P10 Project

The "Spatial Mixer": Cross-Device Interactions for Mixing of Music

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Spatial Mixer

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STUDENT REPORT

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The "Spatial Mixer": Cross-Device Interactions for Mixing of Music

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Synopsis:

This report explores the use of cross-device interactions in the context of spatial mixing in surround sound. We use the knowledge of cross-device interaction we acquired from our previous semester project as well as articles related to spatial mixing and cross-device interactions to develop an app that have been based on the source code of another project. The app is designed around the *Stage Metaphor* to visualize the values from D.A.Ws in a way which represent how they wound be placed on a stage. A user study with five participants who tested the app was conducted. The findings and implications is presented in the paper included in this report. These implications can be relevant when designing cross-device interactions to extend the functionality of a system and apps in the context of spatial mixing.

This report is written as a 10th semester master project in software by group IS104F16, which consists of three students from the Department of Computer Science at Aalborg University (AAU). The students are Aleksander S. Nilsson, Kasper Plejdrup and Mette T. Pedersen. This report documents and describes the process of elaborating the field of cross-device interactions in the context of music mixing with focus on spatial mixing in surround sound.

We would like to thank: Our supervisor Jesper Kjeldskov, for his valuable feedback and guidance throughout the project. Steven Gelineck for granting us access to his project Music Mixing Surface. Mads Walther-Hansen for his musical expertise and his help designing the tasks and finding participants for our study of use. Lastly we would like to thank all the people who had the time to participate in our study of use.

Aalborg, June 14, 2016

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1 Resume

In this study we looked at music production and how cross-device interaction could be used when mixing music. Music production is a complex process typically involving many different people, many phases and a lot of equipment. The digitalization of the mixing work station opened up for new possibilities for cross-device interactions. The digital workstation design is typically based on the *Channel Strip Metaphor* inspired by the traditional analog mixing desks. The digital workstation used in this study is the program *Ableton Live* for the iMac.

This study focuses especially on spatial mixing in surround sound using the *Stage Metaphor* as an alternative to the *Channel Strip Metaphor*. The study builds on Gelineck *et al.*'s work about the *Stage Metaphor*. In the study a prototype app has been designed and developed, built on the source code supplied by Steven Gelineck. The app, called *Spatial Mixer* is an *Extension* for *Ableton Live*, as described in the *4C Framework* by Sørensen *et al.*

A study of use has been made of the cross-device interactions between the *Spatial Mixer* and *Ableton Live* with five participants studying music production. The study ran for a week and each participant worked with the system for 2.5 hours followed by a half hour interview. The first task in the study was about using *Ableton Live* alone to get baseline data followed by two tasks using the combined system. All tasks were about mixing music in surround sound and were video recorded, and the screen of the computer and iPad used were recorded as well. The interview was also recorded. The data from the recordings was then transcribed or logged.

The data from the study of use was split into the following themes: Spatial Mixing, Cross-Device, Change in Music Production Process, Touch, Mapping, Novice vs. Expert Users and Usability problems. The themes were then discussed and led to several implications relevant when designing cross-device interactions for an extension, and for designing cross-device interactions for a system in the setting of spatial mixing of music in surround sound. The implications found were:

- When designing a cross-device system, it is really important to understand the contest in which the system should be integrated.
- It is important to evaluate which functionality should be extended while balancing the complexity of an extension.
- Users should be able to quickly distinguish the data across the different platforms in the cross-device setup.

- The communication between the systems have to be very robust.
- The extended functionality has to mapped both ways in the systems so they are fully integrated with each other. The data can then flow both ways, resulting in the same behavior on the two systems.
- Depending on the context, it could be relevant to chose a device which support different kinds of interactions like touch.
- Different metaphors can improve the quality of an extension and help in the process of creating a more understandable user interface for the users.

In summary: In the study an app for spatial mixing in surround sound inspired by the *Stage Metaphor* has been designed and developed. A study of use of the cross-device interaction between the app and *Ableton Live* has been conducted, and the data from the study of use led to several implications when designing extensions and spatial mixing apps.

2 Introduction

Last semester cross-device interaction have be studied in the context of the car being a part of the digital ecosystem. The study looked at how information could be moved from a user's personal computer and out in the car where it would be ready to use in a new context. For the movement of the data the theme *Migration* within the principle of *Continuity* was used. *Migration* describes the flow a user doing an activity on their computer. The user then pauses the activity and moves to another device, e.g. their car, where they then can continue from what their were doing on the computer. To get an overview of the research done within the field of cross-device a literature review was done. To understand the context of the car, different in-car system was review to understand them and what the users already could use them for. Based on collected information three interaction techniques were designed and used in a users study to evaluate them and find their advantages and drawbacks. The conclusion of the study was that it was possible to use *Migration* to continue the users activities in another context. However there were no evidence for a particular difference between the designed interaction techniques.

