Appendices

Syntonize

A music making collaborative platform for bandmates

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Master thesis
MSc Design for interaction
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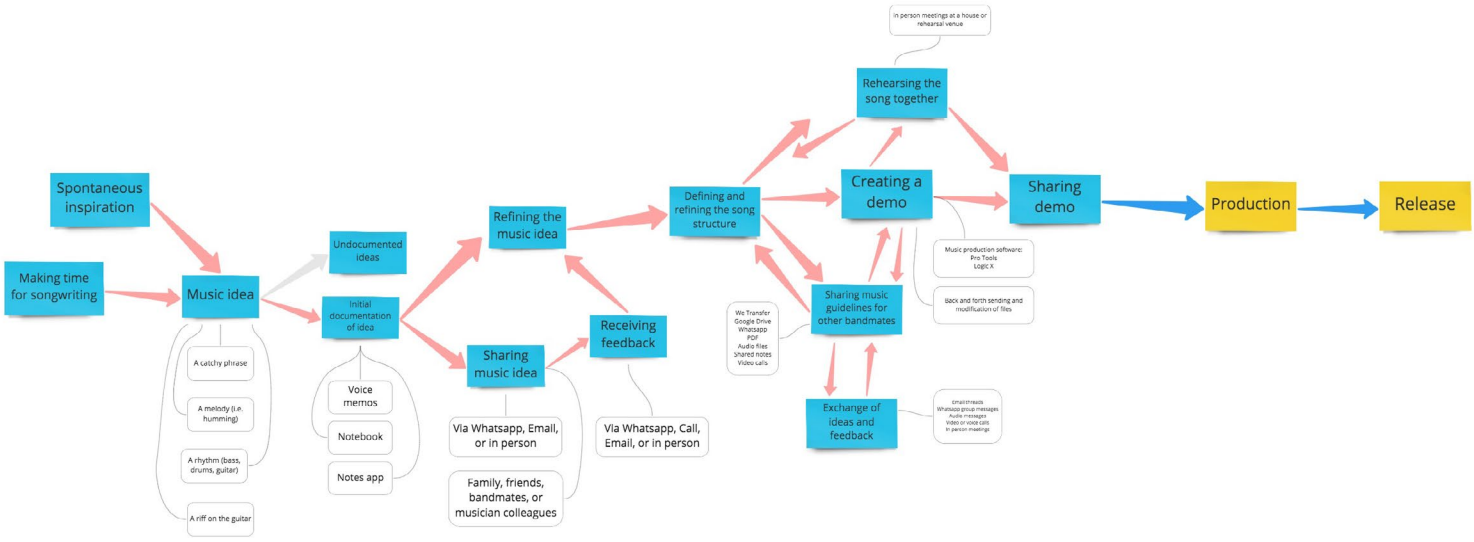
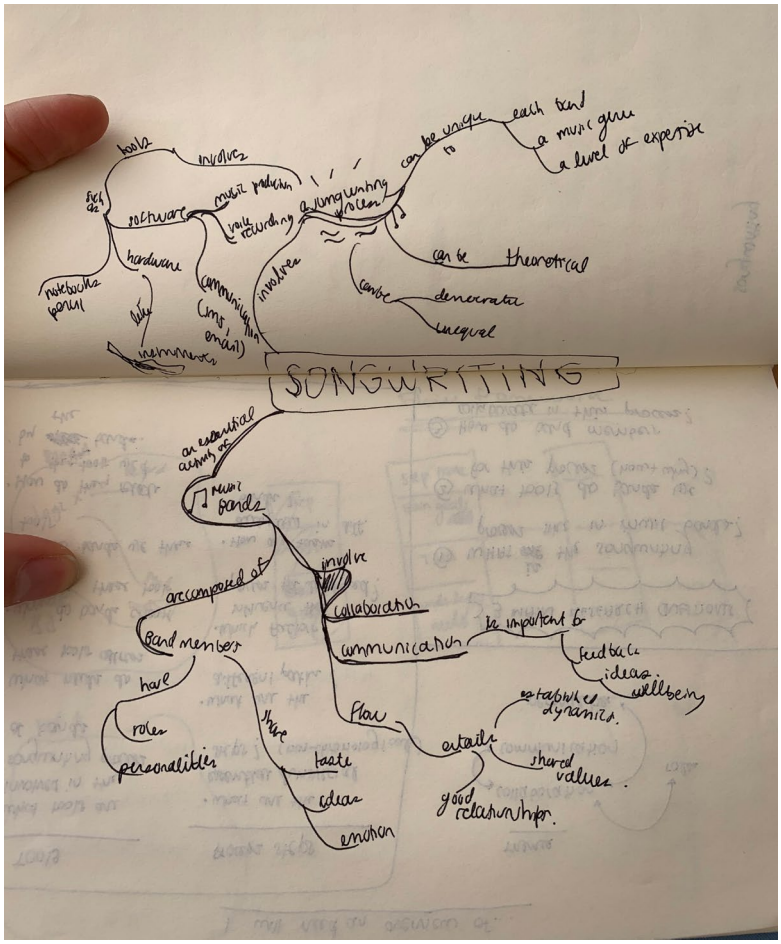
Appendix 2. Initial songwriting mindmaps





Appendix 3. User research

Participant overview

Screener survey link: https://forms.gle/FDPoQmGdMGdW44T97

PARTICIPANT 1

COLLABORATION STYLE

A Single-led collaboration
Local Remote

BAND DETAILS

GENRE Indie-rock

BAND MEMBERS 1

INSTRUMENTS Vocals and guitar + external arrangements

EXPERIENCE 4 years of experience

MEMBER EXPERTISE self taught

COUNTRY Germany

PARTICIPANT 2

COLLABORATION STYLE

A Single-led collaboration
Local Remote

BAND DETAILS

GENRE Punk-rock

BAND MEMBERS 4

INSTRUMENTS Vocals, bass, drums, guitar 1, guitar 2

EXPERIENCE 10+ years of experience

MEMBER EXPERTISE mixed (self taught, University education)

COUNTRY London, USA

PARTICIPANT 3

COLLABORATION STYLE

A Single-led collaboration
Local Remote

BAND DETAILS

GENRE Rock

BAND MEMBERS 5

INSTRUMENTS Vocals, bass, keys, bass, guitar, drums, horn

EXPERIENCE 30+ years since band formed

MEMBER EXPERTISE mixed (self taught, conservatory)

COUNTRY USA, Netherlands, Turkey

PARTICIPANT 4

COLLABORATION STYLE

A Single-led collaboration
Local Remote

BAND DETAILS

GENRE Indie-rock

BAND MEMBERS 1

INSTRUMENTS Vocals (Liah), + external arrangements

EXPERIENCE 2 years of experience

MEMBER EXPERTISE Singing and songwriting University-level

COUNTRY Costa Rica

PARTICIPANT 5

COLLABORATION STYLE

B Duo-led collaboration
Local Remote

BAND DETAILS

GENRE Indie-rock

BAND MEMBERS 5

INSTRUMENTS Vocals, bass, keys, drums, bass, guitar

EXPERIENCE 6 years of experience

MEMBER EXPERTISE mixed (self taught, University level)

COUNTRY Netherlands, Turkey

PARTICIPANT 6

COLLABORATION STYLE

B Duo-led collaboration
Local Remote

BAND DETAILS

GENRE R&B Rock

BAND MEMBERS 1

INSTRUMENTS Vocals (Liah), + producer arrangements

EXPERIENCE 4 years of experience

MEMBER EXPERTISE Conservatory

COUNTRY Netherlands

PARTICIPANT 7

COLLABORATION STYLE

B Duo-led collaboration
Local Remote

BAND DETAILS

GENRE Rock

BAND MEMBERS 5

INSTRUMENTS Vocals, guitar, bass, drums

EXPERIENCE 2 years of experience

MEMBER EXPERTISE

COUNTRY Netherlands

PARTICIPANT 8

COLLABORATION STYLE

C Co-led collaboration
Local Remote

BAND DETAILS

GENRE Rock

BAND MEMBERS 5

INSTRUMENTS Vocals, bass, keys, bass, 2 guitars

EXPERIENCE 10+ years of experience

MEMBER EXPERTISE mixed (self taught, University level)

COUNTRY Costa Rica

Screener survey for participants

Hello! As part of my Design Master thesis about music, I would love to learn about you and the songwriting process of your music band. Thank you for participating and sharing with me!

Section 1 - Personal details

What's your full name?

How old are you?

What is your main nationality?

Where do you and your band members live?

Section 2 - Getting to know your band

What is the name of your band?

Tell us briefly how your band was created!

How many band members are in your band?

What are three words that best describe your band's dynamics (i.e. fun, serious)?

Which music genre(s) best describe your band's music?

Which instrument(s) are played in your band? Please mark with an * asterisk * the one(s) that you play.

How would you define the current state of your band? ***

- Students
- Early stage (just got started!)
- Part time hobby
- Part time professionals
- Full time professionals

Which of these best describe the relationship among you and your bandmates?

- Most/all of us were friends before starting the band
- We have become friends after we started the band
- We mostly keep it as band colleagues
- Other (please specify)

Section 3 - Your songwriting process

How often are you involved in the songwriting process of new music of your band?

- Always
- Sometimes
- Never

Which tools do you or your band mates use in this process (before production*) from coming up with ideas to creating a demo?

- Logic X
- Pro tools
- Ableton
- Garageband
- Voice memos or other voice recording apps
- Notebook

Which other things or tools do you use that were not mentioned in the previous question?

Which tools out there do you think are not recommendable for songwriting (i.e. tools you don't want to use or have stopped using)?

What is inconvenient about these tools?

Which tools do you use for communication with your band mates?

- Whatsapp (group chats)
- Whatsapp (individual chats)
- Phone calls
- Video calls
- Email
- In person meetings

On a scale from 1-5 (1 being no improvisation and 5 being very high improvisation), how improvised do you think your songwriting process is?

On a scale from 1-5 (1 being the least structured and 5 being the most structured), how structured do you think your songwriting process is?

On a scale from 1-5 (1 being the least important and 5 being the most important), how important is the theory of songwriting in your process?

Please rate the importance (0 being not important to 5 being very important) of the following steps within your songwriting process

- Developing creativity and inspiration
- Making time to write music
- Documenting past ideas
- Having technical knowledge about songwriting
- Communicating with other band members
- Receiving feedback from others
- Giving feedback to other band members
- Meeting in person with band members

What else do you think is very important in your band's songwriting process and why is it important?

Open ended

( ) I allow Marianne to contact me to have an interview or participate in other fun research activities!

Phone number: _____

Country code: ___

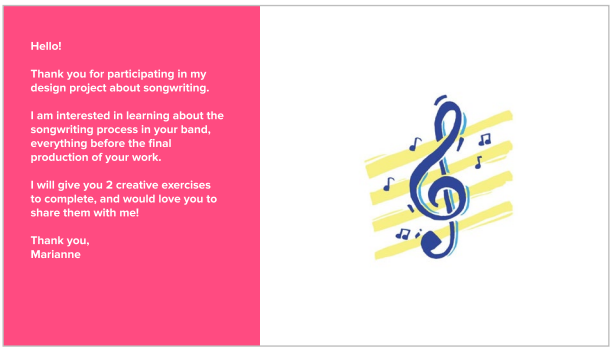
Thank you for sharing

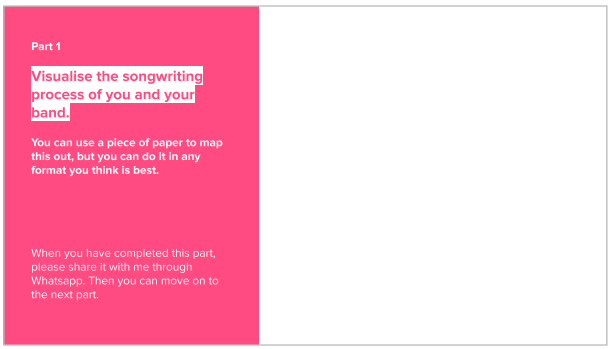
Sensitizing material for interviews

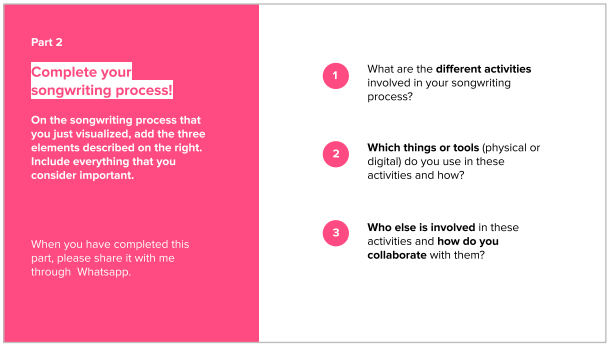
Parting from the initial assumption that musicians are highly sensitized with their process, it was a realization along the process that they are sensitized with the practical part of songwriting, as in the tools and activities, but not in the collaborative aspect of this experience. In fact, 'x' participants from the musicians' group described their process as 'non-collaborative,' whereas once they dived into the details of some of the activities, they described the involvement and crucial role of others in them.

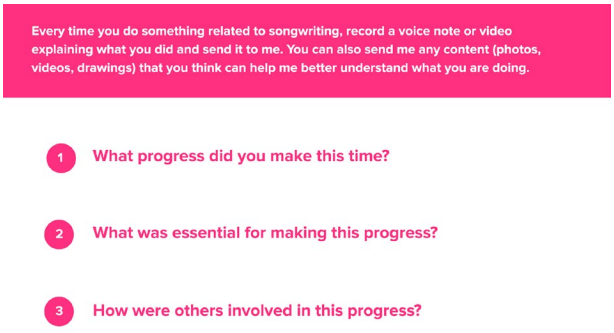
The definition of what was perceived as collaboration initially changed as the songwriting activities and the dynamics of collaboration related to them were understood.

The initial plan was to do a sensitizing activity, interviews and a diary study. The latter aimed to collect data from musicians throughout their process of writing a full song. However, a key insight from this activity changed the course of the research. The time to write a song is indefinite and loosely structured. A musician could not only pick up lyrics from 2 years ago, but also work on multiple songs at once. On the other hand, the current socio-economic context of the COVID-19 pandemic altered some of the participants' activities related to songwriting. As all their upcoming events for live performances or recording were cancelled, it was not a time to write music, rather to think of alternative ways of making money. Therefore the diary study was not appropriate for the context of the participants in the study and the netnographic activities were reframed.

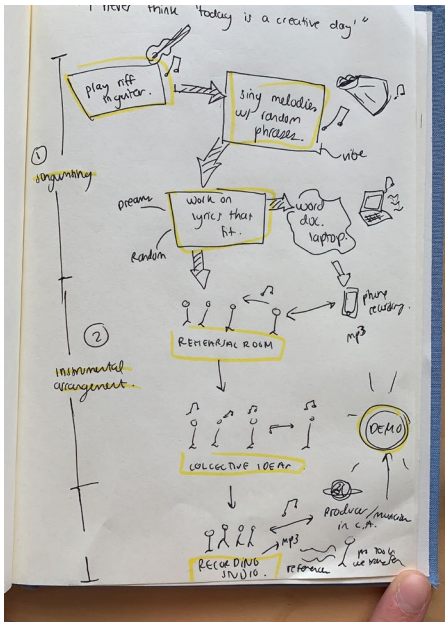


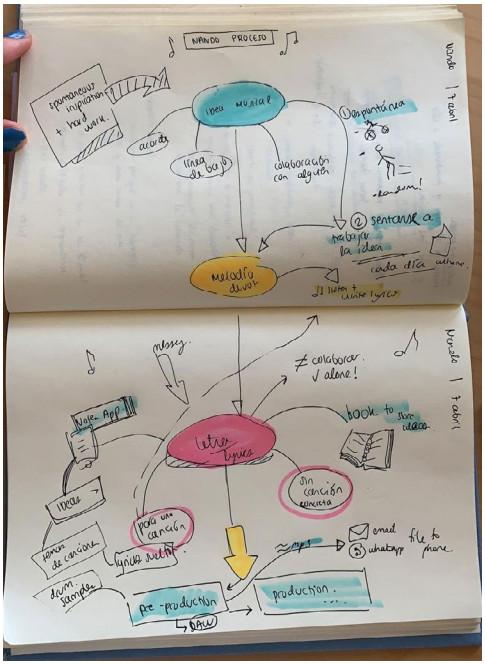


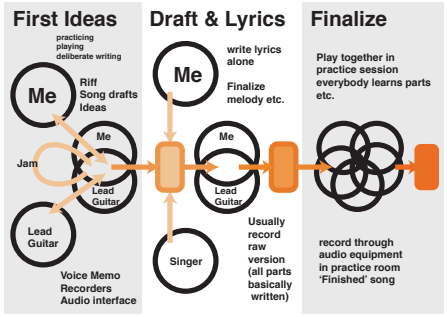


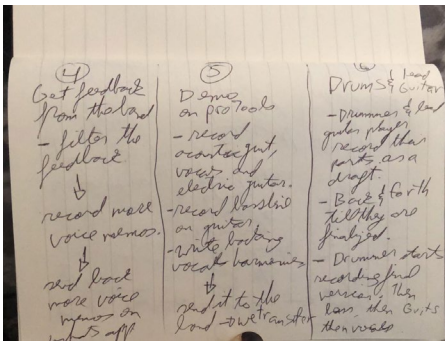


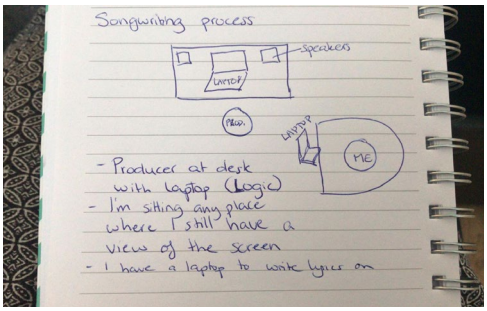
Sensitizing material completed by participants

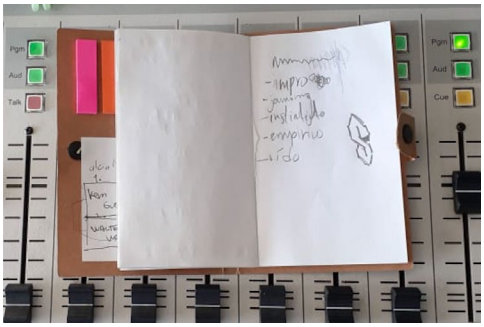












Interview guide

Introduction (5 minutes)

- Explain what my project is about
- Why I've reached out to them
- What the session will be about and how long it will take
- Is it okay if I record the session?
- Do you have any questions before we start?

Questions (35 minutes)

First I would like to get to know you a little bit...

Can you tell me a bit about yourself? *(5 min)*

- Where are you from? How old are you?
- What do you do for a living?
- How did you get started with music?
    - Did you receive any formal education? For how long?
    - What was that like?
    - What instruments do you play?
- What does music mean to you on a personal level? And professional?

About the involvement in a band *(5 min)*

- Are you part of a band?
- What's the name of your band?
- How many people are in your band?
- What kind of music do you play?
- How much time do you dedicate weekly to this band?
    - Do they have other side activities as well?

- How did you get together?
- When did you start this band?

- What are the major differences among the people in your band?
- Are there any cultural differences?
    - What impact do you think this has had on the band?

About the songwriting process *(15 min)*

- Do you write music as a band? (yes/ no)
    - How many albums or songs have you released?
- Could you describe to me as much as possible what that process is like?
    - I'm interested in the tools you use and how you interact with your band members, so please be as specific as possible in this!
- Which of these are the most important steps in your process? Why?
    - What is your role?
- What is the most challenging step and why?
    - How do you deal with these challenges?
    - What could make it better?
- What is the part you enjoy the most? Why?
- Do you work on one song at a time or multiple at once?
    - What are the challenges?

