[Requirements] Elicitation

Target User Info

Name	Email	Description (A brief summary of who they are.)
Gavin	gavin@openfusion.com.au	Chief Technology Officer (CTO) of a tech startup.
Robyn	robyn@openfusion.com.au	Associate Professor of Theology at a university.
Hannah	herhannahness@gmail.com	Fourth year medical student.

Explain project: We have this group project where we're writing the backend for a teamwork-driven communication tool similar to Microsoft Teams or Zoom. We're interviewing people to try to gain a better understanding of the requirements and needs of our users as we consider the trajectory of our next iteration of software development.

- **In what parts of your life do you typically use software like UNSW Seams? (e.g. work, personal, etc.)**

Gavin: I usually use them in a work context, but occasionally in a familial setting so we can all keep in touch when one of us is away.

Robyn: I use MSTeams/Zoom for work meetings, and slack for family communication. At work for textual communications, we typically use email/phone. We only use zoom if it's a few people together.

Hannah: For uni (microsoft teams, zoom, blackboard collaborate), work (zoom), and personal communication (slack). Mostly in uni contexts.

- **Could you describe what you were doing the last time you used a tool like Seams?**

Gavin: Discussions about work issues: feature discussions, documentation review, etc. Generally talking in a channel that contains many people, even though only 1-3 of them are actively involved in the discussion.

Robyn: I was watching a presentation by another academic with a Q&A afterwards.

Hannah: I was using it to tutor, talking to people and using functions like share screen and video annotation.

- **Do you typically use tools like Seams to communicate with a large group of people at once, or to communicate with people one-on-one?**

Gavin: Both situations happen quite often. But then the main advantage of a tool like Seams is that you can use it for larger groups in a way that doesn't require you to include everyone explicitly.

Robyn: Usually a small group, but I sometimes do one on one meetings with research students.

Hannah: Typically a large group of ppl. Tools like Seams are helpful for when you've got a large group of people and you want to communicate with them all at once.

- **What is something you find difficult/annoying about using software like UNSW Seams?**

Gavin: It's confusing when you have multiple conversations going on at the same time in the same channel and you're trying to figure out which thread of what's going on in the channel a person is answering. [-> Replying about a certain topic in a channel?]

Also, finding things when they're moved around when you're having conversations in the wrong place, and being able to move the conversation to the right area so you can find it again.

Robyn: I used to find it difficult doing screen sharing! I usually don't find technology intuitive so I always just want to know how to do the usual things you do with a certain tool without getting into the fancy stuff.
I also find it annoying if someone's freezing all the time, or if the sound is poor, etc. If you're just talking and it's not interactive etc. I usually mostly just use the video/audio part of software like Seams; most textual stuff is done over email.

Hannah: It can be confusing having so many different groups and channels and calls and individual people, and there are so many layers so sometimes it's hard to know what to look for.
Also, how in Teams people talk so slow and you can't speed it up.

- **What is something you really like about software like UNSW Seams?**

Gavin: I like it as an alternative to email for work communication because it's a public rather than private discussion, which is better for workplace discussion.
I don't usually use Teams or Zoom - in my workplace we use Slack. Something I really like about that tool specifically is that Slack is really integrated with other tools, like pipelines and google docs, which can be used without having to constantly go back and forth to another page. (Integration beats implementation!)

Robyn: It's faster than using email because you're getting direct responses. Often with email things can get lost, so the immediacy is good, so that you can fix things in real time.

Hannah: You can work from home and you don't have to have everything in emails. It's really good when you have really clearly marked channels so you know where to go. Having a big group of ppl and talking together really easily. Also screen sharing.

- **Do you use multiple teamwork-driven communication tools? If so, why?**

Gavin: We mainly use Slack (and occasionally email) - we do use github, trello, gyra (for ticket tracking) for cases where other tools have a more specific focus on that task. So we use other tools for other kinds of collaboration, but we generally use Slack for general chat. We often use email for external communication because it's a more neutral venue and its easier if they don't use Slack already.

