Development methods for improving the user experience

1   Introduction

This report aims to simplify and discuss methods of developing software for the benefit of the user. In this report, the needs of potential users will be observed to attempt to cater to current needs, or to predict possible use cases by similar users and preemptively cater to them. The requirements derived from these use cases will be considered in order to design intuitive and simple solutions that improve the overall user experience.

2   Elicitation:

2.1   Finding the Problem

In order to better understand the needs of potential users, we must consider factors that contribute to their efficacy and experience in using the software. The main factors include how intuitive the design is, whether the software includes features that are readily available in other similar software, and how well the software allows for communication between users.

In considering these factors, we have developed a series of questions to aid our understanding:

1.   Can you do everything you would like to be able to do?
2.   Is it easy to use?
3.   Would you use this software over other software?
4.   Is there any behavior that does not make sense?
5.   What would you use this software to do?
6.   Who would you use this software to interact with?
7.   Do you use it for 1 on 1 interactions or group interactions? If a group interaction, on what scale might the group be?
8.   Are social features such as reacts or games important to your usage?
9.   Is the support of sending file attachments important to your usage?

2.2   User Profiles

2.2.1   User A Profile

As a student I would like to be able to create a voice call in a specified channel or dm in order to more effectively communicate with my peers.

Email: John.John10@outlook.com

1. No, it does not allow me to send images in the chat or call at all.
2. I found it fine to use.
3. Definitely! I prefer discord or messenger where possible, but tutors and professors might prefer to communicate via this software.
4. Sometimes I get notifications, but when I check the message has already been deleted.
5. Mostly to talk to tutors and ask them questions.
6. Tutors or professors.
7. Mostly 1 on 1 interactions, since I'm usually privately asking a question.
8. Not at all – I wouldn't really use this for social things anyways.
9. Yeah, it would be a huge help to be able to send tutors screenshots of my code when it's not working.

2.2.2   User B Profile

As a teacher I want to be able to upload a file to the channel or dm in order to share study notes or other relevant educational material with the receiver.

Email: David.Davis3@education.nsw.gov.au

1. Everything but send files or hold meetings!
2. Fairly easy, although it did take me a few tries to figure out
3. I would rather use a software such as teams or zoom as it allows file sharing and meetings to be held
4. I'm not sure why but the
5. To create group chats with my students or staff
6. Mostly other teachers
7. Definitely group interactions with a class of 30
8. Reacts can be useful just so I know when people have seen an announcement or update that I've made, but otherwise not really.
9. Absolutely! It's so cumbersome to have to then go and send people files via email separately to the chat. I think that needs to be changed for sure.

2.2.3   User C Profile:

As a user I would like to be able to send emotes in the channel or dm to better interact with my friends.

Email: Andy.Allen5@outlook.com

1. Nope! Can't send images, or gifs or videos and it definitely can't call!
2. Yeah, it's intuitive enough.
3. I would rather use Discord or Skype
4. Apart from not being able to send anything but text, I guess not.
5. I just talk to friends, maybe organize parties and or outings like when we all want to go to the movies together.
6. Friends.
7. Both – I sometimes have big group chats to organize stuff with, but otherwise I have loads of 1 on 1 chats with friends too!
8. Ooh games would be fun! Reacts are cute too, I would definitely appreciate some variety in the reacts.
9. I'd like to send photos I guess, but not much else.

2.3   Summary of User Profiles

The variety in the types of users illustrates the need for doing a survey. In this case, users that may have not been initially expected can end up using the software and may have different needs to the original target audience. As with User C, we see that younger users may prefer an emphasis on social aspects of the software, while older users who interact on a purely professional level may prefer practical additions such as the support of sending file attachments. This survey provides a good example for a range of use cases and requirements we ought to consider.

2.4   Frequently mentioned requirements and their solutions

The main issue appears to be the lack of support in sending attached files, with the most frequent request being the ability to send images. In addition to that, professional and educational environments may require sending of text documents and pdfs.

Overall, the solution seems to be to allow for the upload, attachment and sending of files.

These may include PNG's, JPEG's, JPG's, PDF's, Word documents, and Excel spreadsheets.

3 Analysis:

3.1.1 User A Profile

As a student I would like to be able to create a voice call in a specified channel or dm in order to more effectively communicate with my peers.

- The hold voice call button is placed near the message bar, next to the send later button
- The hold voice call opens a new window for the user showing participants who have accepted the call request which has been sent to all other users in the selected channel or dm
- Other users in the channel or dm are given a accept call prompt on their UNSW seams website which can be accepted or declined
- Upon acceptance a new window is opened showing participants in the voice call
- Users can leave the call by clicking the leave call button in the voice call window closing the window as well
- Call will end upon the last participant leaving the call
- The call has a 24hr time limit
- Limit of one voice call per channel or dm

User Case Success Scenario

- Step 1: User navigates to dm with another user
- Step 2: User clicks hold voice call
- Step 3: New window is opened for the user showing accepting participants
- Step 4: Second user in the channel is prompted with and accepts the call request
- Step 5: New window is opened for the second user showing accepting participants
- Step 6: First user leaves the call by clicking leave call
- Step 7: Second user leaves the call by clicking leave call and the call is ended

3.1.2 User B Profile

As a teacher I want to be able to upload a file to the channel or dm in order to share study notes or other relevant educational material with the receiver.