About communication

- How do you communicate with your band members normally?
- How often do you meet in person?
- What are the reasons why you meet in person?
- What is essential to do in person in the songwriting process? Why?
- What is more convenient to do individually and why?
- What are the main challenges?

About collaboration and ideas

- How do you come up with ideas? How do you find inspiration?
    - What kind of ideas do you have? Can you give me an example?
    - Is this only individual or with other members as well?
- How do you record your ideas? What tools do you use and why?
- How do you share your ideas with your band members?
    - Why is this important?
- How do you give and receive feedback?
    - How important is this process?
- Is this equal among the members? How does it change?
    - How do you feel about that?

- What are some of the challenges you have in the collaboration?
- What works really well in your band?
    - Why do you think that is?

About the tools used

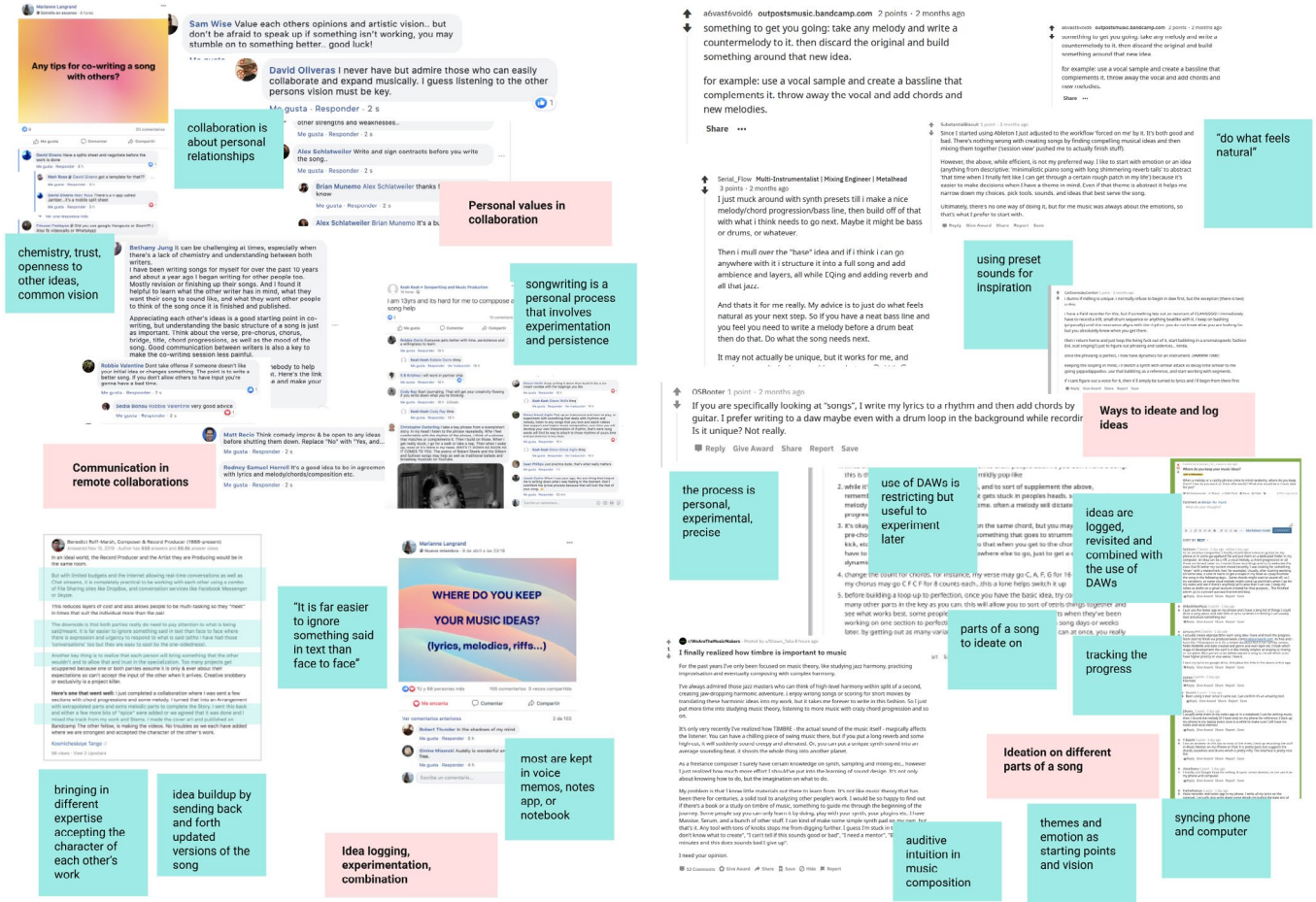
- Go in depth with some of the tools
- Ask for other tools used or what they use for specific steps
- What are some challenges you encounter with x tool?
- Why is this important?
- How could it be better?

Themes	Notes	Quotes

Extra time questions

- Have you been in other bands before?
- What are the major things that change from one band to another?

Appendix 4.Low touch netnography

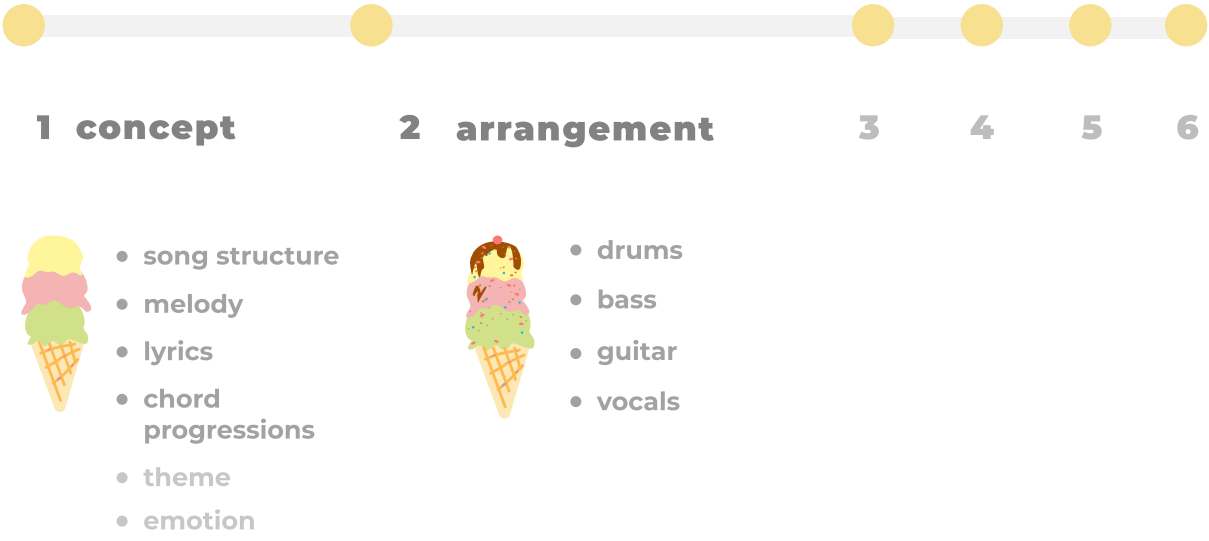


Appendix 5. The music making process

The evolution of ideas into songs takes place in various phases, as shown below. The initial phase, referred to as the song conceptualisation, consists of creating the basis of the song. This involves drafting the song structure, lyrics, and melody. As in the previous figure, the cone and the scoops of the ice cream are served. The themes or emotions can be determined either directly by the songwriter or indirectly through their music.

During the second phase, the toppings of the ice cream are served and the song concept is interpreted by the different instrumental elements, such as the piano, guitar, drums, keys, bass, and vocals. At this point, the song is in its 'draft' state. This is followed by recording a first demo, and then moving to the pre-production and production phases.

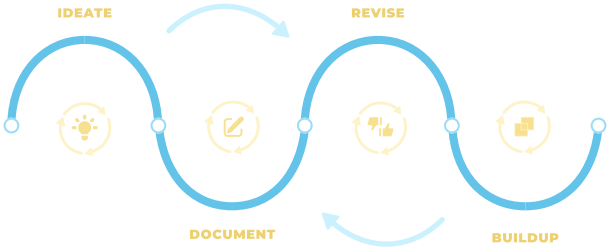
The interest of this project is the creative and collaborative process to make a rough draft of a song, or a low fidelity prototype, and not the further stages of development. Therefore the focus of this research was to explore the two initial phases of music making described in the figure.



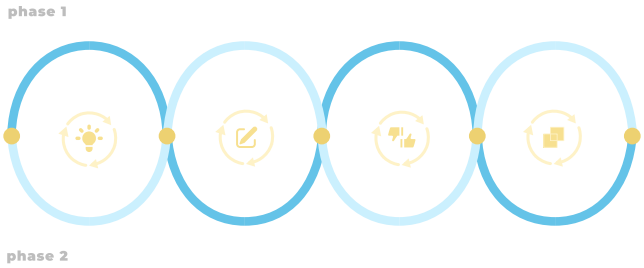
An iterative process

The music making process is iterative and does not follow a particular sequence. There are universal stages and activities that take place within this process, and musicians can go back to them at different moments. The main stages are Ideate, Document, Revise, and Buildup.

Not only do the stages described above take place in iterative cycles, but so do the first two phases that were described previously (conceptualisation and arrangement). Figure x below illustrates the first two phases as a closed loop, representing it's non-linear nature and synergies. These phases follow the same or similar processes. They occur one after the other, in parallel, and iteratively; they are superpositioned.



Music making process stages: ideation, documentation, revision, and buildup.

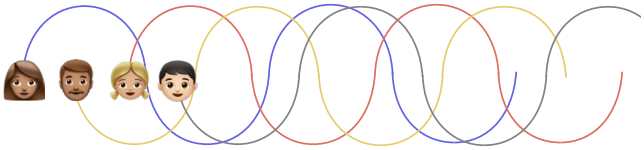


Songwriting phases 1 and 2 as superpositioned processes.

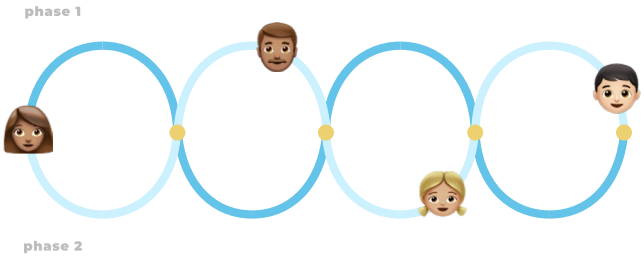
A collaborative process

Different activities can be performed by different music contributors, and they can also begin or join this cycle at different moments in time (Figure x).

Figure x shows what a shared songwriting process looks like when different members are involved.



Musicians' personal process can start at different moments of the song journey, and they come together at points to share ideas and contribute.



Musicians can join at different phases and stages of the process.

Appendix 6. Key findings

Key findings

1. The songwriting process is iterative and chaotic.

_Band members ideate individually on loose elements of a song (lyrics, melody, harmony), and then combining these ideas to create a song concept. As musicians are chaotic by nature, their process is personal and does not follow a particular structure.

_Band members can contribute to a song by building up on each other's music ideas, either by creating new combinations of loose elements, or creating parts of the instrumental arrangement of the song.

Each band has their own collaboration style, which describes the creative contribution of its members. It is usually grounded on the interplay between creative freedom and creative guidance established by the band leader.

2. Songwriting takes place e-v-e-r-y-w-h-e-r-e.

_Musicians use a broad range of tools for different stages and activities of songwriting. This takes place from simple ideation on voice memos, to sharing ideas through Whatsapp conversations and email threads, to combining ideas on music production software.

_Musicians often document (record, register, log, file, catalogue, archive) their ideas on different tools. The buildup of music ideas into a single song is not enabled by the most commonly used ideation tools I.e voice memos or digital notes

_Tool choice is motivated by the principle of accessibility, practicality and adaptability to the musician's purpose and context of use. It is not directly tied to their musical expertise, experience or technological literacy.

_Songwriting tools neglect collaborative activities, which have communication at its core. Currently, social platforms are used to manage collaborations and messaging and file sharing services are crucial to exchange music ideas and feedback.

3. Shared songwriting is about communication and values.

_The co-creation of a song requires frequent interactions between band members for the purpose of giving feedback and building up on each others' ideas. This means that communication and personal relationships are very significant.

_Collaboration is about constructive feedback, ranging from technical to emotional ways of expression. It has the purpose of shaping ideas towards a common vision of the song. The feedback on audio material is usually expressed verbally.

Key pain points

1. It's hard to combine and iterate on ideas because ideas are documented all over the place.

Different tools are used for different stages and activities of the songwriting process. Tool choice is motivated by its purpose and context of use, resulting in ideas documented in different places. This is a major barrier during the ideation process because it's complex and inefficient to iterate on and combine ideas.

2. It's hard to build up on each others' ideas because the ideation tools used are not collaborative.

Musicians reach out to communication tools for activities related to feedback loops, and file sharing tools and complex production interfaces for the idea buildup. Social platforms are used to manage these collaborations - such as Whatsapp and Facebook. Other messaging and file sharing services are important, such as Gmail, WeTransfer, and Dropbox.

3. Idea buildup is not smooth because there is a big gap between production software and single-use, individual ideation tools.

The buildup of music ideas into a single song is not enabled by the most commonly used ideation tools. Targeted for further stages of music making, production tools allow for activities of idea buildup that are key in the writing phase. The use of these complex tools for simple tasks shows a gap between the songwriting and production stages.

4. It's hard to communicate effectively for feedback because the tools don't facilitate this aspect.

Communication is key to collaboration, and in the context of music making it is important to communicate on a granular level about the musical content or material. Generic communication tools, such as social platforms,

Key gain points

1. Flexible creative expression

Being able to express the musical self, experimenting and logging ideas whenever and wherever.

2. Community and connection

Sharing a passion with others and being part of something. Sharing knowledge with others to grow as a musician.

3. Creative contribution

Being able to give creative input to the making of a song. Sharing the ownership of a successful song with others.

Appendix 7. Ideation

What is ideation in music?

Ideation is defined by the moments in which musicians come up with music ideas in the form of melodies, riffs, phrases, beats, and other musical elements. This occurs all along the music making process, which it is a creative endeavour that is personal to every musician (Chan et al., 2019). Fueled by emotions and creative impulses, a musician might begin to ideate in multiple ways:

- A spark of inspiration that can come in the form of suddenly "listening" inside their head to a melody or a phrase that has lyrical sense.

- Playing an instrument; improvising until they come up with a hook in the form of a riff, melody, or phrase

- Writing lyrics or a song structure

- Listening to musical references that have concepts that they would like to recreate.

- Having a theme or story as a starting point

The music ideas that are appealing to a musician might resonate with latent themes or emotions that they wish to convey through their music, as well as their own musical sense (Benford, Chamberlain, & McGrath, 2016)

> **I don't have the discipline of a writer. I'm not a prodigy. It all happens organically. I never say 'today is going to be a creative day'"**

ADRIAN, BAND LEADER

Single-led collaboration - online

When and where do musicians ideate?

The time to write a song is indefinite because the process is personal to every band and to each musician within the band. Factors such as the band setup, contributing parties, the immediate circumstances, motivation level, commitment, and inspiration, shape the songwriting process of every musician.

The moments of working on music ideas usually take place when they have their instruments (usually at home or the band rehearsal room). Participants in this study described these moments as either 'bursts of creativity' that could take 15 minutes to an hour, or scheduled creative sessions that could take an entire afternoon.

It is worth making a distinction between ideation that occurs at random moments of inspiration versus the deliberate moments of working further on ideas and creating new ones. Both play an essential part in the music making process, and one could say that the ideation activities are not tied to a particular space, rather the tools that are available to the musician at the ideation moments. For example, if a musician thinks of a catchy melody in the middle of the street, they might record it by humming into their Voice Memos app on the phone, and then work on it later at home when they have their instruments accessible to them. Once the intention to ideate is there, the form it will take will depend on the accessibility of the tools.

“

I can pick up the lyrics months later, or also write several songs at once.”

- ADRIAN, BAND LEADER

“

It will take me a few hours, maybe 3 or so, usually every few weeks. It also depends on the circumstance, if people are available, my own confidence or motivation. When writing by myself, it depends on inspiration. If I don’t have it, I don’t write.”

- LARA, SOLO ARTIST

“

You have to make time to work on your music”

- PAUL, SOLO ARTIST

“

As long as I can hold my attention span. Sometimes I can write for an entire afternoon or even an entire day. Most of the time I get distracted by my phone in an hour or so.”

- JULIAN, BAND LEADER

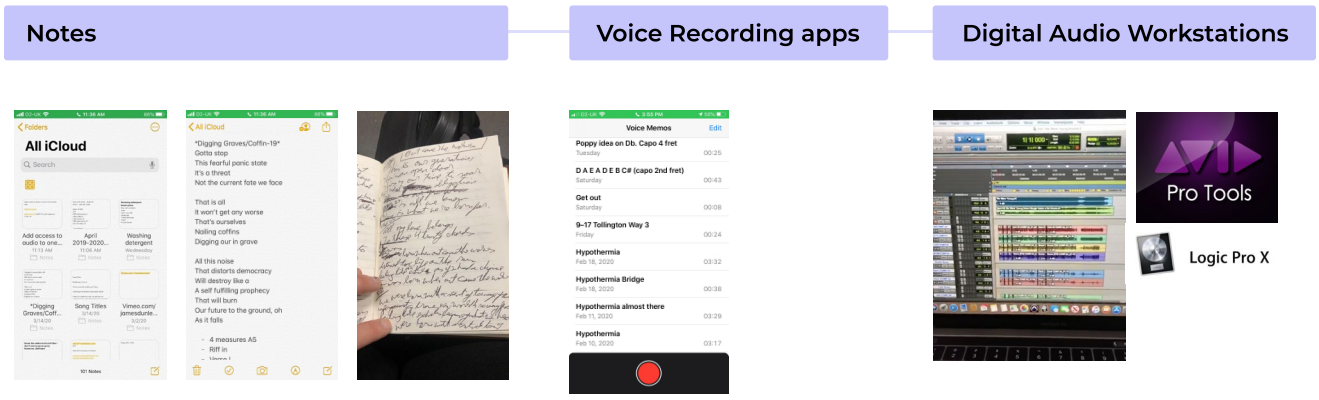
Need for creative freedom

Through ideation, musicians are able to create their initial music ideas through an experimental process of trial and error. At this stage, their need for creative freedom, autonomy and creative confidence are strongest. These drive the musician’s expression of their musical self. At the same time, they seek inspiration and creative guidance from external references, such as other people’s music. In this way, they grow and develop as musicians.

Appendix 8. Documentation tools

Commonly used tools

Figure x shows an overview of the most common music making tools used by musicians during the early stages of music making, according to the research carried out. These are voice recording mobile applications, and physical and digital notes. A secondary tool that some musicians reach out to is a Digital Audio Workstation (such as Pro Tools, Logic X, Ableton, or Garageband), which is a more complex interface designed for music production and requires a higher learning curve than the other tools. This software is purposed for later stages, such as pre-production or production stages. They are currently used to carry out collaborations with bandmates to create the instrumental arrangement (Benford, Chamberlain, & McGrath, 2016).



Sample of participant voice recordings showing iterations of turning loose ideas into combined ideas.