Robyn: Zoom, email, phone. Not sure why. They're just what I know, so I just tend to use each tool for one small part of the communication process (i.e. video, textual, audio).

Hannah: Yes, often because I use them in different contexts, like personal stuff and uni and work. A lot of the time it's just because that's the tool being used by the lecturer or similar.

[Requirements] Analysis & Specification - Use Cases

User Stories and Use Cases

User stories generated from above responses:

STORY

As a software developer, I want to be able to meet on a video call with multiple other users of Seams so that I can discuss work related content with colleagues.

Acceptance Criteria:

- Given: a user is a member of a channel.
- And: user has navigated to this channel.
- Then: they are able to start a video call.

STORY

As a University student, I want to be able to share my screen on a video call so I can demonstrate concepts to students that I am tutoring.

Acceptance Criteria:

- Given: a user has started a video call.
- Then: an icon is presented to select screen sharing.
- When: user presses the screen share icon.
- Then: their video is replaced by a video stream of their screen that other users in the call can see and screen share icon changes to stop sharing icon.
- When: user sharing screen presses stop sharing icon.
- Then: user video switches back to video call screen as it is normally displayed.

STORY

As a University Professor, I want to be able to use a video call feature that allows messaging so that I can attend work related presentations.

Acceptance Criteria:

- Given: a user has been invited to a channel.
- Then: user is able to view a video call in this channel.
- And: user is able to send messages in this video call.

STORY

As a software developer, I want to be able to reply to a specific message in a channel so that other users can understand what I am referring to in my response.

Acceptance Criteria:

- Given: a user has navigated to a channel of which they are a member.
- And: user selects to reply to a specific message.
- Then: message sent by the user is marked as a reply to this chosen message.

STORY

As a software developer/University student, I want to be able to change the order that my channels appear in so that I can easily find a specific channel when I'm looking for it.

Acceptance Criteria:

- Given: a user has navigated to their channels.
- Then: they can manually change the order in which channels are displayed

STORY

As a software developer, I want to be able to use external tools like pipeline and google docs in Seams so that I don't have to keep changing tabs to use these other tools.

Acceptance Criteria:

- Given: a user has logged on to Seams.
- Then: there is an option to select use of external tools.
- When: user selects option to use external tools.
- Then: they are presented with a list of external tools available.
- When: user selects a specific tool.
- Then: they are able to use this tool whilst in Seams.

Use Cases:

USER STARTS VIDEO CALL

Step 1. User navigates to a channel of which they are a member.

Step 2. Seams presents them with the messages in the channel; there is also a button to commence a video call.

Step 3. User presses the button to commence a video call.

Step 4. Seams asks the user whether they want to share video and audio.

Step 5. User selects to share either video, audio, both or neither.

Step 6. Seams sends a notification to other members of the channel inviting them to join this video call.

Step 7. Invited users open the notification to join the call.

Step 8. Seams presents them with the messages in the channel and a button to join the call.

Step 9: Invited users choose to join the call.

Step 10. Seams asks these users whether they want to share video and audio.

Step 11. Newly joined users select to share either video, audio, both or neither.

Step 12. Seams presents members of the call with the video call screen, which contains:

- Videos of members who have chosen to share their video
- Profile pictures of users who have selected not to share video.

USER SHARES SCREEN

Step 1. User starts a video call in a channel of which they are a member.

Step 2. Seams provides video call, main page contains a button to share screen.

Step 3. User presses the button to share screen.

Step 4. Seams shares user's screen so that other members of the call can see this user's screen. 'Share screen' button replaced by 'stop sharing' button for user sharing their screen.

Step 5: User presses the button to stop sharing their screen.

Step 6: Seams returns to showing the video call screen as it is usually displayed.

Validation

Upon showing the completed use cases to the target users interviewed in Requirements Elicitation, they were met with general approval. Hannah was quoted as saying that they 'exemplified her issues perfectly'.