- The upload file interface is place near the send message bar, next to the send later button
- The upload file button opens the users File Explorer when clicked
- The user can click on the file that will be uploaded in their file explorer, and upon confirmation will upload the file to the channel or dm it has been uploaded to
- The user cannot upload a file over 10gb in size

- The user can only upload PNG's, JPEG's, JPG's, PDF's, Word documents

User Case Success Scenario

- Step 1: User navigates to channel
- Step 2: User clicks upload file
- Step 3: User's file explorer is opened
- Step 4: User navigates to file to be uploaded and selects it
- Step 5: User is prompted with a confirm upload request
- Step 6: File selected is uploaded to selected channel when user clicks confirm upload

3.1.3 User C Profile

As a user I would like to be able to send emotes in the channel or dm to better interact with my friends.

- The emotes button is placed in the message bar, next to the send later button
- When clicked, the emotes button opens a small sidebar with a selection of emotes which can be used e.g. Smile, Laugh, Cry
- An emote can be selected from the sidebar upon which it will be placed into the message bar
- A message can be typed alongside the emote which can be sent together or just the emote on its own
- The user is limited to only the available emotes in the emotes bar which are not animated
- Emote sidebar is closed upon selecting emote

User Case Success Scenario

- Step 1: User navigates to channel
- Step 2: User clicks emotes
- Step 3: Emotes sidebar is opened with selection of emotes
- Step 4: User navigates to desired emote and selects it
- Step 5: Emote is placed into message bar and sidebar closes
- Step 6: Emote selected is sent along with the rest of the message upon clicking send message

4 Validation:

4.1.1 User A

- Adding a hold voice call function would significantly improve the usability of UNSW Seams as it would allow me to communicate either verbally or through chat whenever necessary

4.1.2 User B

- Being able to upload a file would allow me to upload teaching material to students or other teaching staff or even parents when necessary
- The lack of being able to hold meetings and screen sharing however would still make me choose other alternatives to UNSW Seams

4.1.3 User C

- Having an emotes function would allow me to better interact with friends other than just using the message chat function
- However, there are still many other functions such as uploading photos or voice calls that are lacking in the site

5 Interface:

5.1.1 User A

Channel/call/start: starts a voice call in the selected channel

- HTTP Method: POST
- **Parameters:** {token, channel_id}
- **Return Type:** {}

Dm/call/start: starts a voice call in the selected dm

- HTTP Method: POST
- **Parameters:** {token, dm_id}
- **Return Type:** {}

Dm/call/is_active: For a given dm, return whether a user is in an active voice call

- HTTP Method: GET
- **Parameters:** {token, dm_id}
- **Return Type:** {is_active}

Channel/call/is_active: For a given channel, return whether a user is in an active voice call

- HTTP Method: GET
- **Parameters:** {token, channel_id}
- **Return Type:** {is_active}

Channel/call/leave: For a given channel, remove the given user from an active voice call

- HTTP Method: POST
- **Parameters:** {token, channel_id}
- **Return Type:** {}

Dm/call/leave: For a given dm, remove the given user from an active voice call

- HTTP Method: POST

- **Parameters:** {token, channel_id}
- **Return Type:** {}

5.1.2 User B

Channel/upload: upload a given file to a channel

- HTTP Method: POST
- **Parameters:** {token, channel_id}
- **Return Type:** {}

Dm/upload: upload a given file to a dm

- HTTP Method: POST
- **Parameters:** {token, dm_id}
- **Return Type:** {}

5.1.3 User C

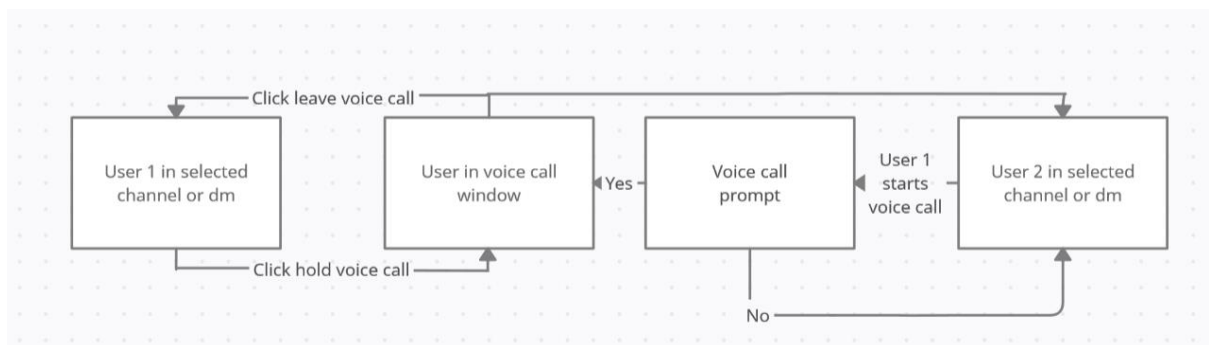Channel/emotes: post an emote to a given channel