When flexibility meets structure

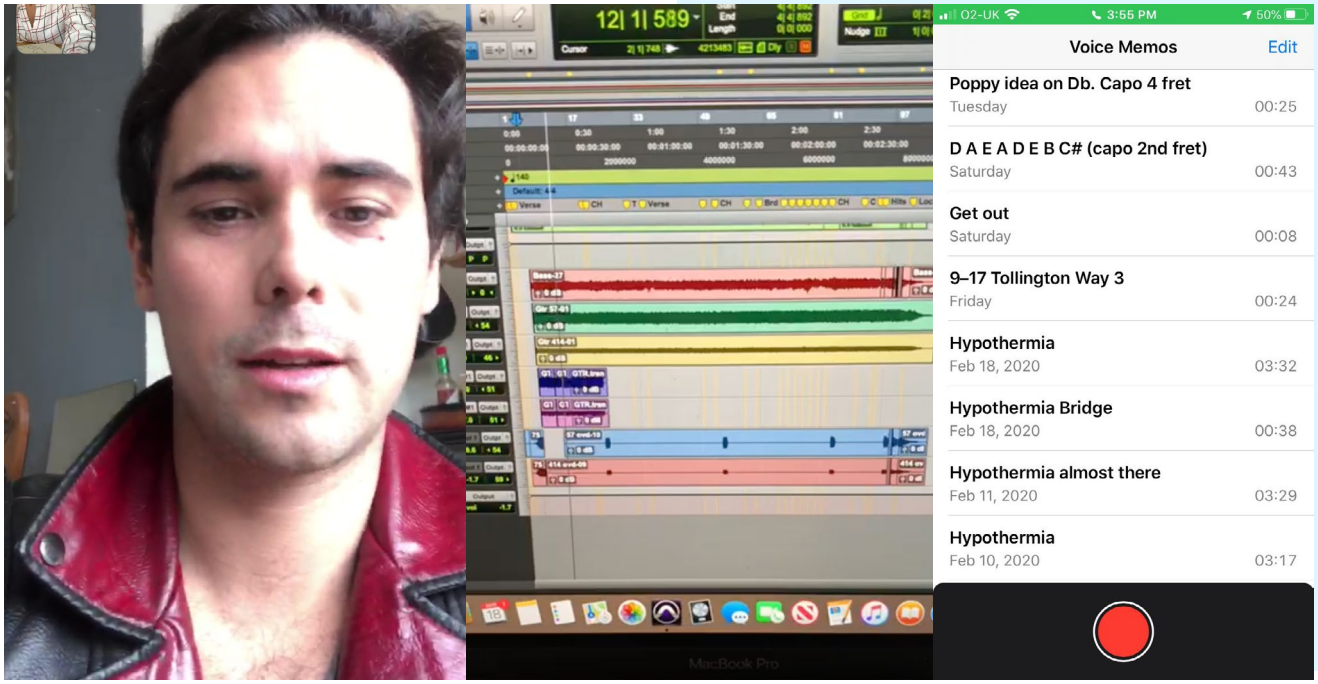
In an unstructured ideation process, the diversity and accessibility of tools meets the need for flexibility. Nonetheless, the possibility to log ideas everywhere and anywhere compromises the need for structure that arises when working on the ideas later. For example, keeping track of music ideas can be a challenge to musicians because they are logged on different tools. This experience can feel messy and disorganised, making the process more inefficient to them. Also, the possibilities of cataloguing the ideas, especially on Voice Memos applications, are limited. They are stored in chronological order and the name attribution is also limited in length. This can make it challenging for musicians to easily identify ideas they are working on and the song they might belong to.

VOICE MEMOS

Voice Memos is a generic, basic voice recording mobile application. Musicians use it mostly to record selected early stage music ideas that they would like to build upon. This was discovered through the low-touch netnography, in which musicians in a songwriting and music production Facebook community were asked about their tools to log their music ideas. 70% of respondents referred to the voice memos as a primary tool for logging initial music ideas. In the high touch netnography research, 8 out of 8 participants said they used Voice Memos on their phone as the go-to application to record their initial ideas. They would use it to record 15-second to 3-minute recordings, which can consist of loose music ideas (such as humming a melody, singing lyrics a cappella, playing a guitar riff, or playing a bass line) or compound music ideas (such as singing along with the guitar).

After each audio recording, musicians will try to name the idea briefly, depending on the nature of the idea (lyrics, chord progressions, rhythm section). The names can make reference to chords, phrases, song structure, emotions, or versions of ideas (Figure x).

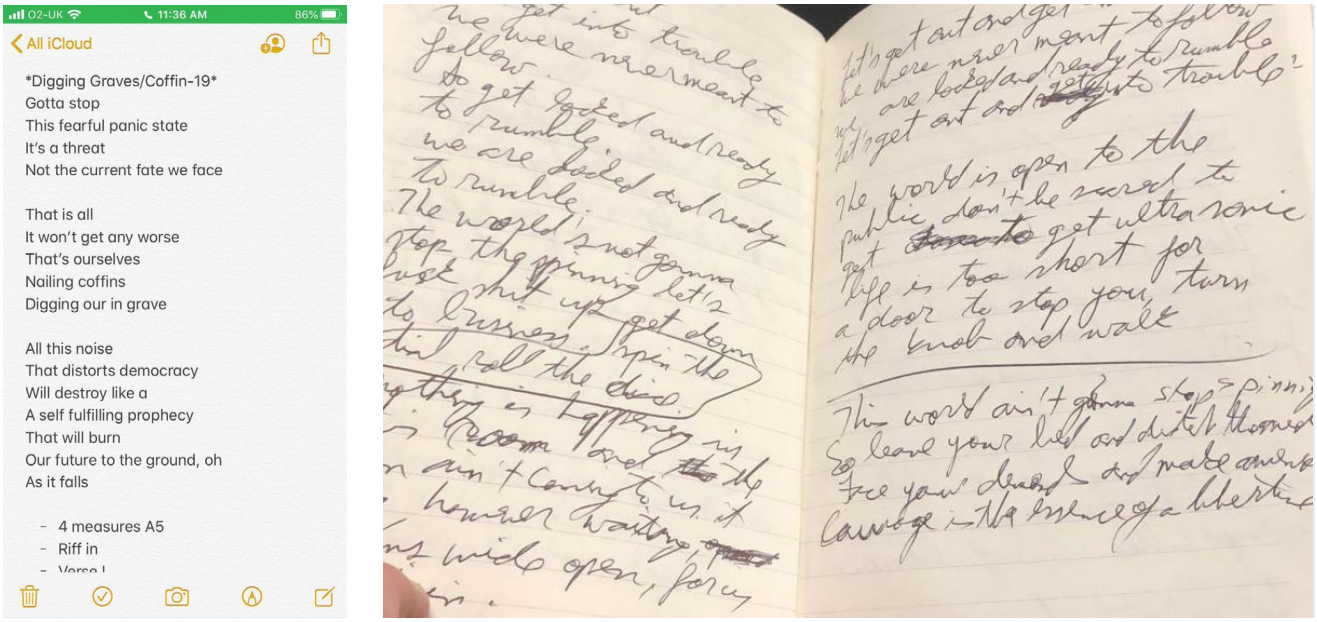
> **"I try to name my ideas by referring to the chords, lyrics, or themes. If I'm working on more than one song, sometimes I don't really know to which song the chords belonged to"**
>
> **- RONALD, BAND LEADER**



Overview of most commonly used tools for documentation of music ideas

NOTEBOOKS OR DIGITAL NOTES

Physical notebooks or digital notes applications enable musicians to brainstorm on lyrics, write down hooks, or even chord charts. These tools were described by all participants of the high-touch netnography as very useful to write lyrics and song structures. These two tools are used interchangeably, depending on the preference of the user and the tool availability at the moment of use. The notebook was described as more suitable for creative flows, since it allows to see the evolution of songs and write in different orders and forms to better combine ideas. 3 out of 8 participants said they try to take their notebook everywhere, so that they can catch their moments of inspiration and be able to write on the spot. However, the digital notes mobile applications were described by 6 out of 8 participants as more practical, accessible at all times, and easier for editing.



Samples of a participant's music making tools.

DIGITAL AUDIO WORKSTATIONS (DAWs)

What are DAWs?

Digital Audio Workstations are complex interfaces made for music production purposes, and allow users to record, edit, alter, and produce their music by adding samples, MIDI instruments, or effects. The numerous possibilities of audio edition of this software makes it appropriate for production processes, yet intricate for the simple tasks of recording music ideas at the early stages of a song (Love & McGrath, 2017).

How are DAWs used in music making?

In the high-touch netnography research, Digital Audio Workstations were used by participants whose music making activities happened mostly online and for pre-production purposes. However, these participants also made use of the previously described tools to record their initial ideas.

The DAWs are used to collaborate with their bandmates on the build up of ideas for the arrangement phase. This involves sharing the DAW files back and forth through file sharing services such as We Transfer, Gmail, or Dropbox, as musicians edit the files to record their stems corresponding to their instrumental role (Figure x).

> **“When I see these complex interfaces I feel like it’s such a hassle and such an effort. I prefer not to use them”**
>
> **- MARTEN, BAND LEADER**
> DUO-LED COLLABORATION, MOSTLY OFFLINE

> **“Software recording... the vocalist doesn’t like that at all. It’s too much to do- It’s a hassle, so she sends whatsapp singing the melody, that’s so much more simple and easy to do remotely”**
>
> **- MERT, BAND LEADER**
> DUO-LED COLLABORATION, MOSTLY OFFLINE

Samples of a participant’s music making tools.

Appendix 9. Revision

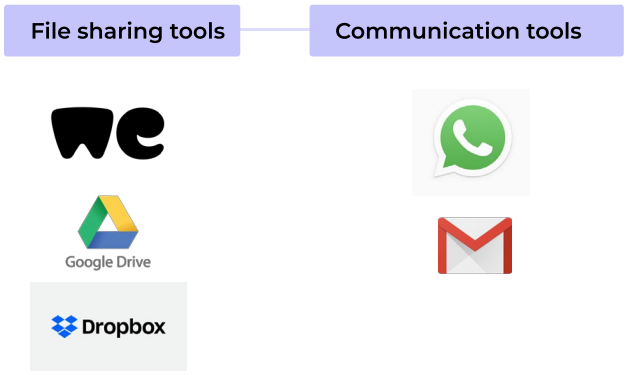
As ideas emerge and the song develops, musicians share their work with their music contributors to receive feedback (and to trigger further ideation in others). These are some forms this process can take:

_Sharing an mp3 of a loose music idea

_Sharing an mp3 of an initial song concept

_Sharing a DAW file after adding a stem to the rest of the music

Depending on the stage of the process, they will share the ideas through different file sharing platforms. Figure x shows an overview of the most commonly used tools for this purpose.



Communication platforms

Usually, voice memos containing early music ideas are shared through Whatsapp to trigger inspiration or discussion. This platform is chosen because of the high accessibility and practicality of sharing audio files from the voice recording apps to Whatsapp. This communication tool is also considered adaptable since it allows for audio files and text messages in the same communication stream.

Email is used for sharing song concepts that are ready for idea buildup from contributing members, or for music contributions from other members, shared through DAW files. According to participants, email makes it easy to track versions of these files and to have a thread of feedback and discussions in one place.

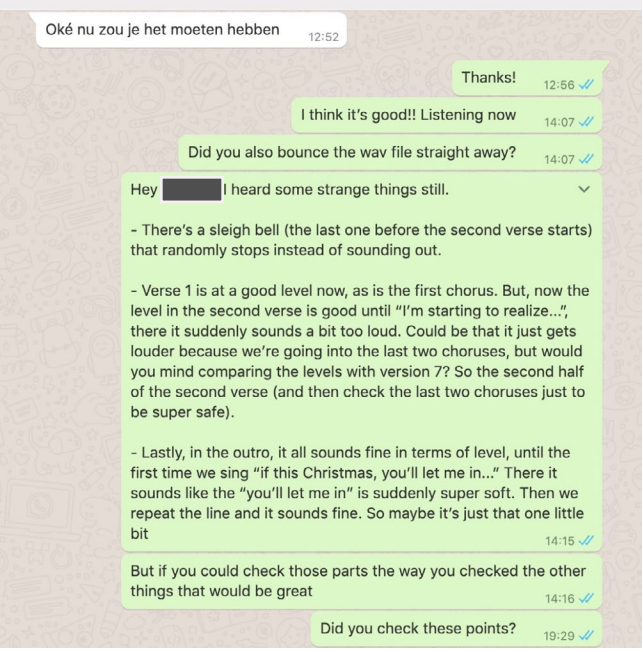
File sharing services

WeTransfer or Dropbox If the files are too big for the email, they will turn to other file sharing platforms such as WeTransfer or Dropbox. These are not chosen in the first place because they don't allow for communication about the files. It was also mentioned by 2 participants that files shared in this way can seem of low priority and have low impact in motivating other members to pick up the work.

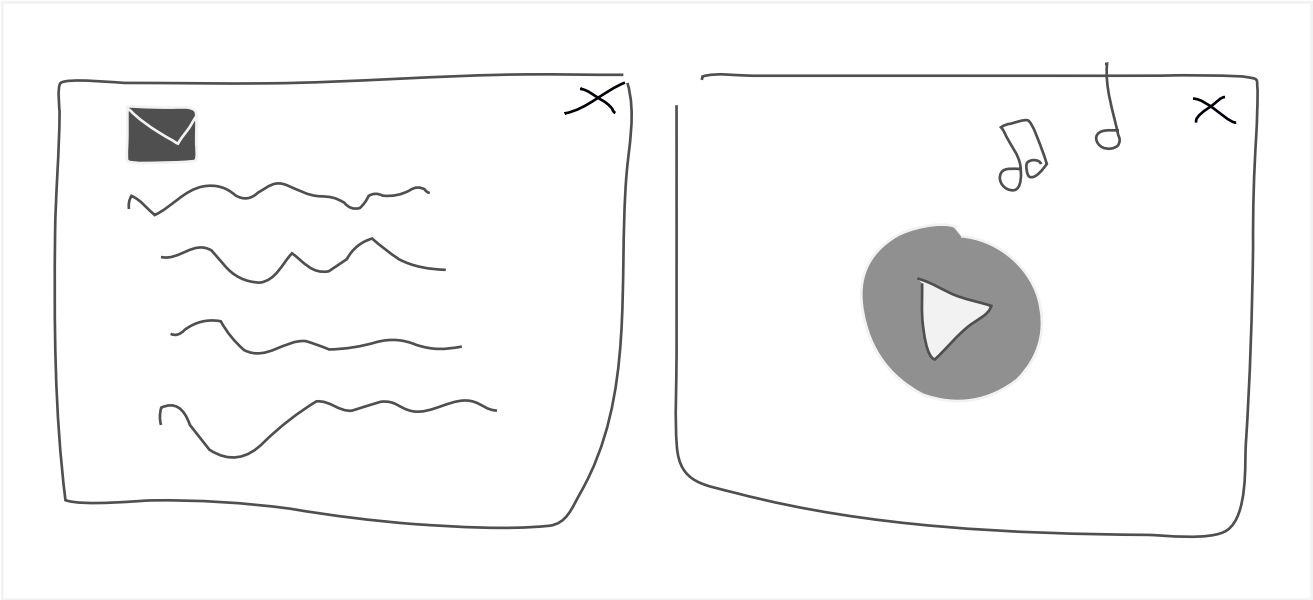
Online feedback

A common opinion among participants was that it can be tedious to provide online feedback. Currently used platforms don't allow for precision or practicality of communication (Flores et al., 2007). For this reason, participants whose bands were in the same city described their feedback process to have an additional occurrence 'in the rehearsal room' or through video calls, since "you cannot always express what you mean through writing, sometimes you have to show them what you mean (by playing)."

Figure x shows how one of the participants gives feedback to their bandmates when they create the instrumental arrangements. By having the audio file on a window and the email draft on the other, they will listen to the song and write the feedback along. Figure x shows how another participant sends feedback through Whatsapp to their producer, who creates the instrumental arrangements of their songs.



Overview of most commonly used tools for documentation of music ideas

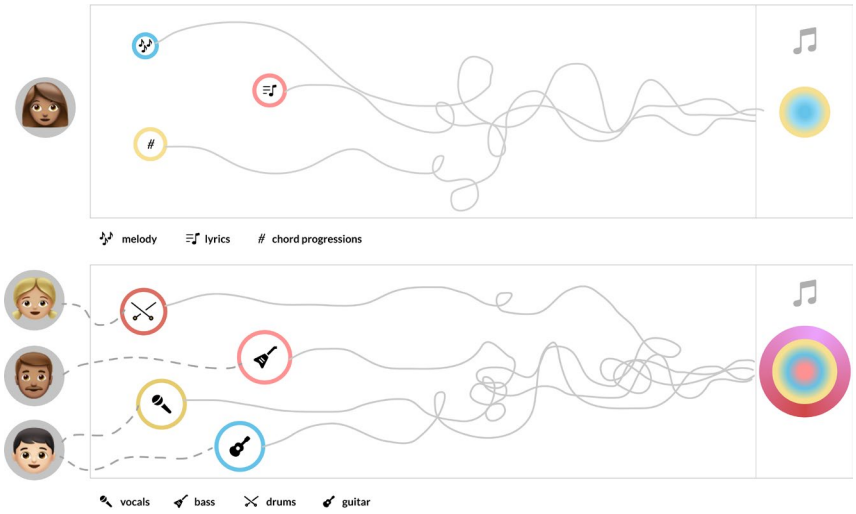


Samples of a participant's music making tools.

Appendix 10. Buildup

How do musicians build up on ideas online?

Musicians usually use Digital Audio Workstations (DAWs) to build up music ideas, since the basic ideation tools that they use have technical limitations for idea buildup (i.e. they are not collaborative, cannot import files, and cannot layer different files). The use of DAWs implies back and forth sharing of .wav or .mp3 files through email, importing them to the software, and recording stems on top of other peoples' tracks. Figure x visualises this process. Cloud based platforms are not easily accessible, which is why musicians reach out to file sharing tools to send the newer versions of their updated songs to their bandmates.



Example of idea buildup on a single-led collaboration.

Collaboration online and offline

Music making can occur in online or offline environments depending on the collaboration culture of the band and their physical context. One of the participant bands, with a co-led culture, carried out the songwriting process fully offline. The bandmates gathered in a house to write a song, or organised trips for several days to write a whole album. Two out of the eight bands carried out their processes fully online. In these cases, the band members were spread across different countries. Other bands had mixed processes (online and offline). For example, members could begin by ideating individually and sharing their melodies or riffs online, and then they would come together to the rehearsal room to give feedback, refine ideas, and practice together. Then, the idea buildup would happen online as well by sharing DAW files back and forth.

External contributors

The music making process of a band or artist can involve external actors. Whereas usually band members are the people involved in the songwriting process, there could also be an external songwriter or a producer highly involved in this process as well.

In the case of a participant, she works closely with a producer who is also a multi-instrumentalist. They would exchange ideas online, and do in person writing sessions.

In this case, their differing expertise will dictate a different kind of social interactions and music language. In the case of this participant, she emphasized the need to send references of music to her producer, so that they would understand what her vision for the song was. The habit of sharing reference tracks to either a producer or other band members was also expressed by 3 other participants in the study, and described in other research studies about collaborative music making as well (Benford et al., 2016).

For the purpose of this project, the design will be directed to a setup of internal collaboration among band members. However, the possibility of collaborating with external contributors will be taken as a secondary consideration.

Thinking alone, together

The term collaboration in songwriting could mean that people are co-writing the song, which is not what is being explored specifically. All the stakeholder interactions that happen around the writing and pre-production are considered as part of this collaboration. The collaboration among musicians is then defined as the creative contribution they bring to a song by building up on each others' ideas.

Collaboration in bands can occur among different contributing members. At times, some bands will collaborate with an external songwriter or producer for this process. One of the bands, which had a solo artist setup with musicians for the arrangement, had a duo-led collaboration. The solo artist would co-write with the producer.

Within every collaboration style, there are different degrees of creative freedom which are established usually by the band leader. In some cases, all band members will have the freedom to create their instrumental arrangement parts with no restrictions other than having the song base as a starting point. On the other extreme of band setups, the band leader or songwriter will write the arrangements as well, for example through MIDI, and send them to the musicians.