[Design] Interface Design

Name and Description	HTTP Method	Data Types	Exceptions

`videocall/start/v1`
 	
Given a valid channel_id, begins a video call in the channel which any member in that channel may join. (Only one video call may be running on a channel at any given time).
	POST	<u>Parameters:</u>
		`{token, channel_id}`
		
		<u>Return type:</u>
		`{}`
			<u>InputError</u>
			   channel_id does not refer to a valid channel
			
			<u>AccessError</u>
			   channel_id is valid and the authorised user is not a member of the channel

`videocall/sharescreen/start/v1`
 	
Given a valid channel_id where a video call is currently in process, shares the users screen to that video call.
	POST	<u>Parameters:</u>
		`{token, channel_id}`
		
		<u>Return type:</u>
		`{}`
			<u>InputError</u>
			   channel_id does not refer to a valid channel
			   channel_id is valid but the channel has no video call currently running
			
			<u>AccessError</u>
			   channel_id is valid and the authorised user is not a member of the channel

`videocall/active/v1`
 	
Given a channel that the authorised user is a part of, returns whether a video call is running on that channel and if so, when it started.
	GET	<u>Parameters:</u>
		`{token, channel_id}`
		
		<u>Return type:</u>
		`{is_running, time_started}`
			<u>InputError</u>
			   channel_id does not refer to a valid channel
			   channel_id is valid but the channel has no video call currently running
			
			<u>AccessError</u>
			   channel_id is valid and the authorised user is not a member of the channel

`videocall/sharescreen/end/v1`
 	
Given a valid channel_id where a video call is currently in process and a user who is sharing their screen, ends the screen share.
	POST	<u>Parameters:</u>
		`{token, channel_id}`
		
		<u>Return type:</u>
		`{}`
			<u>InputError</u>
			   channel_id does not refer to a valid channel
			   Authorised user did not begin the video call AND they do not have owner permissions in the channel
			   channel_id is valid but the channel has no

| | | | video call currently running

AccessError
  channel_id is valid and the authorised user is not a member of the channel |
|---|---|---|---|
| `videocall/end/v1`

Given a valid channel_id where a video call is currently running, ends the video call. | POST | <u>Parameters:</u>
`{token, channel_id}`

<u>Return type:</u>
`{time_started, time_finished}` | <u>InputError</u>
  channel_id does not refer to a valid channel
  channel_id is valid but the channel has no video call currently running
  Authorised user did not begin the video call AND they do not have owner permissions in the channel

<u>AccessError</u>
  channel_id is valid and the authorised user is not a member of the channel |
| `user/profile/channels/adjust /v1`

Given a user profile page, allows the user to modify the order that channels are shown on that page. | PUT | <u>Parameters:</u>
`{token}`

<u>Return type:</u>
`{}` | <u>InputError</u>
  N/A

<u>AccessError</u>
  N/A |
| `message/reply/v1`

Given a message within a channel or dm the authorised user is a part of, allows them to reply directly to that message. | POST | <u>Parameters:</u>
`{token, og_message_id, message }`

<u>Return type:</u>
`{message_id}` | <u>InputError:</u>
  og_message_id is not a valid message within a channel or DM that the authorised user has joined
  message length is greater than 1000 characters or less than 1 character

<u>AccessError:</u>
N/A |

[Design] Conceptual Modelling (State)

Access Error - invalid token / user is not a member of the channel

Input Error - channel_id does not refer to a valid channel

No active videocall

User starts a video call

Member turns on/off camera, mic, or shares screen

Input Error - no active video call

Videocall active (mic off) — Member turns on/off mic — Videocall active (mic on)

Videocall active (camera off) — Member turns on/off camera — Videocall active (camera on)

Videocall active (screensharing off) — Member starts/stops screen sharing — Videocall active (screensharing on)

Member ends a video call