- HTTP Method: POST
- **Parameters:** {token, channel_id}
- **Return Type:** {emote_id}
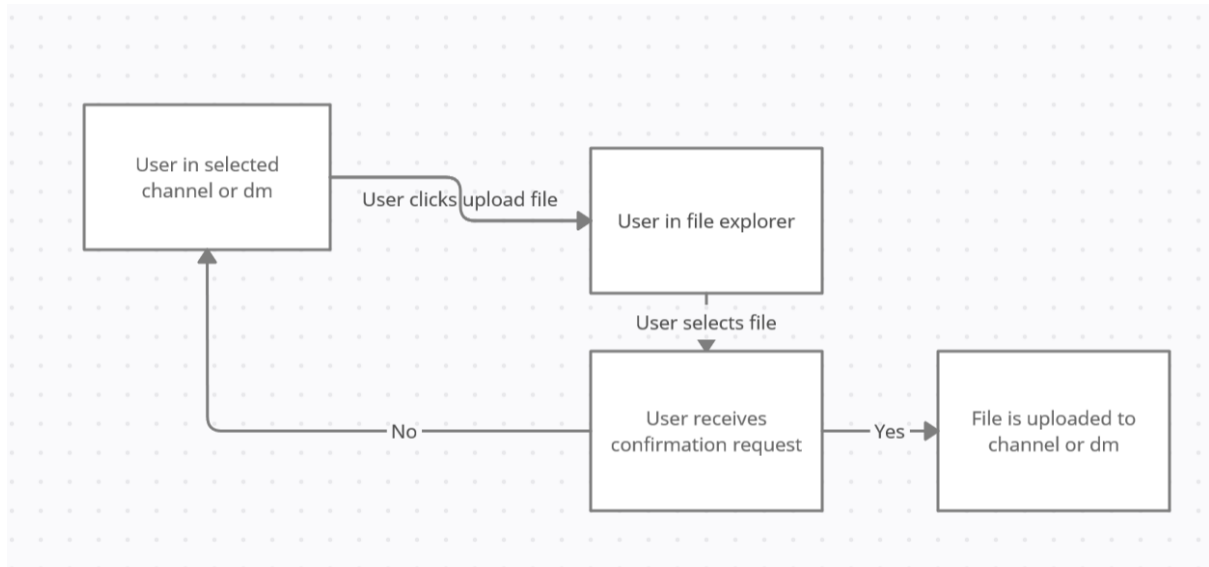
Dm/emotes: post an emote to a given dm

- HTTP Method: POST
- **Parameters:** {token, channel_id}
- **Return Type:** {emote_id}

6   State Diagrams:

6.1.1 User A Profile

6.1.2 User B Profile

Upload File Flow

```
┌─────────────────┐                      ┌─────────────────┐
│                 │                      │                 │
│  User in        │  User clicks upload  │  User in file   │
│  selected       │────── file ─────────▶│  explorer       │
│  channel or dm  │                      │                 │
│                 │◀─┐                   │                 │
└─────────────────┘  │                   └─────────────────┘
                     │                            │
                     │                   User selects file
                     No                           │
                     │                            ▼
                     │          ┌─────────────────┐      ┌─────────────────┐
                     │          │                 │      │                 │
                     └──────────│  User receives  │─Yes─▶│  File is        │
                                │  confirmation   │      │  uploaded to    │
                                │  request        │      │  channel or dm  │
                                └─────────────────┘      └─────────────────┘
```

6.1.3   User C Profile

```
        ┌──── User clicks out of sidebar ────────────────┐
        ▼                                                │
┌─────────────────┐                      ┌─────────────────┐
│                 │                      │                 │
│  User in        │ User clicks emotes   │  User in        │
│  selected       │────── button ───────▶│  emotes         │
│  channel or dm  │                      │  sidebar        │
│                 │◀─┐                   │                 │
└─────────────────┘  │                   └─────────────────┘
                     │                            │
                     │                   User selects emote from sidebar
                     │                            │
                     │                            ▼
                     │          ┌─────────────────┐      ┌─────────────────┐
                     │          │ Emote is placed │      │                 │
                     │          │ in message bar  │      │  Emote is sent  │
                     └─ Message │ and the emote   │─ Mes─▶│  to channel or  │
                       is not   │ sidebar is      │ sage  │  dm chat        │
                       sent     │ closed          │ is    │                 │
                                └─────────────────┘ sent  └─────────────────┘
```