Communication

Studies suggest that communication is key to collaboration (Calefato et al., 2018; Dow & Settles, 2013). An exchange occurs among musicians who speak with different "musical" languages and collaborate in a song. In the case of Ronald, his bandmates ask him "What type of beat or melody do you want here?" He hums what he would like to be played with the horns or the drums, and the musicians interpret it. They can also come up with their own ideas that fit the song.

Creative freedom in collaboration

Band members will engage in the music making process at different moments and for different purposes. Their contribution is usually framed by the level of creative freedom that is established by the band leader. For example, in a duo-led culture with a high degree of creative freedom, band members can create the arrangement parts on their own, after having received the song concept from the first phase. On the other end, the songwriting duo would create a draft of the arrangement by using MIDI instruments. The other musicians would receive their parts in a DAW file and learn them or propose changes before the pre-production. Interestingly, all band leaders in this study described themselves as 'open to others' ideas, but having the final say.'

"

I used to work with a friend, but we clashed and I didn't want to deal with this. He had a more classical view of rock. vNow I write all my songs, and sometimes I get other musicians for the production"

- PAUL, SOLO ARTIST

Single-led collaboration

Tool use

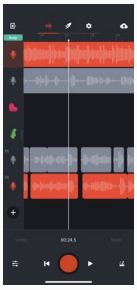
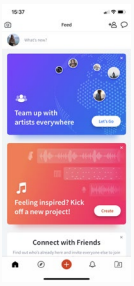
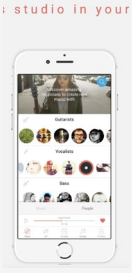
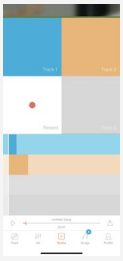
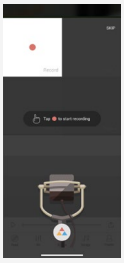
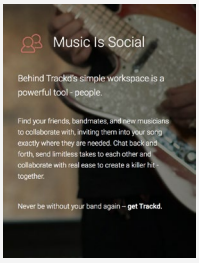
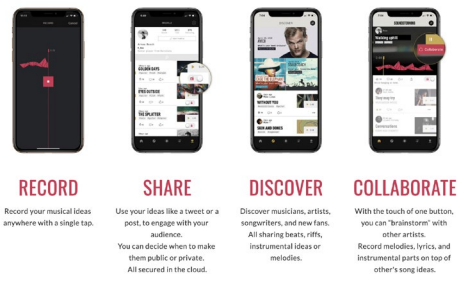
Tool	Description	How it's used	Advantages	Limitations
Gmail Dropbox We Transfer	REVISION / BUILDUP - File sharing	***"For better quality ideas"*** - To share music concepts ready for idea buildup (as .mp4 or DAW files). - To share music ideas with the goal of receiving feedback.	- Keeping track of versions of songs (Gmail) - Sharing large files (Dropbox, WeTransfer) - Accessibility (free and commonly known) - Adaptability (ability to send different types of files)	- It does not enable immediate feedback or content editing within the platform. - Responsibilities can easily get lost.
Gmail Whatsapp Facebook messenger	REVISION / BUILDUP - Communication	***"For sharing quick ideas and feedback"*** - To share loose music ideas in a draft state, usually recorded on voice memos, or as a screenshot of the notebook or digital notes. - To send feedback on music ideas in the form of audio or text. - For project management, such as task delegation and general discussions about the workflow - To keep track of the evolution of a song, it's versions and discussions around it (Gmail only)	- Ability to share voice memos directly from the app - Ability to write, record, and send photos - Free - Tools already used for other purposes - Easy to use - Ability to trigger communication right after sharing, quick sharing	- Feedback is not easy to couple with the content material, which can be received through multiple platforms.
Voice Memos (voice recording app)	DOCUMENTATION - logging ideas	***"For rough, selected ideas"*** - To record selected ideas in audio format during a creative session or sporadically (singing, guitar riffs, humming melodies). These ideas are then named to be able to identify them.	- Simple and easy to use - Free - It's on the phone, so it's handy - Already installed on the phone - Quick to record ideas (practical)	- They are stored in chronological order, making it impossible to catalogue or organise ideas in convenient ways. This can make it hard to locate certain ideas afterwards. The only way to catalogue an idea is through naming. - Combining ideas or idea buildup is not possible because overdubbing is not supported. - Does not support flexible ways of documentation (i.e. writing lyrics), which might be convenient for combining ideas. - It is not collaborative, so idea buildup with other contributors is not feasible. Other files cannot be imported either.

Notes (digital notes app)	DOCUMENTATION - Logging and editing ideas	***"For lyrics and song structures"*** - To write and work on lyrics or song structures (typing and editing) - To write down sporadic loose music ideas that come to min (such as a phrase or a topic)	- It's on the phone, so it's handy - Quick to log ideas - Free - Already installed on the phone - Simple and easy to use - Good to search for old themes or lyrics to work on in the future	- Inconvenient for idea buildup because it cannot be combined with audio. - Cannot be used simultaneously with voice memos. - Don't enable experimental ways of note taking to spark creativity
Notebook	DOCUMENTATION - Logging and editing ideas	***"For lyrics and song structures"*** - To write and work on lyrics and song structures.	- Letting creativity flow - Freestyle writing and drawing - Good to see the evolution of a song, with scratched out lyrics and different combinations	- It is not always handy with the musician. - It does not allow for audio format of ideas.
DAWs (Digital Audio Workstation - production software)	BUILDUP - ideating, logging ideas, and combining ideas	- To build up on other people's work by recording and adding the corresponding music stems. - To experiment with sample libraries for inspiration during ideation. - To edit and polish songs (pre-production, production)	- Ability to do high quality work - Ability to work with midi instruments or samples - Ability to edit the music in many ways	- Non-collaborative software requires sending files back and forth through file sharing services - Integrated communication is not supported, so musicians have to reach out to communication services for this purpose. - Interfaces are intricate, so they have a learning curve and can complicate simple tasks such as combining ideas in the early stages of ideation.
Physical instruments (Piano, guitar, keyboard, drums, bass)	IDEATION / DOCUMENTATION / BUILDUP	- To play music - To work on ideas - To improvise	n/a	n/a

Purpose, advantages and limitations of the range of tools used by musicians in the study.

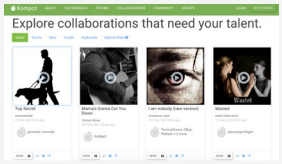
Appendix 11. Market research

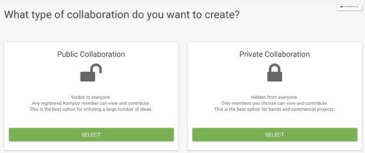
Exploration of other music making platforms

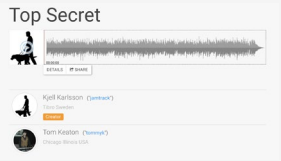
Tool	Description	UI samples
Soundtrap	Collaborative, web and mobile digital audio workstation. This platform allows for real time collaboration of members for music making. It has a sample library, loops, audio effects, and software instruments.	
BandLab	This is a social platform for musicians to connect with each other and share music. Users are able to "fork" a track created from someone else and build up on their music, creating a new version. It has a built in recording studio in which people can use sound samples, audio record, or connect to MIDI. It is collaborative but there is no communication enabled during the collaboration. It is not synchronised. Users document ideas and have to publish a new version for the other person to see it.	 
Trackd	Trackd is a social music making mobile app to enable people to collaborate on the same project. It allows people to search for other musicians in the platform to play together.	   
Soundstorming	This is a social music app meant to start spontaneous collaborations in music with anyone in the platform.	

Kompoz

Collaborative, web-based music making platform. The concept is to create spontaneous collaborations with people around the world. It is targetted to musicians who want to find other people to complete their own songs. It enables people to upload audio, text, or image files to their projects. It does not include any in-app recording functionalities. It instead counts on the musicians using their current tools to record music and upload it to this platform for collaboration purposes.

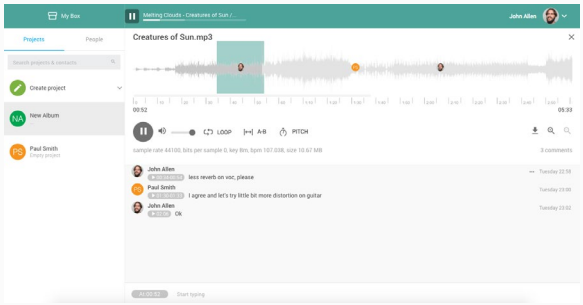






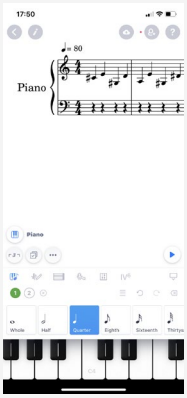
Pibox

Collaborative, web-based music project management tool. People can create shared spaces, upload their work, and get feedback from other members.



Flat

Mobile app to create music scores with sotware instruments. Collaborators can be added to work together on the same score.

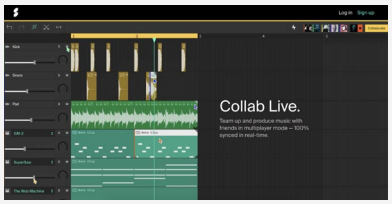


ProCollabs

Collaborative, web based digital audio workstation. This platform allows for real time collaboration of members for pre-production and production purposes. It has a sample library, loops, audio effects, and software instruments.

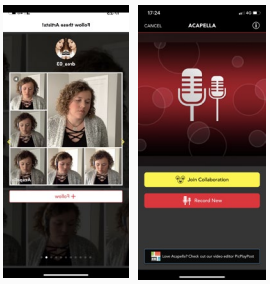
Soundation

Collaborative, web based digital audio workstation. This platform allows for real time collaboration of members for pre-production and production purposes. It has a sample library, loops, audio effects, and software instruments.



A Capella

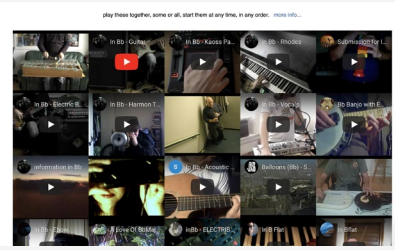
This is a social music platform inspired on the a capella concept. People can make music by filming themselves various times to build up a musical creation. They can also do collaborations with strangers, and people can bring along their own instrument. It also has a live collaboration feature through video.



- Being able to quickly create mockups
- The feeling of being in the same room
- The idea buildup
- The 'non technical' feeling of it, very organic and natural

inbflat.net

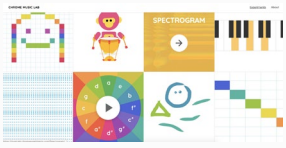
This is a website with a grid of youtube videos of people who created music in b-flat. It is meant for people to experiment and play the videos in whatever order they like, and it will always create harmonious and interesting music.



- Intuitive and easy to use, straightforward
- Inspiring content
- The idea of a buildup experience that can be created in infinite ways, and have infinite results

Chrome Music Lab

This is an experimental site by Google that enables people to learn about music through experimentation. It has different music theory concepts that are taught through gamified and interactive experiences.



- visualising music
- experimental
- creative freedom
- inspirational
- gamification

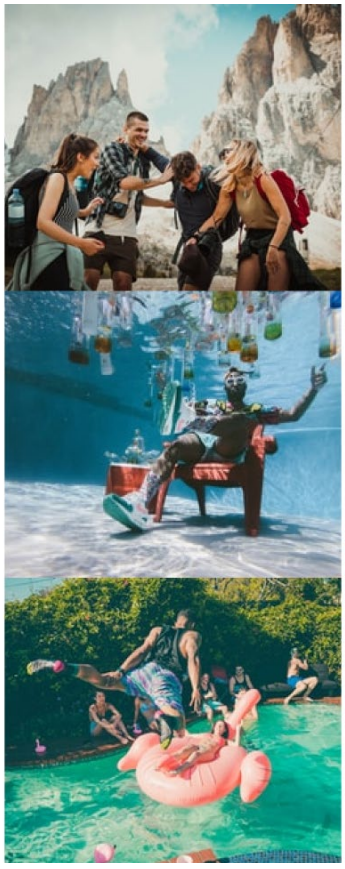
Appendix 12. Development

Interaction and product vision

The interaction vision is a metaphorical representation of the experience intended to be conveyed through the design (ref). The aspired experience should feel like friends planning Alex's birthday party together: enjoyable, motivating, collaborative, partially improvised, and inclusive.

Like friends planning Alex's bday party together!

- ★ enjoyable
- ★ motivating
- ★ collaborative
- ★ partially improvised
- ★ inclusive



purpose

to enable bandmates to collaborate and build up their music ideas to turn them into songs

what the experience should be like

friends planning Alex's bday party together

what the experience should feel like

controlled serendipity

personality

like the friend at the party who puts the pieces together and lets everyone have fun

character traits

reliable, dynamic, motivating

product qualities

practical, collaborative, efficient

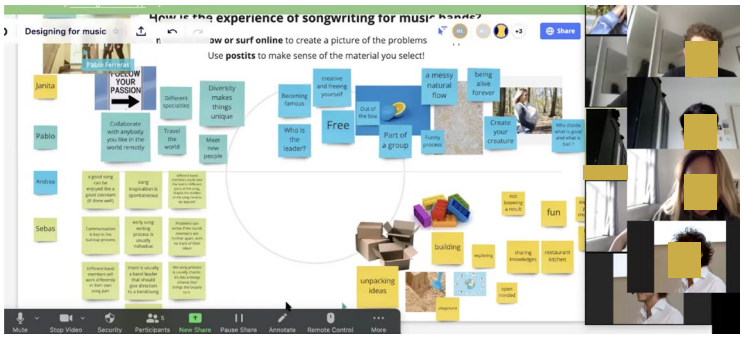
Creative sessions

First session: Co-creating a vision

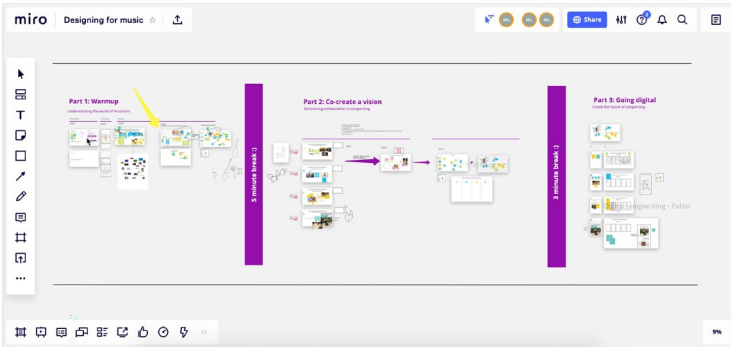
A first session was carried out with a group of three design Master students from Delft University of Technology, and a developer who might be involved in this project later on. The 2-hour session was hosted through Miro and Zoom (Figure x).

The session was structured in 3 parts, and a Miro board was prepared to walk participants through this flow (Figure x). The session followed the suggested three-diamond structure for creative facilitation by Marc Tassoul (ref.). The activities were prepared so that participants were first "lightly" immersed in the research, then mapped out their understanding, visualised the problems/opportunities, and ideated on how might we's of the problem as perceived. Then, participants created a vision/metaphor about great examples of idea buildup, and finally created digital solutions. The intention was to take the initial ideas from part 1 (rooted on problems) and shape them towards a desired vision.

After the session, feedback was collected individually from each participant. This followed the reflection on Appendix x, and shaped further adjustments for the next session.



Miro board overview of the first creative session.



Online session with participants ideating on how to's

SESSION IMPACT

This session resulted in a starting point to create an interaction vision, as well as a starting point for design directions.

Session 1 Miro Board link

https://miro.com/app/board/o9J_kr0tLFo=/

Session 1 Plan

Part 1: Understanding the world of musicians

Immerse and empathise into the current context

En esta parte les enseño las cosas más importantes que tenemos que atacar y ellos hacen ideas con el contexto inicial con la pregunta y ya.

Immerse participants into the research by walking them through my key findings and pain points. Persona, context of remote collaboration. Show them the problem definition (problem as given).

Brainstorm ROUND 1 - to get rid of initial ideas and associations, connections, assumptions they have about the problem

PICTURE THE PROBLEM En esta parte los dejo jugar ya con el raw material y que vayan creando how to's. Basado en los ***pain points y gain points*** *del journey. Necesito aquí que piensen en el problema ya más y que lo frame a su manera con el contenido del research.*

- Create how to's for the current world view
- Cluster the how to's and create themes

IDEATION ROUND 1 - problem-driven ideas for the actual problems

Cluster ideas

Vote with stickers

Part 2: Envisioning collaboration in songwriting

Co-create a desired vision

Aquí quiero que ellos construyan la visión de lo que debería entonces ser el songwriting, inspirados en ***los valores y los needs, y los tensions****. Usar fotos random tambien para que ellos expresen su collage. Quiero que describan en una frase su mundo... como un interaction vision collage, con cualidades que deberían tener las interacciones y keywords de lo q deberia representarse en la solución.*

- Create boards of what collaboration in songwriting means. Use photos, user material, quotes, cards from needs and emotions.
- Create new how to's from the desired vision

IDEATION ROUND 3 - vision-driven ideas towards the desired situation. Derive ideas from the previous ones,

Part 3: Create the future of songwriting

Find potential solutions and design directions

How can we frame these into digital solutions?

IDEATION ROUND 3

Sharing round

Clustering round

Voting round

Activity	Description	Time
Part 1	**Understanding the world of musicians**	**1h**
Introduction	Ice breaker, goal, rules, agenda, let's learn	10 min - 2:10
Immersion	Go through the context and Q&A	6 minutes - 2:20
Warmup: Picture the problem	Create a shared map of the experience of songwriting, focusing on problems and opportunities. You can use the photos below or go to unsplash to search for others. Thank you, this was a warm up exercise and now we will see some of the outcome of the research	3 minutes (Explain) 7 minutes (Do) - 2:30 5 minutes (Share 1 each) - 2:35
Warmup: How might we's	Step 1: Let's take 2 minutes to read the pain points, and then we can create how might we's that can inspire interesting design solutions. Show examples of how might we's	1 min explain 2 min read 8 min how might we's - Cluster 4 min - 2:50
	Ideate on how might we's	Ideate 7 mins Read and vote 3 mins - 3:00
Break	coffee	5 min
Part 2	**Co-create a vision**	
Build a vision	What are great ways to build up ideas with others? Take	Explain 2 min Do 10 min See others 3 min Discuss 5 min - 3:25
	Needs	Scan and place 3 min Select vision and place 2 - 3:30
	What if's	Explain 2 min Do 8 min - 3:40
	Paring up what if's with previous ideas (select the one that is most powerful)	Vote and select 2 min 3:42 - 6 min
Break	2 min3	
Part 3	**Going digital**	
Brainstorm	canvas	8 min
Screen development	screens	10 minutes 5 share Vote with stickers on most interesting screens 3 min

Second session: Ideating on analogous contexts

The second session was different from the previous one. Participants ideated on how to's, following a buildup from the music context into the interaction vision of "planning Alex's birthday party together." They initially created a moodboard to "plan Alex's bday party" and then discussed the qualities of this experience (Figure x). Then, they ideated on how to's related to this context (how to make people dance, how to create cocktails, how to create Alex's birthday song). The purpose was to enable participants to ideate for a relatable, analogous context to trigger their creativity (ref.), since they had no experience related to music. Then, they returned to the context of music: how to build up ideas for music.

