age (18+ only)
4. Security preferences (settings that allow others to view your profile)
5. UI preferences (light/dark mode or colorblind mode)
6. Profile Images
7. Video Clips / Sound Clips
8. Social Media Links
9. Location settings (search radius, current location)
10. Calendars (setting schedules and reminders)
11. Login Information (Username, Password, Security Questions)
12. Friends lists (favorites, groups, followers)
13. Payment Information (Payment types, card information, subscription status) 14. Private Message Logs (messages, group chats, videos/clips, timestamps) 15. Public Message Logs (comments, likes/dislikes, timestamps)
16. Music Preferences (Instruments, Genres, years of experience)

Teams are a critical component of "*Band Builder*" as well. These are designed to be the primary tool used to establish jam sessions amongst your peers. Teams have the built-in functionality to communicate with group members, schedule sessions, set reminders and notifications. Teams are comprised of the following data types:

1. Member Lists (Team Leads/Members)
2. Group Message Boards (Posts, Videos, Images)
3. Calendar (Rehearsal times, Member Availability, Reminders)

Communities are meant to be catalysts for bringing people together that are bonded by similar musical backgrounds. An example of a community would be a "saxophonist community" where musicians can bond, share advice, establish/promote events relevant to the saxophone. Every community will have an owner, maintainers/moderators, and regular members. Within each community will be the following data types:

1. Community Profiles (Profile Images, Descriptions/Biographies, Photo/Video Galleries) 2. Member Lists (Members, Maintainers, Owners)
3. Public Message Board (Posts, Videos, Sound Bites)
4. Music Preferences (Genres, Instruments)

Additional Data that will need to be maintained is the site data itself, which is comprised of the site name, descriptions, images/styles, function lists, and headers. There will also be sponsor data for advertisements that run for unpaid users.

(PLEASE SEE THE FULL DATA DESCRIPTION DOCUMENT FOR THE COMPLETE REPORT)

[Personal Reflections]

Benjamin:
I think overall that this project was very important for me for expanding my understanding of the software development process. Prior to this class, most of my development work has been mostly singular use products that solve a specific problem. I hadn't really had to take the time to plot out how to organize the requirements of the software, think deeply about the users needs, or work on the validation and verification side of the process. Originally when the project started, I thought the user personas were kind of silly, and I didn't really see the importance of developing them. However, after I started to compare the user stories with our original storyboard, I was surprised at just how much was missing. I think some of the pain points I had was a lack/unfamiliarity of tools for drawing storyboards or UI prototypes. I tried a number of services to create the storyboard/wireframes and some of them were better than others. In general, I think all of us could have been better about communication, but we were able to pull it together when we needed in order to complete the project, and I was pretty happy with the result. As for what I'd do differently, I think now that I have a better understanding of the software development lifecycle, it would be easier to assign people projects to work on. I think we tried to say something like I would work on x, Tyler would work on y, and Ryan would work on z, but in the end, the workload wasn't very structured. If we were to do the project again, I think it would be easier to identify what parts of the project need more work and how to divide it between members.

Ryan:

So I'll start off with what I didn't like about the project; firstly we couldn't choose our own group members or group topics. When we were put into random groups, I then felt like I had zero incentive to communicate with classmates outside of the group. I had already been talking with several other classmates about software development and ideas for the project; I met them from the discussion board. I was really hoping to meet some aspiring developers with fresh ideas, instead we were stuck in a group working on a recycled project. I very much think we should have had a project in which we chose our own ideas, our own group members, and which covers more technical aspects of building an app. What I'm saying about the groups is certainly not personal, Tyler and Ben are both talented professionals with promising futures in tech. But I wanted to present my ideas to other classmates and form a team of people that were working on the ideas that they chose to work on. Imagine how much

extra effort an individual is going to put into an idea of their own, especially one that they could further develop after class and turn into a real product. If we were given a specific app to develop, we should have been given a more specific scope to design it in. Making User Personas out of thin air (not based on data) and building requirements from them caused conflicting requirements and mission creep.

Without walkthroughs/tutorials with a design software like Figma, it's unreasonable to assume students are going to be able to pick up a technology like this and run with it. Our app ended up needing at least 8 pages after the 2nd deliverable. We moved away from wireframing with a tool to just building a UI prototype by developing a WordPress site.

Separating the tasks was a little difficult, we have different skills, the scope is open ended, and we all have our own ideas for how things should be.

What I liked about the project; there were some good bits of information about design Validation-Verification that were new to me. Semi-related, the powerpoint slides in each chapter contained some really good information. That being said, how much of it is recycled from an instruction manual or information bank. I'm happy that my group ended up producing some useful documents that are engineering related, I'll be sure to save them for reference later.

Tyler:

Overall, what I disliked about the project and Identify some pain points and frustrations. None of these were related to my actual group members. It was the frustration behind the project being a normalized project. I feel like the creativity was taken away from me in a sense because I am currently building my own personal application and really wanted to express ideas I had from this one. I think that was one of the main frustrations I had but also it allowed me to bounce ideas off of other classmates including my group members to see what they thought about the avenues we could go with the design and implementation of the Bandbuilder application.

Some of the things that I learned about the application that made the greatest impact on me was most importantly the importance of the user's needs. Before this class when building an application or working with software it was just an idea that solved a problem. I never thought "well who are we solving this problem for" the user. The user is the main focal point of the application because they are going to be the ones creating traffic through the application. If you are not putting their needs in front of the majority of everything else then the application or the software will most likely fail. We can look back on the modules and see that from the lectures and the presentation videos.

As far as my group goes. Ryan and Ben both helped me in areas that I struggled in. They were also able to think of ideas and cool items for the app that a solo developer may not have been able to think of.

I will definitely be saving all of the Powerpoint Slides for future reference because I believe there is a ton of good information in them that can be applicable to future software and application designs.