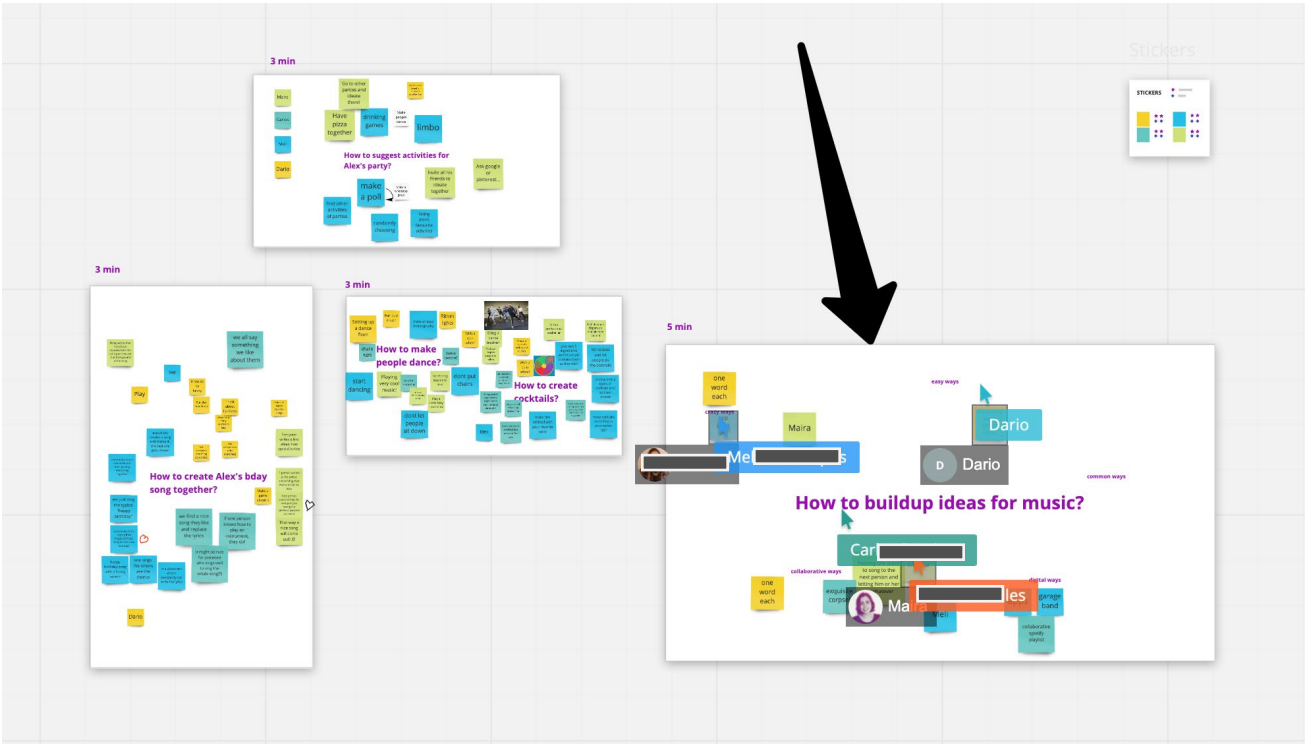
SESSION IMPACT

During the session, participants voted on the most relevant ideas for the project. These resulted in a series of design concepts and principles that were taken into account for further individual brainstorms described.

The key concepts and visions from each session were mapped out in a Figma board to build upon them. This was the starting point of the conceptualization phase.

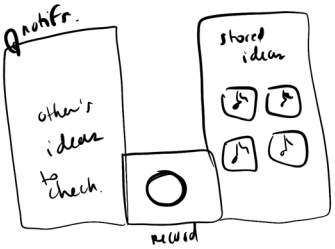
Session 2 Miro Board link

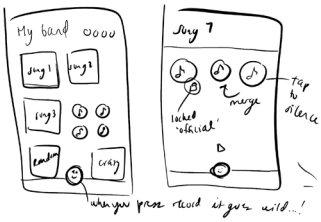
https://miro.com/app/board/o9J_krbF5dM=/

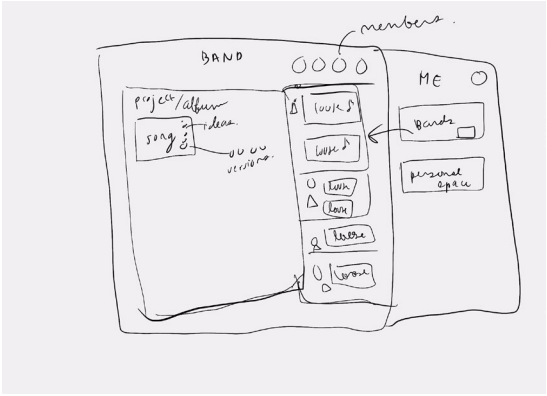


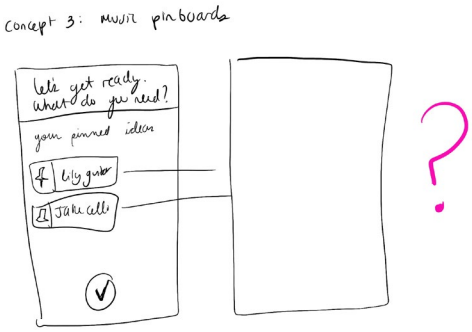
Miro board overview of the first creative session.

Sketching

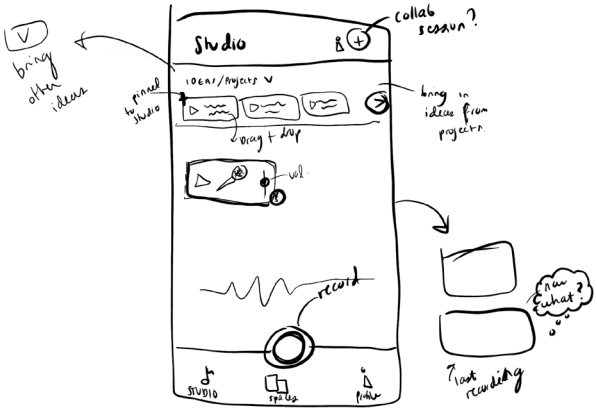

other's ideas to check
stored ideas
record

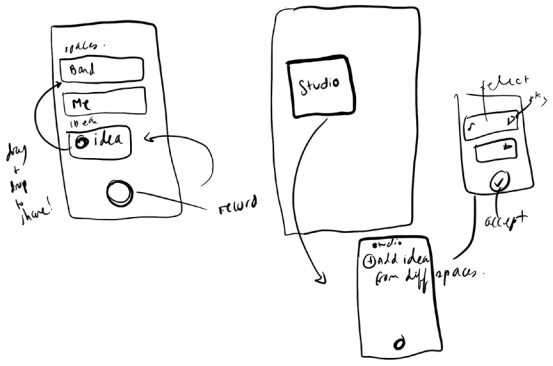

My band
song 1
song 7
merge
tap to silence
when you press record it goes wild...!

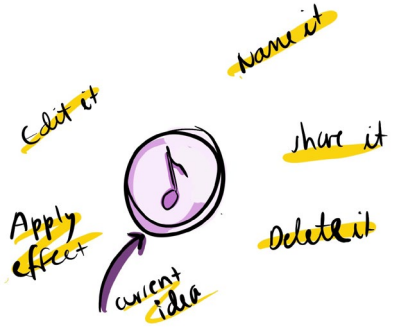

BAND
members
ME
project/album
song
ideas
versions
bands
personal space

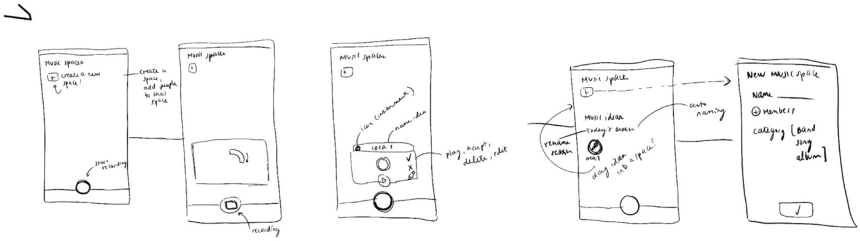

Concept 3: music pinboards
let's get ready. what do you need?
your pinned ideas
Lily guitar
Jake cello

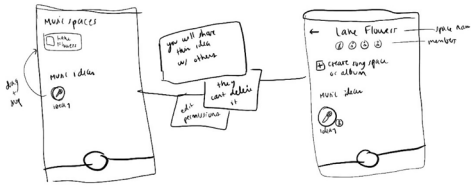

WELCOME
create band
create space
New Band
Name Balloons
invite members
Add members
email
email
email
record.
Balloons
Name My song album
song
album
other
Welcome! Create space
invitation
you can rename later
Album?
song!


bring other ideas
Studio
collab session?
IDEAS/projects
pinned to studio
drag + drop
bring in ideas from projects
vol.
record
Enjoy? Export?
STUDIO
spaces
profile
lost recording


spaces
Band
Me
idea
drag & drop to share!
RECORD
Studio
select
accept
add ideas from diff spaces

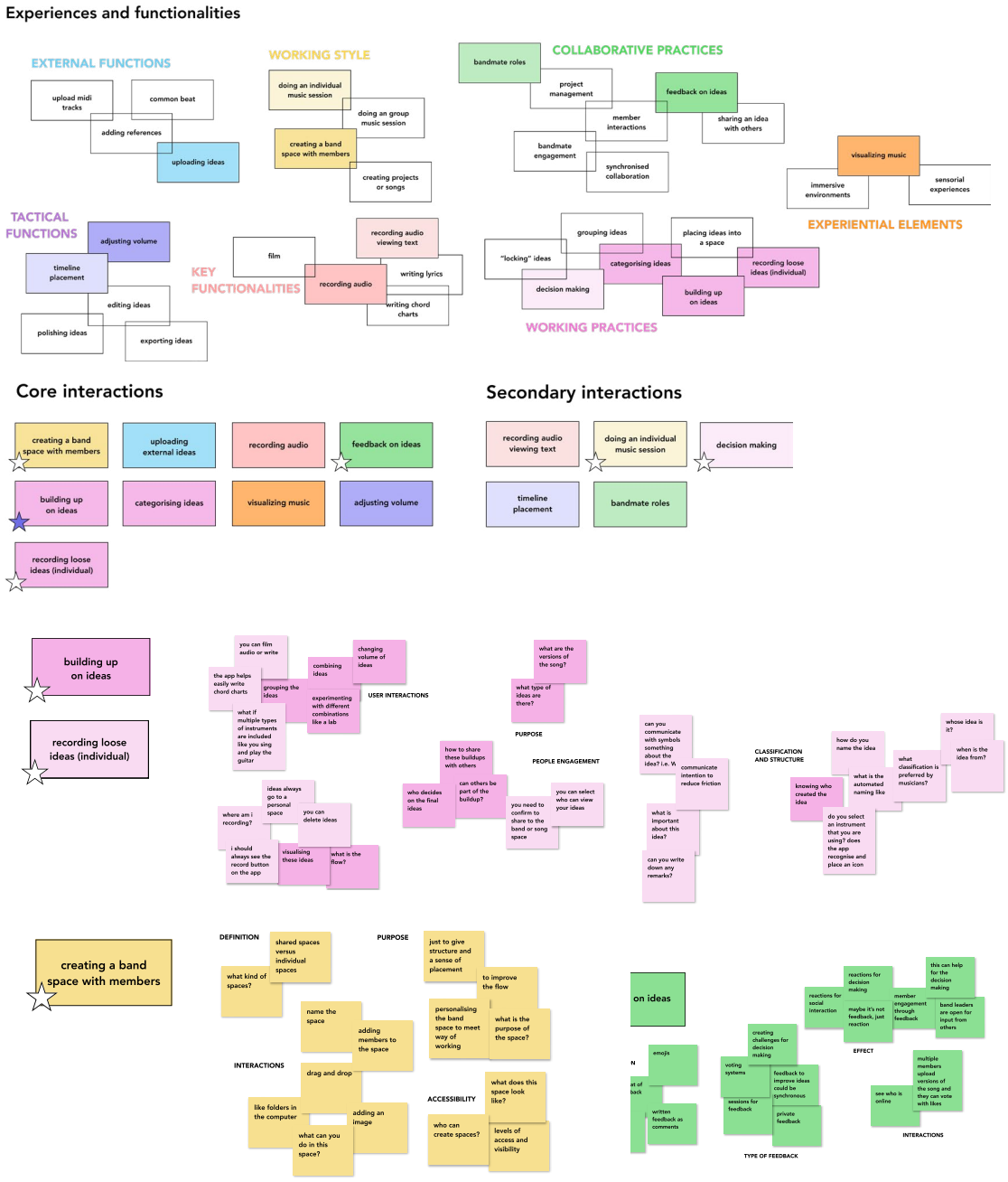

name it
edit it
share it
Apply effect
Delete it
current idea


Music spaces
create a new space
add people to share space
start recording
recording
play record, delete, edit
rename
create new space
rename room
New Music space
Name
members
category [Band song album]


Music spaces
Lake Flowers
create song space or album
Music ideas
drag drop
you will share your idea w/ others
you can't delete it
edit permissions
space name
members

Core experiences

The content from the creative sessions was mapped out into a digital whiteboard and clustered - focusing on the ideation activities and not the ones meant for the 'warmup' of participants. A series of visions, concepts, loose ideas, and product functionalities emerged from these sessions. This was taken further through individual cycles of brainstorming to build up on these, clustering, and voting based on the design goal, pain points, and execution time (Figure x.). This means that the experiences and functionalities which were not voted remain relevant, but not a priority given the time constraints of this project. They could potentially be integrated in further design cycles.



Sample from the conceptualization exercise.

Concept validation (second iteration)

Concept validation form

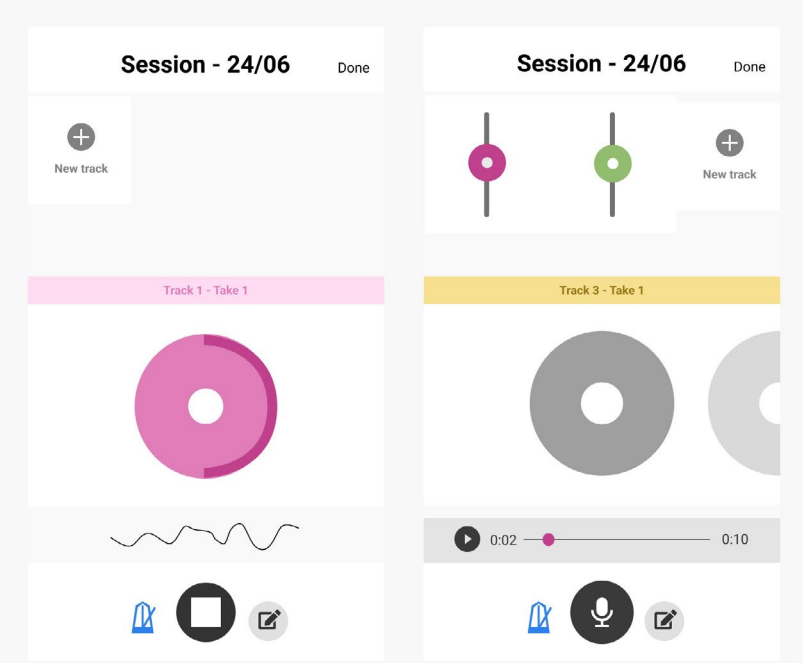
A concept validation form was created to evaluate the 2 concepts of the second design iteration. This form was filled in by eight participants from the target group. Some were recruited through online communities, while others had participated on the initial user research.

1. What's your name?

_____

11/08/2020 Collaborative music making apps

Please have a look at the following concept A and then move on to the questions below



CONCEPT A

This is a collaborative music making app in which you can layer your music ideas on your bandmates' recordings. For example, you can record yourself playing the guitar, and then Jake can record his guitar on top.

2. What are 3 adjectives that describe this concept?

_____

3. Please rate this concept in terms of its 'practicality' for making music with your bandmates

Mark only one oval.

	1	2	3	4	5	
Not practical	◯	◯	◯	◯	◯	Very practical

4. Please rate this concept in terms of its 'efficiency' for making music with your bandmates

Mark only one oval.

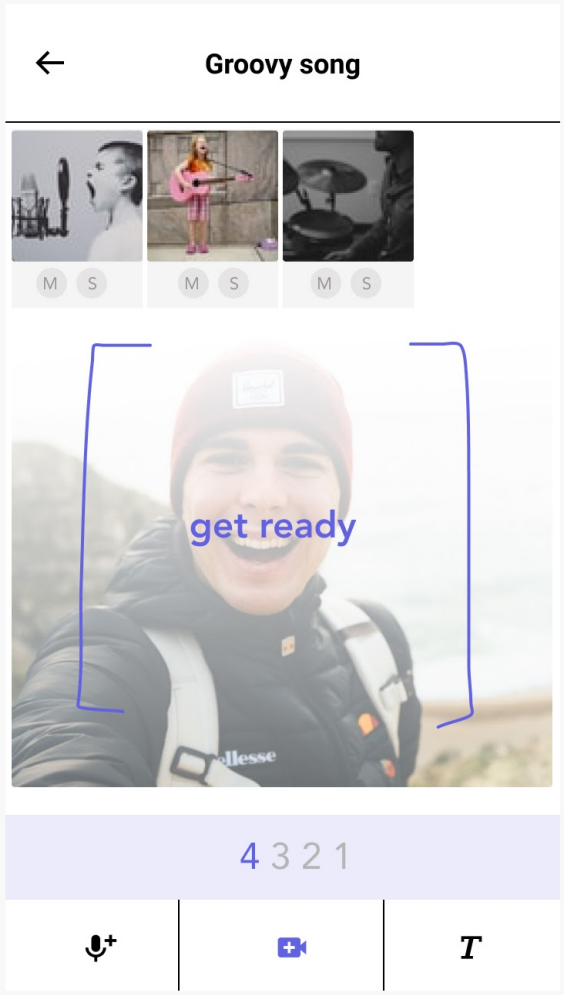
	1	2	3	4	5	
Not efficient	◯	◯	◯	◯	◯	Very efficient

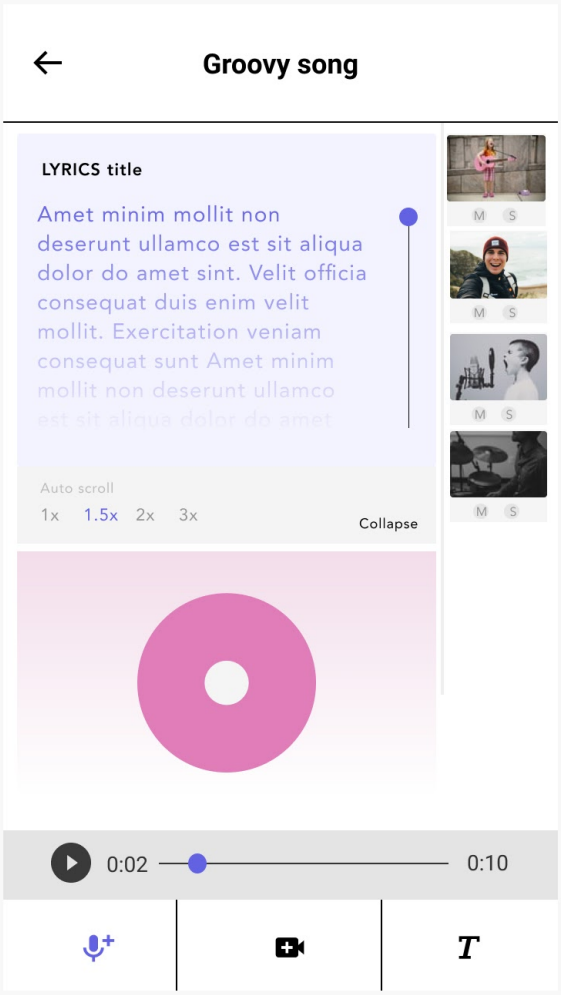
5. How likely are you to use this app with your bandmates if it were developed?

Mark only one oval.

	1	2	3	4	5	
Not likely	◯	◯	◯	◯	◯	Very likely

Please have a look at the following concept B and then move on to the questions below





CONCEPT B

This is a collaborative music making app in which you can upload your music ideas in various formats. In this way, you can see your bandmates videos playing while you record your part on top. You can also upload lyrics and read them while you sing.

6. What are 3 adjectives that describe this concept?

7. Please rate this concept in terms of its 'efficiency' for making music with your bandmates

Mark only one oval.

	1	2	3	4	5	
Not efficient	◯	◯	◯	◯	◯	Very efficient

8. Please rate this concept in terms of its 'practicality' for making music with your bandmates

Mark only one oval.

	1	2	3	4	5	
Not practical	◯	◯	◯	◯	◯	Very practical

9. How likely are you to use this app with your bandmates if it were developed?

Mark only one oval.

	1	2	3	4	5	
Not likely	◯	◯	◯	◯	◯	Very likely

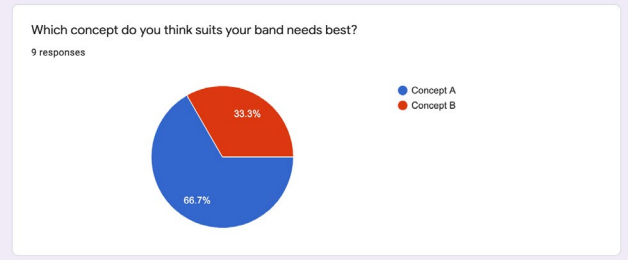
10. Which concept do you think suits your band needs best?

Mark only one oval.

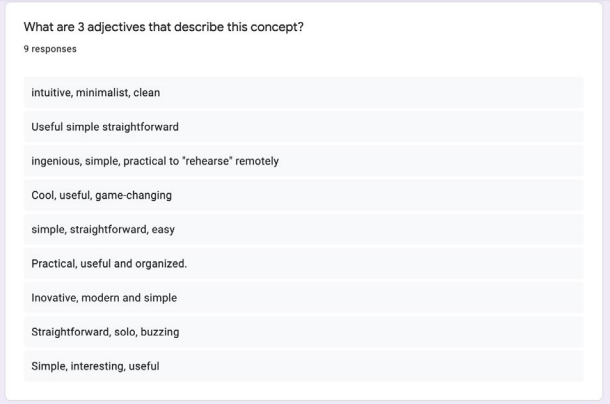
- ◯ Concept A
- ◯ Concept B

11. Please tell us briefly why you made this choice.

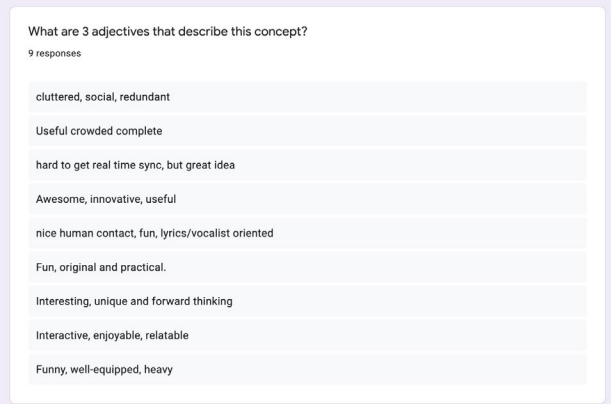
Sample of results

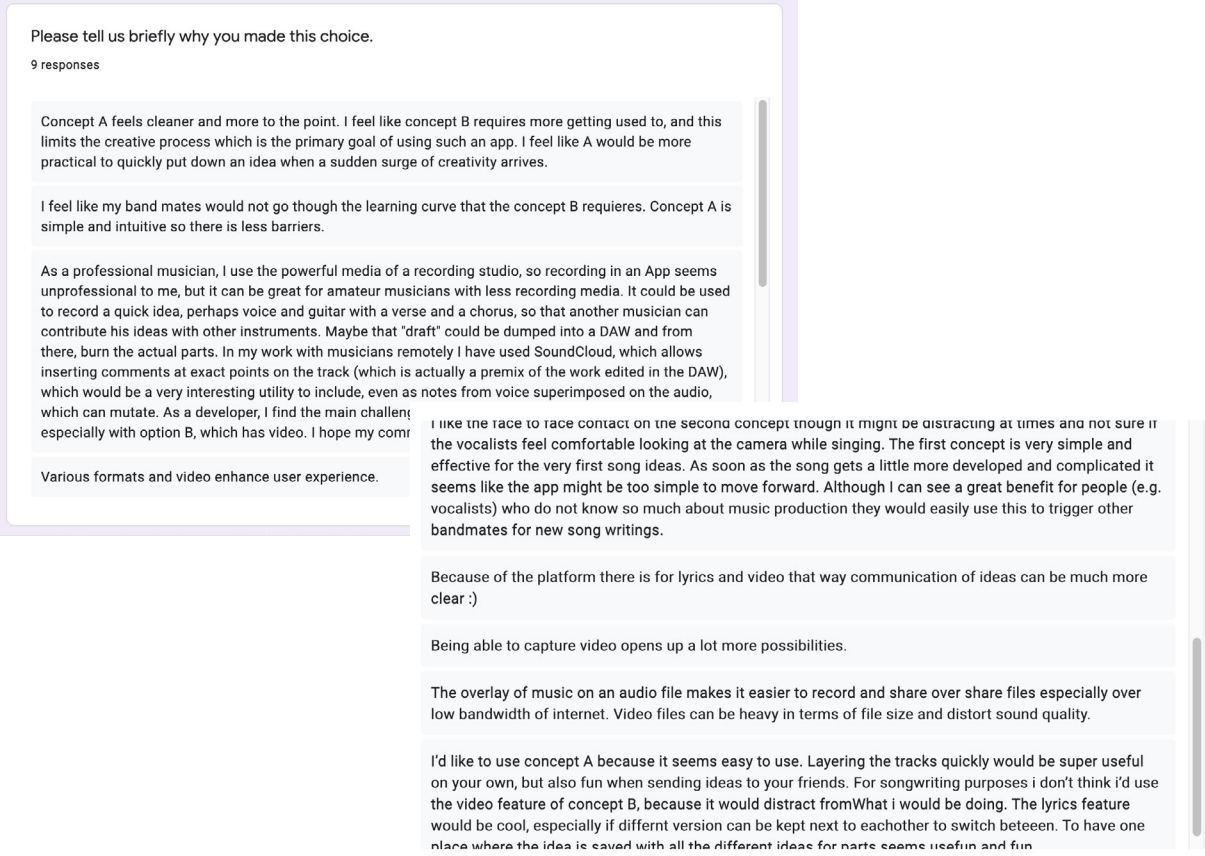


Concept A

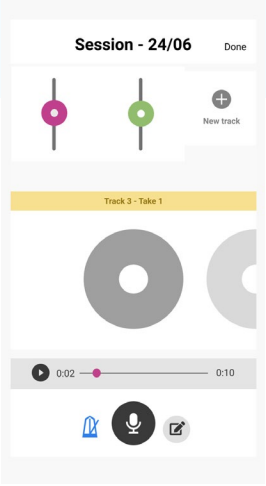


Concept B





Test material: Dancefloor concept



KEYWORDS

USEFUL (4)
SIMPLE (4)
STRAIGHTFORWARD (3)
PRACTICAL
EASY
INTUITIVE
ORGANIZED
MINIMALIST
CLEAN
SOLO
COOL
BUZZING
MODERN
INNOVATIVE
GAME-CHANGING
INTERESTING

"As soon as the song gets a little more developed and complicated it seems like the app might be too simple to move forward"

"The overlay of music on an audio file makes it easier to record and share over share files especially over low bandwidth of internet."

"I'd like to use concept A because it seems easy to use"

"Layering the tracks quickly would be super useful on your own, but also fun when sending ideas to your friends"

"The first concept is very simple and effective for the very first song ideas."

"I felt like A has a more intuitive layout and UI, which allows you to quickly write down an idea which is the ultimate goal of the app"

"Concept A is simple and intuitive so there is less barriers"

"Concept A feels cleaner and more to the point"

"If I'm just trying to create music remotely, it makes sense for me to just over my part on an existing recording. It fun, cus i just have to listen, be in the mood and then ad something on the existing track.

"To have one place where the idea is saved with all the different ideas for parts seems useful and fun"

"I can see a great benefit for people (e.g. vocalists) who do not know so much about music production they would easily use this to trigger other bandmates for new song writings"

"I feel like A would be more practical to quickly put down an idea when a sudden surge of creativity arrives"

KEYWORDS

PRACTICAL
USEFUL (2)
COMPLETE
WELL-EQUIPPED
HEAVY
CLUTTERED
CROWDED
REDUNDANT
VOCALIST-ORIENTED
ORIGINAL
INNOVATIVE
UNIQUE
FORWARD-THINKING
INTERESTING
ENJOYABLE
AWESOME
FUN (3)
RELATABLE
SOCIAL
INTERACTIVE
NICE HUMAN CONTACT

"Video files can be heavy in terms of file size and distort sound quality"

"Video doesn't add to the creative process per se"

"For songwriting purposes I don't think I'd use the video feature of concept B, because it would distract from what I would be doing"

"The lyrics feature would be cool, especially if differnt version can be kept next to each other to switch"

"I feel like my band mates would not go though the learning curve that the concept B requires"

"I see value in adding a video if I was doing a live-stream recording/jam session"

"Being able to capture video opens up a lot more possibilities"

"Various formats and video enhance user experience"

"I feel like concept B requires more getting used to, and this limits the creative process which is the primary goal of using such an app"

The platform there is for lyrics is great, and with video the communica-tion of ideas can be much more clear :)"

"I like the face to face contact on the second concept though it might be distracting at times and not sure if the vocalists feel comfortable looking at the camera while singing.

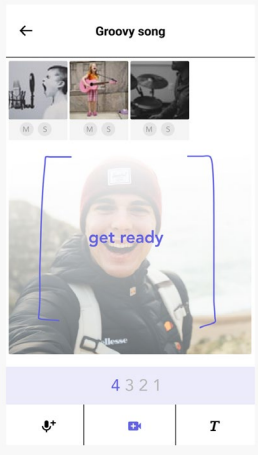
"If I was just jamming with my band or friends, a video is cool is incorporate cus we are having fun. but when creating music, the concentration on listening is priority for me. That shit is intense"

"It would be more useful if you had people join your app has like a social media type thing, to consume musical content"

"The video is an extra step to create a jam vibe when the entire band has fully understood and are in sync. Then we can have fun"

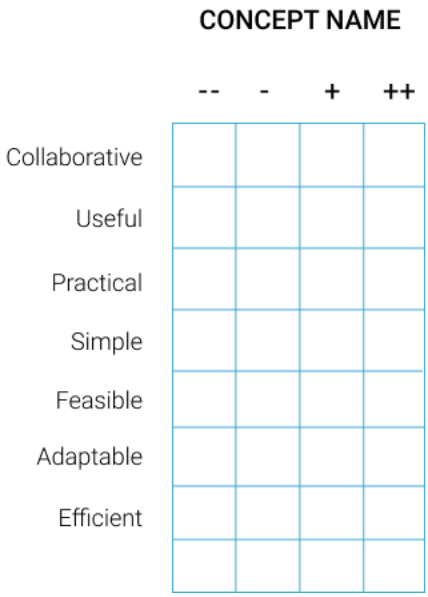
"You could allow people to export the videos, so they could upload it to instagram or other social media"

Test material: Whiteboard concept

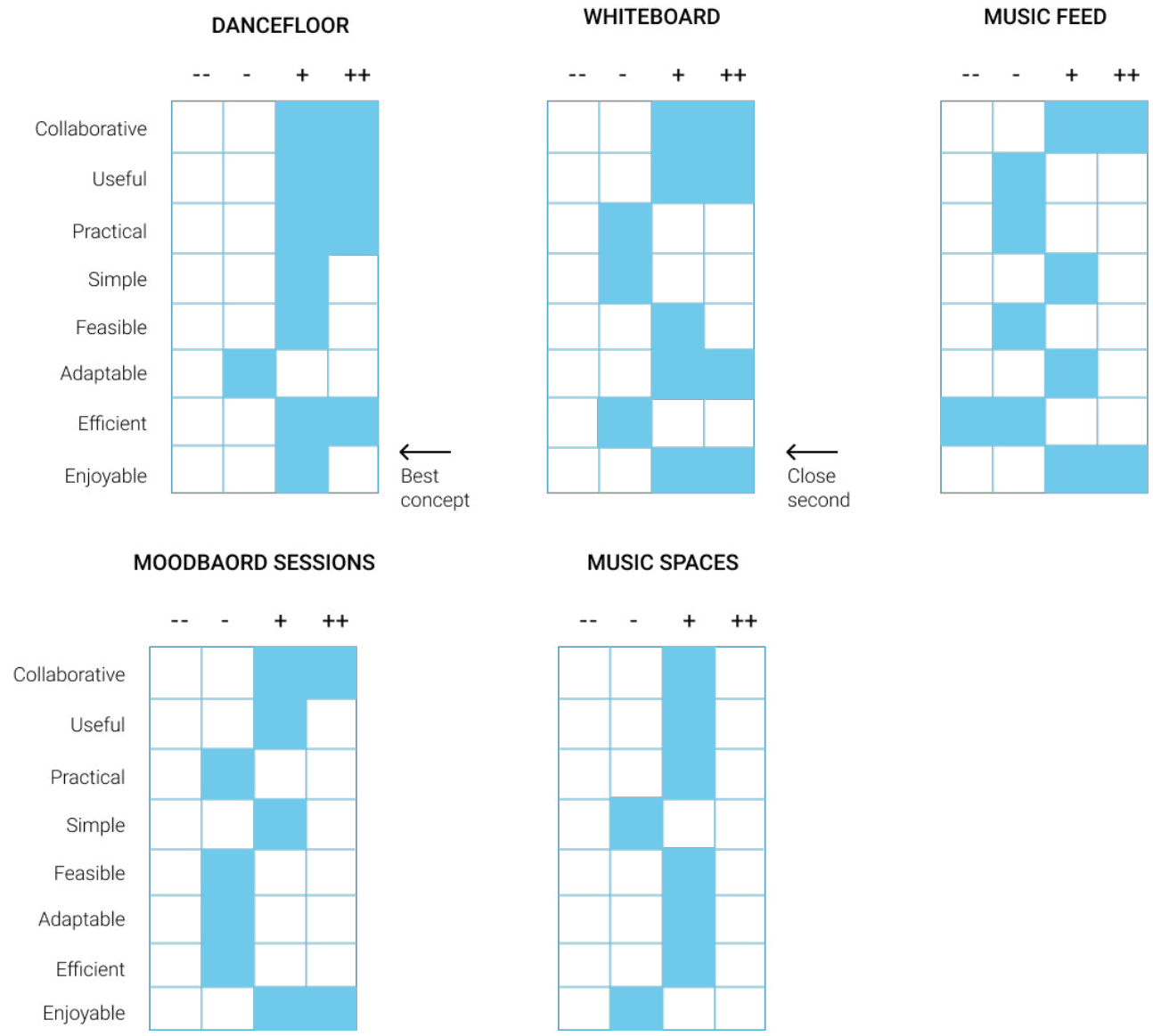


CRITERIA DESCRIPTION

Collaborative	Does it enable collaboration for idea build up?
Useful	Is this concept strongly tied to the design goal?
Practical	Does this concept offer a convenient solution?
Simple	Is this concept easy to understand and use?
Feasible	Are there any technical considerations that may obstruct musicians' goals?
Adaptable	Is it adaptable to changing musicians' needs?
Efficient	Does this concept increase the efficiency of musicians' process?



Further definition of the three core experiences.



Further definition of the three core experiences.

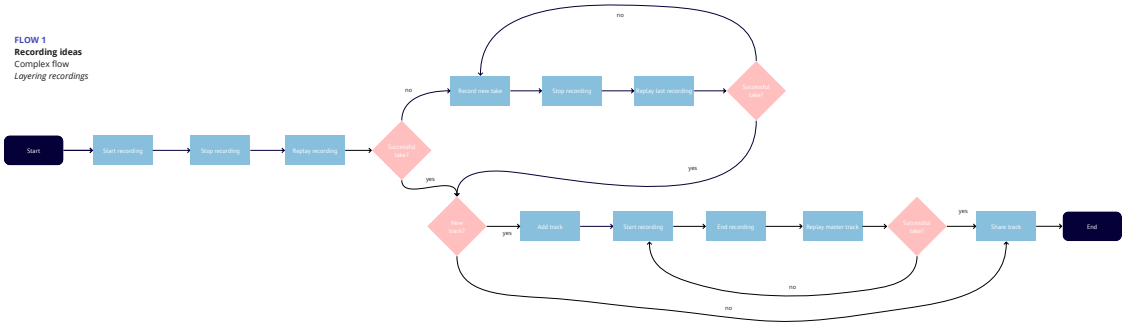
REFLECTION

Selecting criteria for the Harris profile raised questions about the purpose of the desired qualities represented by the interaction vision, and the product qualities associated with the decision-making process of musicians (which resulted from the research). For the Harris profile selection method, the latter were prioritized. However the interaction vision qualities would come in at a later stage to give shape to the previously selected concept. This means that the qualities from the research were more relevant for evaluating the solution at a conceptual level, while the interaction vision qualities would be valuable at an interaction level.

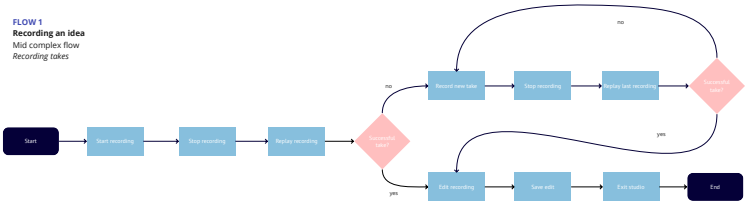
User flows and app structure

FLOW 1
Recording an idea
Simple flow
Record and go

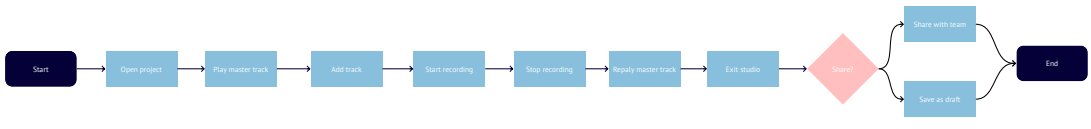
FLOW 1
Recording ideas
Complex flow
Layering recordings

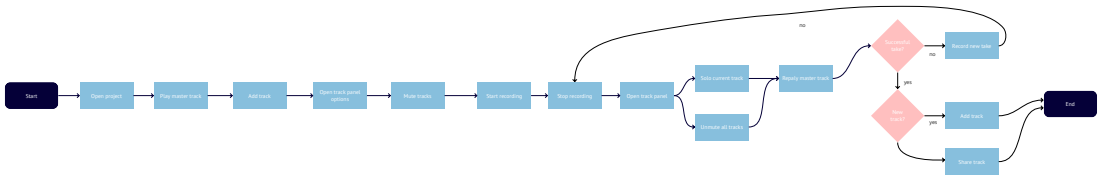


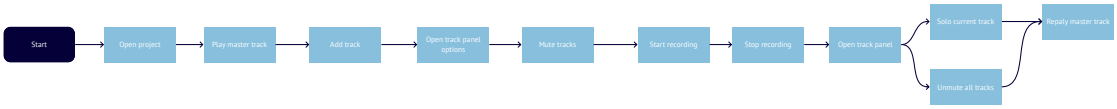
FLOW 1
Recording an idea
Mid complex flow
Recording takes



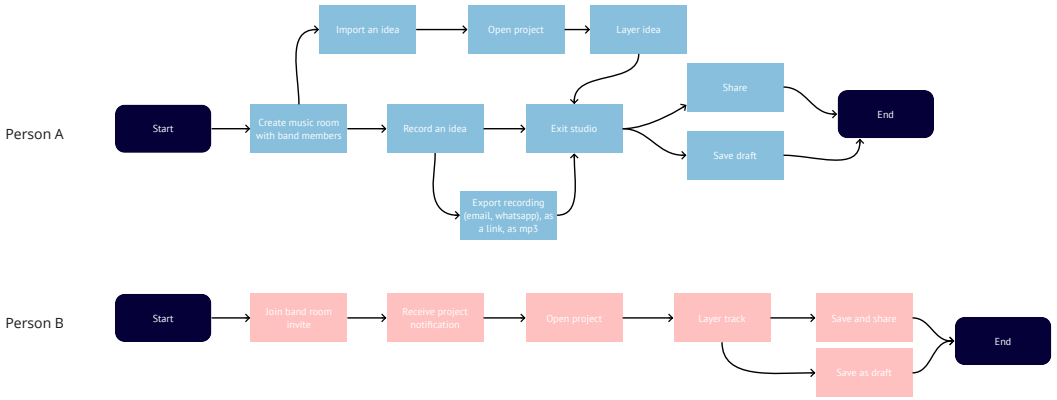
FLOW 2
Collaborative idea buildups
Simple flow



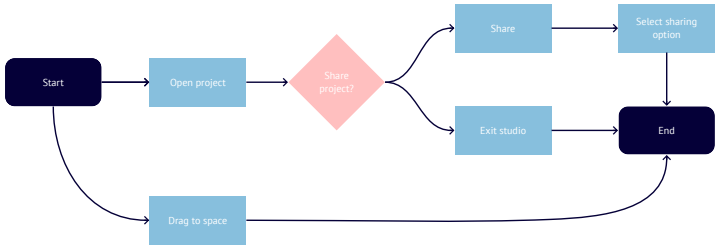




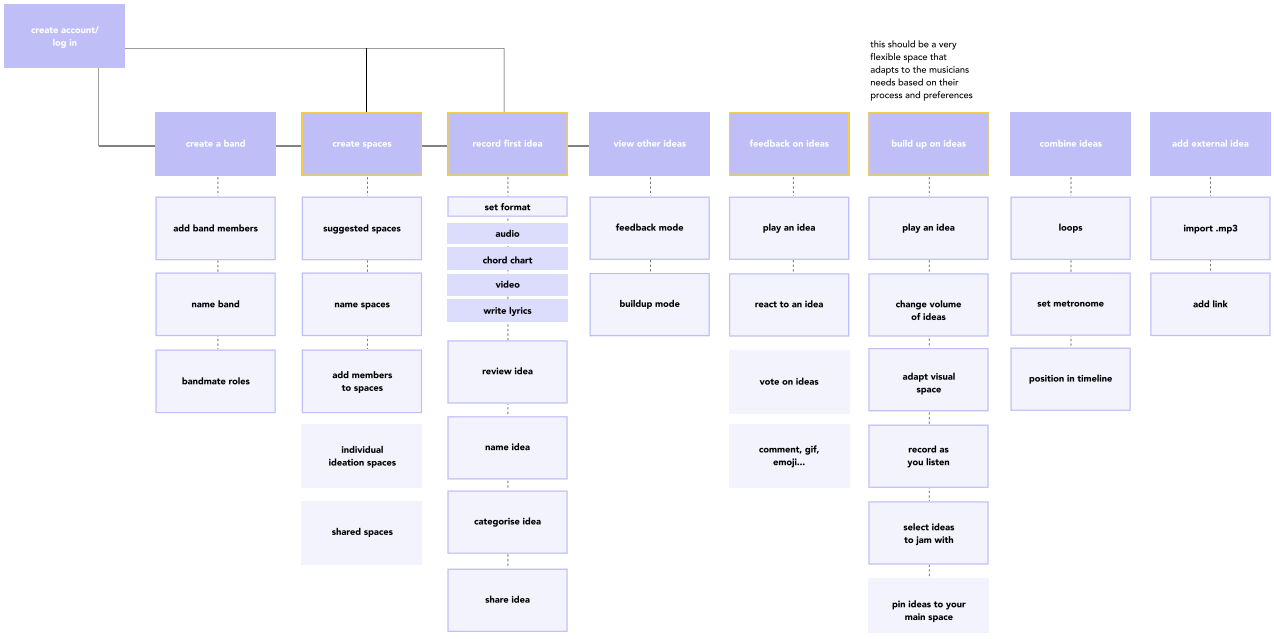
FLOW 3
Creating a band group and adding a recording
Simple flow



FLOW 1
Sharing an idea
Simple flow
Record and share

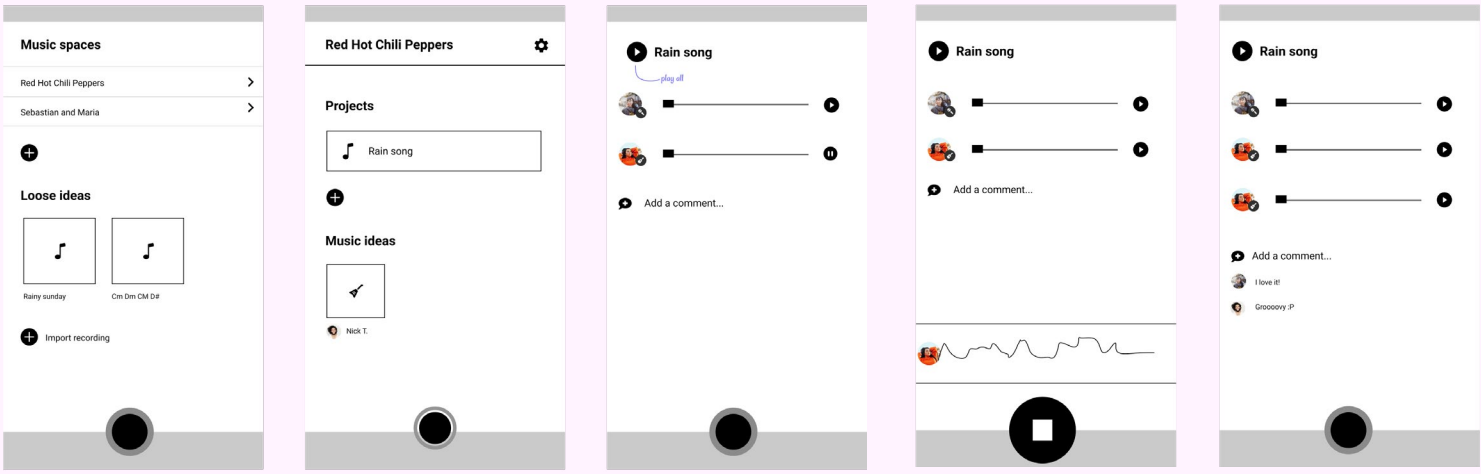


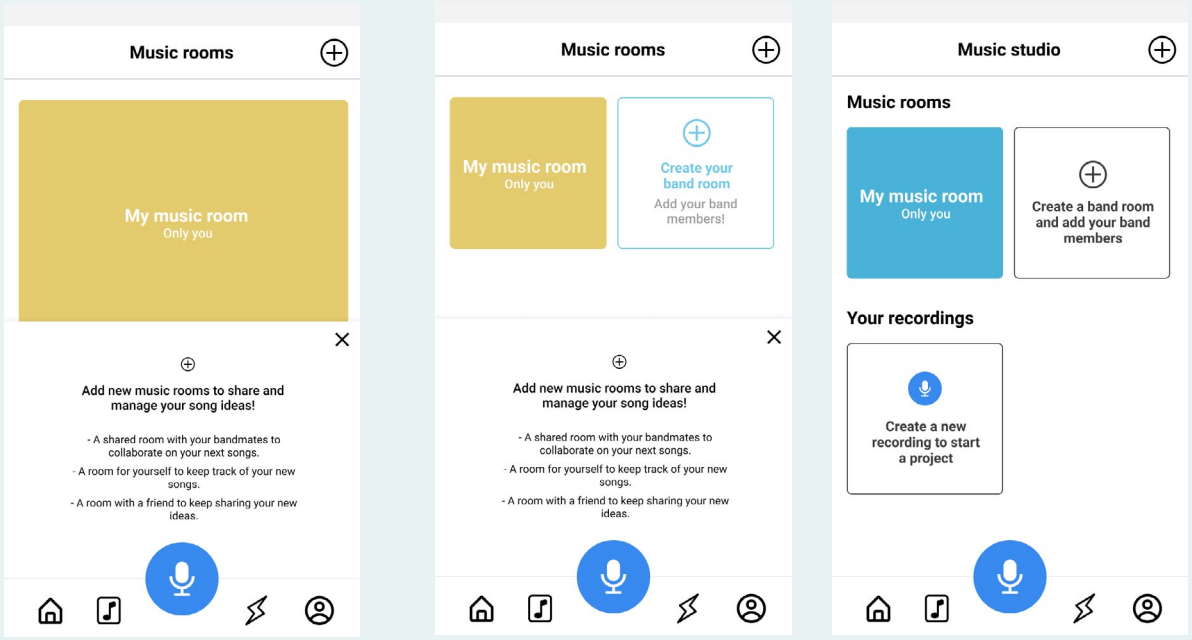
App structure

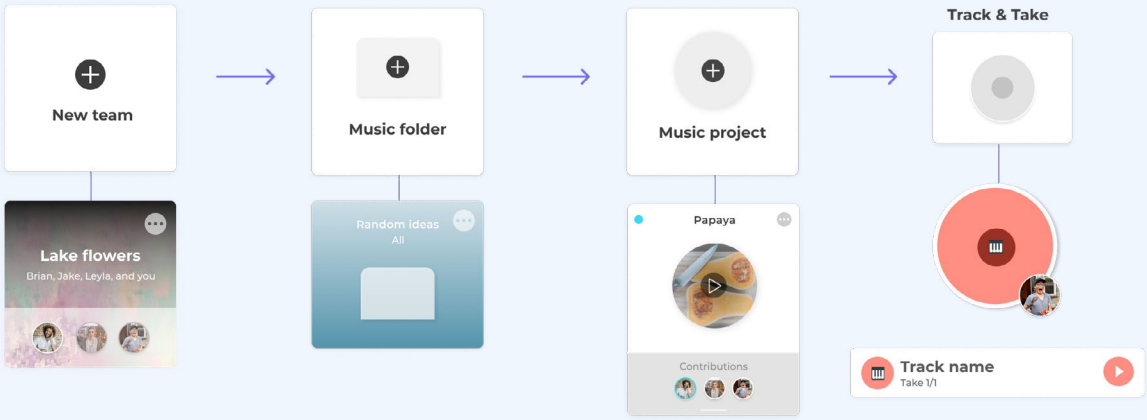


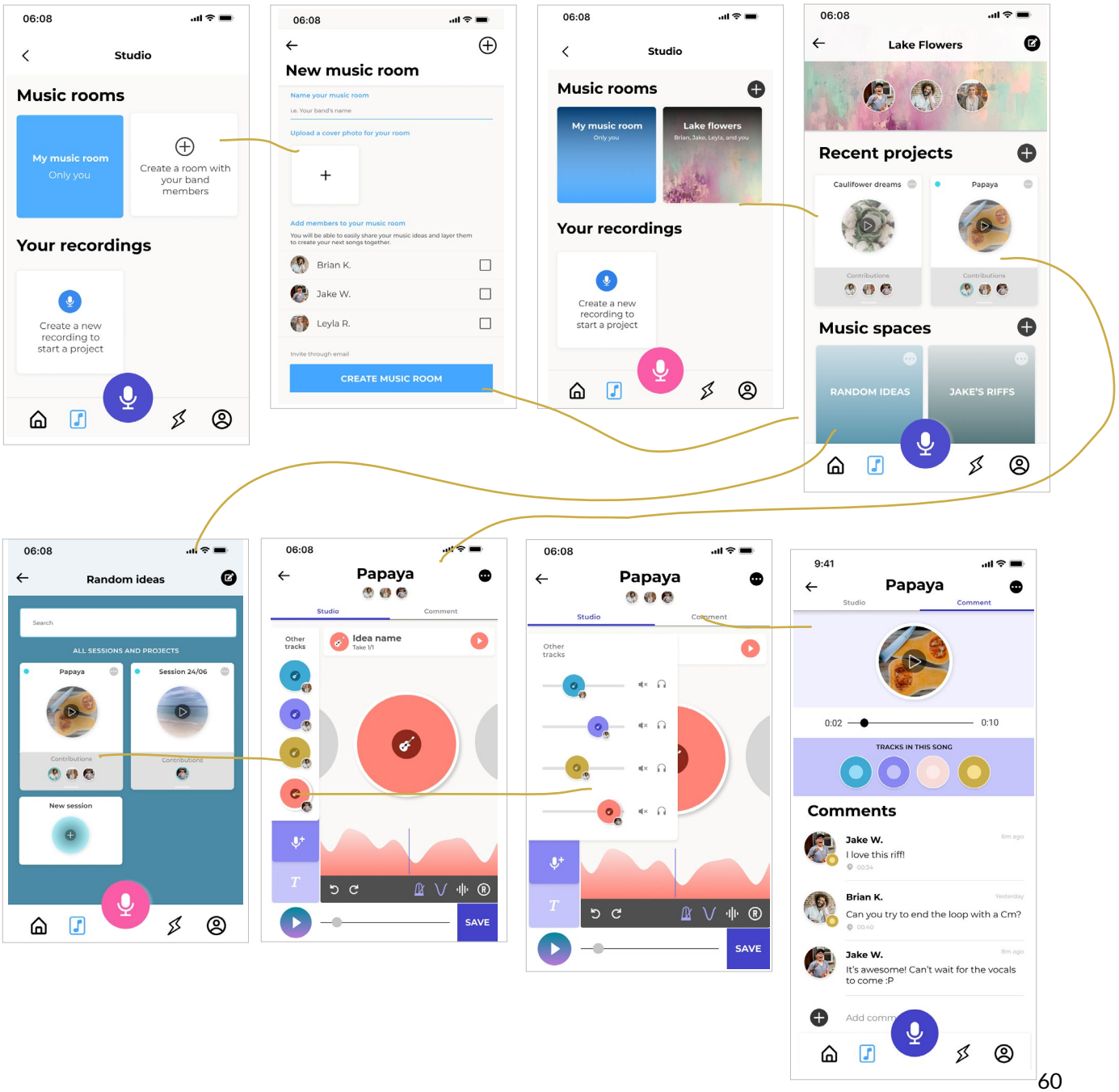
Appendix 13. Final design

Final concept evolution

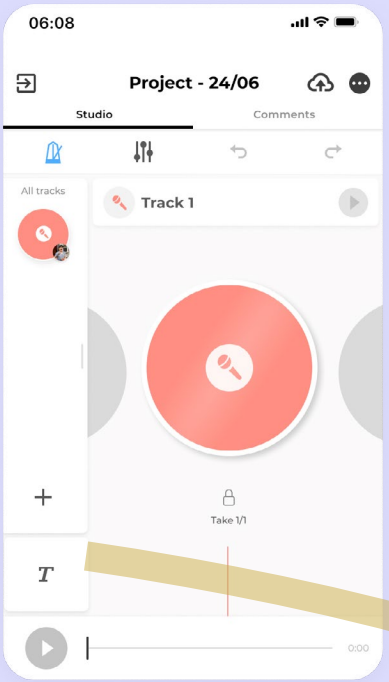


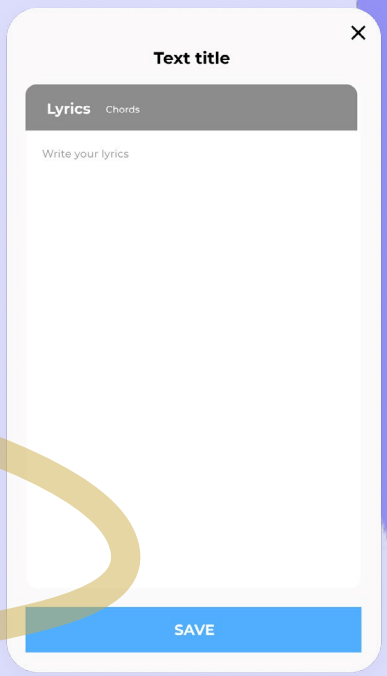


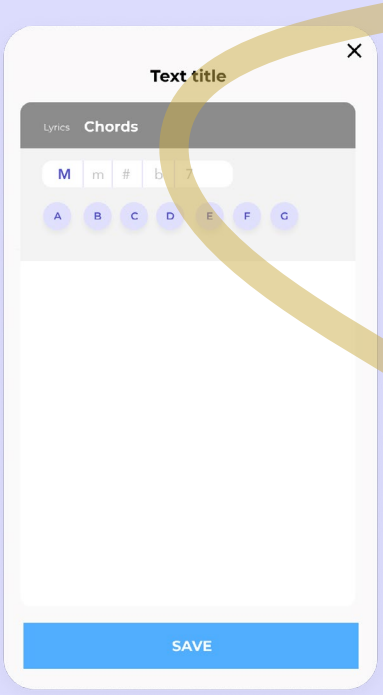

New team
Lake flowers
Brian, Jake, Leyla, and you
Music folder
Random ideas
All
Music project
Papaya
Contributions
Track & Take
Track name
Take 1/1

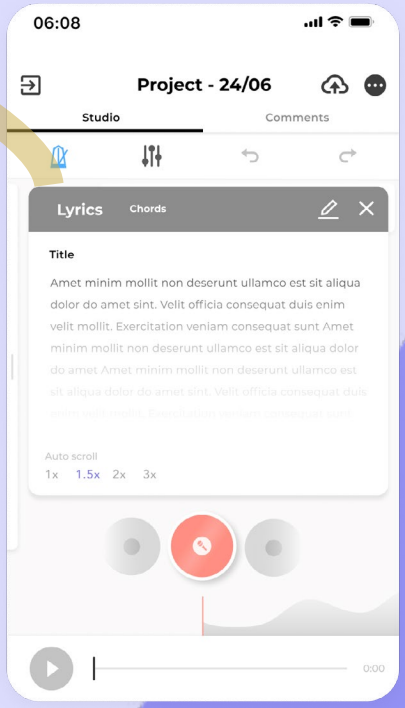

06:08
Studio
Music rooms
My music room
Only you
Create a room with your band members
Your recordings
Create a new recording to start a project
New music room
Name your music room
Upload a cover photo for your room
Add members to your music room
You will be able to easily share your music ideas and layer them to create your next songs together.
Brian K.
Jake W.
Leyla R.
Invite through email
CREATE MUSIC ROOM
Lake flowers
Brian, Jake, Leyla, and you
Lake Flowers
Recent projects
Caulifower dreams
Papaya
Contributions
Music spaces
RANDOM IDEAS
JAKE'S RIFFS
Random ideas
Search
ALL SESSIONS AND PROJECTS
Session 24/06
New session
Papaya
Studio
Comment
Other tracks
Idea name
Take 1/1
SAVE
9:41
0:02
0:10
TRACKS IN THIS SONG
Comments
Jake W.
I love this riff!
Brian K.
Can you try to end the loop with a Cm?
Jake W.
It's awesome! Can't wait for the vocals to come :P

Adaptability: Adding lyrics and chords









Final concept evaluation

Final test plan

4 sessions with musicians in remote rock bands (1 musician per band)
45 minute sessions

The final testing was framed to evaluate the design concept around the core experience of idea buildup. The research goals for this test phase were determined based on the major pain points and needs identified in the research, as well as the upcoming steps of development for this project.

Research goals
1. Understand the global comprehension of the product
2. Understand users' perception and needs related to the idea build up experience.
3. Understand the users' perception in terms of practicality and usefulness, as well as other perceived qualities.
3. Understand the desirability of Syntonize given the users' currently used tools and their music making practices.

Impact
1. Uncover any major areas of improvement related to the core experiences (build up, bandmate engagement, and music spaces)
2. Understand how the product would address user needs for creative flow along the music making journey (flexibility, structure, autonomy), and uncover key usability issues.
3. Understand how this product could support bands' remote music making practices
4. Guide the product roadmap and business plan for future development

Method and prototype platform
● The primary method will be 1:1 usability sessions conducted with 5 participants, using an interactive prototype and with think aloud protocol.
● Figma and ProtoPie prototypes.

For this final testing, an interactive prototype was developed for the core experience of idea buildup. ProtoPie was chosen as the platform to build the prototype, since it would allow for audio interactions and a more advanced development of the prototype compared to Figma.

Test script

Section A: Opening Talk and Warm-up [5 mins]

// This section introduces the participant to the study and setup.

Intro

Hi! I'm Marianne. Thank you for taking this time for meeting me and helping me out on my project. It is very valuable to hear from you to improve the experience of the product I'm designing. I have invited you to this 45 minute session to understand what you think about a music making app that I am designing for my master thesis in Design for interaction. I would like to learn about you, your band and your needs when it comes to making music. This will be a conversation and we will go through some of the designs, you will also interact with a prototype later on. Please feel free to share your experiences and opinions very openly, there are no right or wrong answers! Everything you share with us is very valuable and will be of great help. I want to understand how this product would play a role in your life, it is about you, really.

Do you have any questions before we start?

Warm-up

// This section kicks off the study by learning about the participant and their musical background.

First, I'd love to learn a little about you.. Can you tell me a bit about yourself?

1. Where are you from? What do you do for a living?
2. Today's session is about music, so can you talk to me a bit about your band? What instruments do you play? What kind of music do you make?
3. Can you tell me how you make music in your band?
4. I will be showing you a music making app. What are your go-to tools when making music?

Okay great, thank you for sharing with me a bit about you! Now we can get started.

Section B: Concept walkthrough [10 mins]

This section will evaluate the overall concept with a focus on comprehension, desirability, and perceived qualities.

I would like to first show you some designs for the app to know what you think about it. I will walk you through my concept and ask you some questions. Feel free to also jump in to share whatever goes through your mind. There are no right or wrong ideas. I'm here to learn from you!

General context immersion

"So as you have shared with me you and your bandmates live in different parts of the world. Imagine you download syntonize and you go through these screens."

1. What would you expect this app to do?
2. How do you do this currently?

You have to write music online and you cannot meet in person. You have ideas on your own and constantly share and build up on them online. For this, I have created an app called Syntonize, in which you can make quick music drafts in a collaborative way.

(Starting with prototype)

Ok now I will show you what you can do with Syntonize.

1. Teams: You can create a music team where you can share ideas with others. What do you think about this? What comes to mind that should be included here?
2. Spaces: You can also create different folders and adjust the visibility so that you can share ideas and create projects with other people.
3. Projects: Finally, you can create projects in which you record your instrument, and others can receive it in the app and contribute to the song.

That's the concept in a nutshell. What are your first impressions?
How is this different from the current tools you use?

Section B: Core experience testing [20 mins]

This section will assess the buildup experience by understanding user perception of the product practicality and usefulness. It will also aim to understand how user needs are met (or not!) in different scenarios of use.

Scenario A

Let's say you and your band are using the Syntonize app. You already have a team with your band members, and this is where you share your music ideas and create quick demos for new songs. You are at home practicing with your guitar.

When would you normally record an idea?

Let's say you play a chord progression you like and you want to record it.

Please have a look at the prototype.

1. Can you please tell me what you see and what goes through your mind?
2. Please use it to record this idea.
3. How is this experience? What impressions do you have?

Let's say you did not play properly, so you want to record again. How would you do that?

4. How do you feel about this?
5. What do you understand from this?
    - Where is your previous idea?
    - Would you like to delete it?
6. Do you often record various times?
7. Is there anything else that you would like to do?

Now your idea is ready.
8. What would you do next in a real life situation after you record it?
    - When do you normally share your ideas?

Let's say you want to share your idea with your bandmates. How would you do that?

7. What do you expect to happen after you share it?
8. What will they do?
9. What kind of communication would you need to have after sharing it?
8. What do you think could be the limitations of using this product?

Scenario B

Let's now imagine a different scenario. Let's say you still use the app with your bandmates, and one day you receive the following notification on your phone.

1. What do you understand?
2. What would you do next?

Let's say you open the app and see this screen (tracks from bandmates)

3. What do you understand here?
4. Let's say you want to add your part. How would you do that?
5. Can you explain to me a bit more what you actually need to do to record your part? How do you do that normally?
    a. How could Syntonize help you in this activity?
    b. What are the limitations?

Thank you!

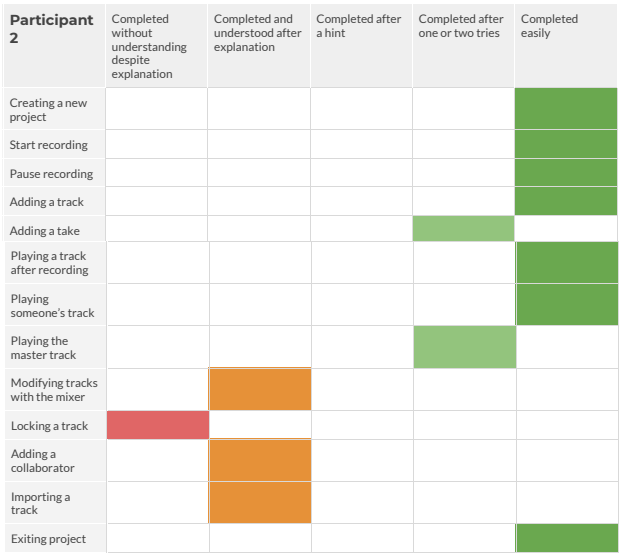
Section C: Concept feedback [10 mins]

// This section reiterates the concept and understands what they like or dislike about it.

Now you have a good understanding about Syntonize.

1. Can you tell me what you liked or disliked about it?
2. Is there anything you would like to add or remove?
3. What would be the benefits of using this app for your band?
4. What would be the reasons, if any, to use this app?
a. In which situations would you benefit the most?
5. What would be the negative aspects?
6. What would be the reasons to not use this product?

Usability evaluation grids per participant for key tasks. Filled in by researcher after observing the session.



Participant 2	Completed without understanding despite explanation	Completed and understood after explanation	Completed after a hint	Completed after one or two tries	Completed easily
Creating a new project					
Start recording					
Pause recording					
Adding a track					
Adding a take					
Playing a track after recording					
Playing someone's track					
Playing the master track					
Modifying tracks with the mixer					
Locking a track					
Adding a collaborator					
Importing a track					
Exiting project					

Participant 1	Completed without understanding despite explanation	Completed and understood after explanation	Completed after a hint	Completed after one or two tries	Completed easily
Creating a project					
Start recording					
Pause recording					
Adding a track					
Adding a take					
Playing a track after recording					
Playing someone's track					
Playing the master track					
Modifying tracks with the mixer					
Locking a track					
Adding a collaborator					
Importing a track					
Exiting project					

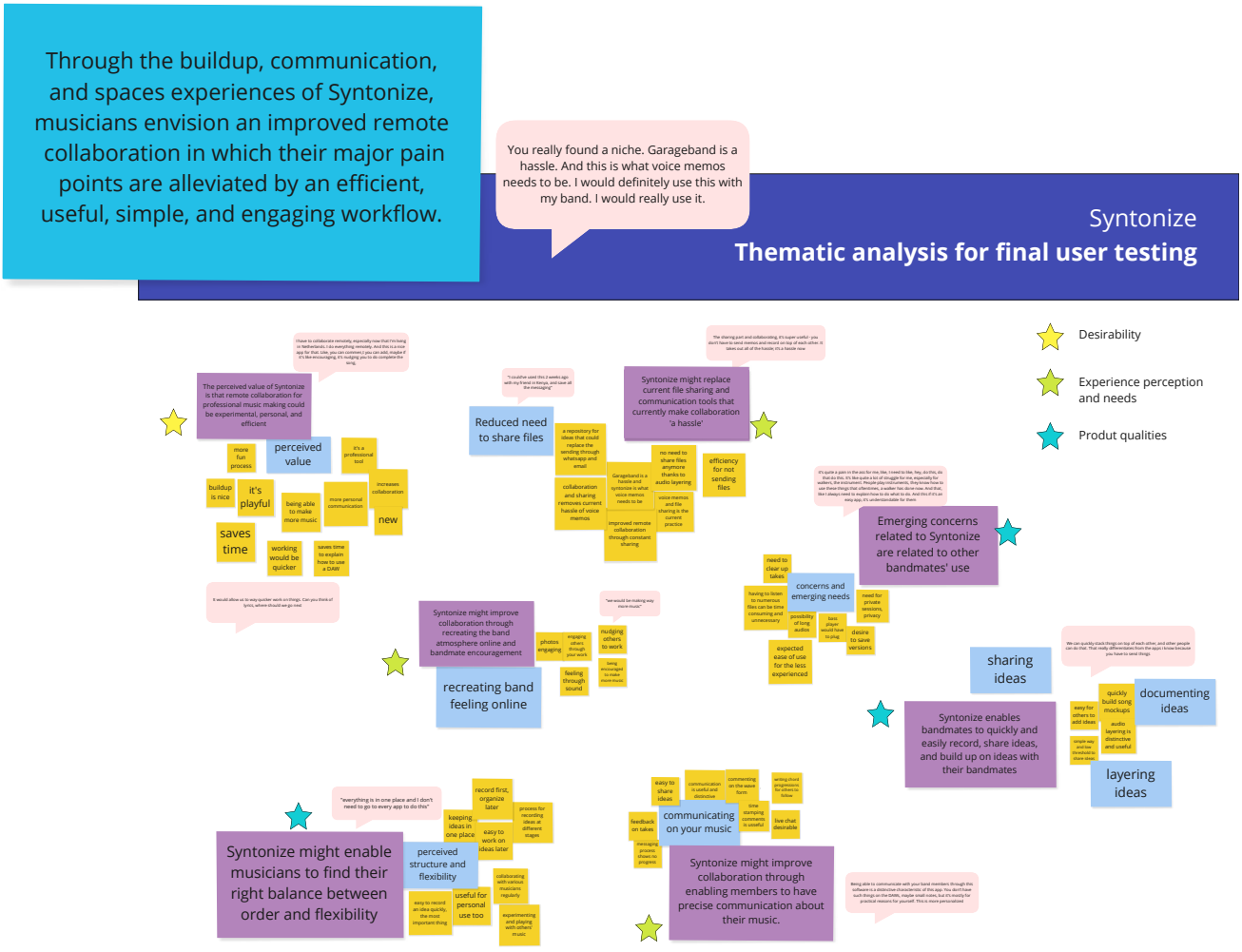
Participant 3	Completed without understanding despite explanation	Completed and understood after explanation	Completed after a hint	Completed after one or two tries	Completed easily
Creating a new project					
Start recording					
Pause recording					
Adding a track					
Adding a take					
Playing a track after recording					
Playing someone's track					
Playing the master track					
Modifying tracks with the mixer					
Locking a track					
Adding a collaborator					
Importing a track					
Exiting project					

Participant 4	Completed without understanding despite explanation	Completed and understood after explanation	Completed after a hint	Completed after one or two tries	Completed easily
Creating a new project					
Start recording					
Pause recording					
Adding a track					
Adding a take					
Playing a track after recording					
Playing someone's track					
Playing the master track					
Modifying tracks with the mixer					
Locking a track					
Adding a collaborator					
Importing a track					
Exiting project					

Average table - results from all participants

AVERAGE of all participants	Completed without understanding despite explanation	Completed and understood after explanation	Completed after a hint	Completed after one or two tries	Completed easily
Creating a new project					
Start recording					
Pause recording					
Adding a track					
Adding a take					
Playing a track after recording					
Playing someone's track					
Playing the master track					
Modifying tracks with the mixer					
Locking a track					
Adding a collaborator					
Importing a track					
Exiting project					

Thematic analysis performed on Miro board after clustering exercise with statement cards from each participant.



Clustering through affinity mapping after creating statement cards

How does Syntonize enable an optimal bandmate contribution and remote collaboration?

These insights are based on participants' perception of the envisioned experience, as they were not tested in context with a working product.

Syntonize offers a simple, quick and efficient way to make music remotely by enabling musicians to easily record, share ideas, and build up on them through the right balance between order and flexibility.

Syntonize might enable musicians to find their right balance between order and flexibility

Syntonize enables bandmates to quickly and easily record, share ideas, and build up on ideas with their bandmates

Syntonize creates a distinctive communication experience for music making, allowing for precise feedback and project management. This could improve remote collaboration and potentially replace the need for file sharing and communication tools in early stages of ideation.

Syntonize might replace current file sharing and communication tools that currently make collaboration 'a hassle'

Syntonize might improve collaboration through enabling members to have precise communication about their music.

Making music with Syntonize is personal, efficient and experimental. It recreates the band atmosphere, making bandmates feel encouraged to make music.

The perceived value of Syntonize is that remote collaboration for professional music making could be experimental, personal, and efficient

Syntonize might improve collaboration through recreating the band atmosphere online and bandmate encouragement

Appendix 14. Reflections and learnings

Reflection on personas

How can personas be useful to design? How can they inspire solutions? How can they bias or limit them?

It is challenging to design a tool that is meant to be used by a band, which is composed by people with different skills, personalities, and individual goals. It is challenging because not all needs can be equally met at first. Therefore the approach taken was to have the band leader as a starting point, and a co-writer persona who would represent the rest of the band members.

In an article from Spotify, a designer describes their use of personas as “an example of a boundary object - a durable and reliable artefact that’s flexible enough to inspire discussions, share information, and adapt to the needs of the product development process” (Hording et al., 2019). This is applicable to this project, since the music making tool might be used by bands with completely different needs, and members with different goals and working styles. Using personas is not about finding an accurate fit for every kind of person who might use the solution, but to inspire design concepts which can then be tested to learn valuable lessons from musicians.

Reflection on final testing

Prototyping

ProtoPie allowed for audio interactions in the sense of playing audio that was uploaded to the prototype prior to testing. However, it does not enable audio recording. Even though the interaction could have been more realistic with a prototype that records, participants were made aware of the fact that the recordings they would play were not theirs. In this way the expectations were set before the test to avoid confusion.

Testing method

The testing was carried out through Protopie (digital prototyping tool) and Lookback.io (remote user testing platform). The positive side of using this tool was being able to record audio, camera, and the participant's screen during the test. In this way, the researcher was able to look back at the session and the participants' interaction with the prototype. Without this tool, the test setup and research analysis would have been more complicated. On the other hand, some introduction to the tool was necessary, as well as downloading the tools on the participants' phone prior to the session. Some technical check-up was needed to make sure it worked properly. Moreover, due to some technical limitations of Lookback, there were some interruptions during some of the user tests and the tool had to be restarted.

Bandmate inclusion

Another limitation of these tests was that it was done with only one member of every band. For further development, it would be interesting to explore test settings in which more than one band member can be present. This would allow to evaluate the product in a more accurate context, bringing various perspectives to the table, and understand better the impact it could have on the bands' music making practices.

In context testing

The tests performed to develop this concept were not performed in real context situations, even though they did intend to immerse participants in real life scenarios. They uncovered valuable insights for the early stages of development of the product. Nevertheless, it would be ideal to test Syntonize with band members using it for a period of time, and in their own context. This would allow them to use it for their actual music making activities - similar to a diary study. In this way, real time, accurate feedback could be collected about the product. This method would be interesting to explore once an MVP of the product is ready to launch. This would help identify usability issues in different use cases, as well as the potential impact Syntonize could have within musicians' music making practices.

Creative sessions reflection

- In general, the session was well structured and had a good pace. Participants found the activities enjoyable and inspiring. They liked that it was following a 'build up' of their ideas throughout the stages (which was also the topic!), so they found it easy to ideate. They also appreciated having stickers to vote on ideas and guidance for the online discussion. They found the topic interesting and the mood was positive during the session.

- They found it very inspiring to think of metaphors and create a vision for designing. However, the jump from a metaphor to creating ideas on a screen was a creativity killer! Next time, I will leave it at a conceptual level and perhaps ask for key functionalities that a product could have, instead of creating a digital experience with such little time. On the other hand, if I want to create digital interfaces with people, it might be useful to include a UI kit with some templates to speed it up.

- It is important to make time for discussion, so that participants can exchange their thoughts and align or inspire each other. Since I scheduled less time for discussion, I gave it during the session, but then had to skip some important exercises in Part 2. I will readjust the session to 2 diamonds instead of 3.

- 2 hours is a good time to have people's attention in an online setting, with one or two 5-minute breaks in between. Participants were focused and inspired throughout the session.

- The activities take more time than expected in an online environment than in person. This might be due to the time to search for images online and also find their way through an online canvas, but also because they might not sense the energy and rush from other people next to them. In the end, they are all sitting down and staring at a screen.

- Placing examples of how activities should be done is important for online settings. In person, you are able to talk and create examples easily, and show with your hands what you mean. Online, you can't even be sure about where they are looking. The mouse pointer can't make up for your body language.

- It was easy for participants to scan through other people's work while they were sharing it. This is a bonus point for online settings!

- At times, working on a rectangular space can feel limiting. Of course, the Miro canvas is infinite, but you create frames for people to work on, and these frames can only have rectangular shapes. Post-its are also rectangular. Why do we have to think in confined squares? Just some food for thought!

- I tried to play music during ideation moments, but then it does not allow for internal discussion. It can also sound disturbing from the other side depending on the song!

Key learnings on remote creative sessions

Along with the previous reflection, a series of learnings emerged from these sessions and were shared with a group of professors from TU Delft to take into account for future online education.

Mind the space

It is important to think about the space that is created for participants to ideate. Are they limited to a small space to place their thoughts and ideas? How much space does each participant have in the canvas? Do they have a shared space, or does each participant have their own 'thinking space' for a particular activity? What shapes are these spaces and what impact do they have on their creativity?

Create examples

Showing examples of how each activity should be done can offer more clarity and confidence to participants. In a remote setting, where particpants do not have a peer by their side to ask questions, it is important that they understand what is expected for each activity. The remote setting can also add tension to moments of confusion, since participants might not feel comfortable asking a question.

Simplify

Activities should be of minimal complexity to increase confidence and reduce time. Using a tool like Miro can be new to some participants. Even though this tool allows for more possibilities of expression and new activities to be explored, it is important to keep them simple. In this way, participants with different backgrounds, experience, and age, will be able to offer their optimal contribution.

Overestimate time

Performing sessions online often takes more time than in person. This is the case for the time it takes participants to perform activities and discuss. Activities such as looking for content online or drawing can be time consuming for some participants. This can be reduced by simple tasks and pre-made templates or material they can use.

Value the breaks and digital energizers

Sitting in front of a screen can be tiring and less interesting than being in a room with other people. It is harder to sense the energy, attention, and needs of participants in an online setting. It is important to give short breaks throughout the session, to be sure that they are getting enough rest, water, toilet breaks, and stretching. Digital energizers might be interesting to explore, such as music and short clips.

Moderate the discussion

Online conversations should be moderated so that people know when to talk, and for how long. Even though it may feel less natural, this might help the conversation flow better, make participants feel listened to, and reduce time.

Restate freedom

It might be valuable to tell participants that even though a template might be given, they are able to express their ideas in a way that they are most comfortable with.