Based on the knowledge from the previous study, cross-device interaction has been studied in the context of spatial music mixing. In this study the emphasize is on the principle *Extension*, from the 4C Framework, under the theme of *Complementarity*. The study looks at how cross-device interaction, in terms of extension, can be used to extend the functionality of a software application for mixing music, *Ableton Live* in this study. To more specifically describe what the study is about, a research question have been formulated:

> *Can cross-device interaction be used in spatial mixing of surround sound and what are the implications for designing cross-device interaction within context of mixing music?*

The prototype app (*Spatial Mixer*) in this project is built from a code base provided by Steven Gelineck who has already done work within the field of spatial mixing. The app embraces the *Stage Metaphor* and utilizes a spatial view to display information about the tracks in relation to each other. The app was used in a study of use to evaluate how the users would use the cross-device interaction and how they would use the *Stage Metaphor* when mixing in surround sound. The findings of the study acts as a proof of concept of the possibility in using cross-device interactions with the *Stage Metaphor* to aid in the process of spatial mixing. Another finding is a list of implications which can be used when creating cross-device interactions within the theme *Extension*. This whole study is described in the article included in this report.

Research Paper 3

To find the answer to the research question and study the use of cross-device in the context of spatial mixing in surround sound, this paper has been made. The paper presents the develop app which uses the *Stage Metaphor* to provide another visualization for the users. This app have been used in a study of use with five participants. The article presents the findings from the study of use and presents a series of implications.

The ”Spatial Mixer”: Cross-Device Interaction for Mixing of Music.

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ABSTRACT
When the workspace of commercial music production was digitalized, it was designed after the traditional work environment, known as the *Channel Strip Metaphor*. An alternative to the *Channel Strip Metaphor* is the *Stage Metaphor*, which focuses on a more visual representation of the sound image. We present our two-fold contribution to the field: An app (*Spatial Mixer*) designed for mixing in surround sound based on the *Stage Metaphor*. The app is designed as an extension for *Ableton Live*. Secondly, a study of cross-device interactions between *Ableton Live* and *Spatial Mixer* in the context of mixing music. To evaluate the cross-device interaction we made a study of use with participants who studied music production. The qualitative data from the study of use was spilt into different themes which led to implications that are relevant when designing cross-device interactions in the case of an extension app and in the setting of music production.

Author Keywords
Spatial Mixing; Cross-Device Interaction; Stage Metaphor; Music Production; Surround Sound

INTRODUCTION
With all the different devices with access to the Internet e.g. smartphones, computers, tablets and smartwatches, new possibilities arises for utilizing them together in a digital ecosystem. This is a popular field with new possibilities is cross-device where two or more devices can interact together to bring new functionality or a better user experience for the users [16, 15, 2]. Within the field of cross-device interaction a lot of research has been done e.g. on how multiple devices can be used at the same time to make tasks more manageable or which interaction technique best suits a given context.

Music mixing nowadays happens on the computer with software designed to emulate analog mixing surfaces [13]. Mixing music have a lot of complexity balancing mixing the depth of the music, the spatial relation between the tracks, finding a balance between the volume of the instruments and adding specific effects to make the sounds different. Commercial music is usually mixed for stereo because the application domain is almost exclusively stereo like streaming, listening on the headset or listening to the radio. The application domain for surround is on the other hand rather limited, mainly to movie theaters, home theaters and surround sound systems.

Figure 1. A picture of the developed prototype systems look.

In the work of Gelineck *et al.* [5] they explore how the *Stage Metaphor* brings the music production into the spatial room and provide a new and more intuitive way of controlling panning and volume while mixing music.

This study looks at cross-device interactions when mixing music in a surround sound setting by utilizing the spatial room. In this study a prototype called *Spatial Mixer* is presented, which is meant to compliment the music composing program *Ableton Live*. The *Spatial Mixer* can be seen in figure 1 in the bottom left corner. The *Spatial Mixer* is built upon the source code of another project created by Gelineck *et al.*. The app provides the composer with a two dimensional view of the tracks from the music mixing program as they are placed in a box, representing the stage, with a listener in the middle allowing for surround sound composing. The composer can then change around the parameters of a track either in the composing program or the app and the other will change accordingly.

The contribution of this project is two-fold. The first contribution is the design of an app using the *Stage Metaphor* as a way to represent the surround sound setting. The second contribution is the qualitative study looking at how a composer makes use of the spatial aspect when mixing in surround sound and using cross-device interactions which resulted in a list of implications. The list of implications are relevant when designing cross-device interactions for an extension in a music setting.

RELATED WORK

The study aims to evaluate how cross-device interaction can be used when designing an application for spatial mixing of music. Therefore research have been conducted both within spatial mixing and cross-device interaction to map some of the relevant research done within these two fields.

Spatial Mixing

In the work of Gelineck *et al.* and Gelineck and Korsgaard [5, 6] they describe an application called *Music Mixing Surface*. The application is designed to enable composition of music on a tablet. The design of the app's interface is based on the control scheme called *Stage Metaphor* whereas standard composing programs, such as *Ableton Live*, make use of the classic *Channel Strip Metaphor*. Their description of the *Stage Metaphor* is a stage where each of the channels are represented as widgets in the mix and their placement compared to a fixed point determines panning and volume. This gives the composer an overview of the different channels' proximity to each other and thereby their level of volume in relation to each other.

When comparing the performance of adjusting volume and panning using *Stage Metaphor* with the *Channel Strip Metaphor* Gelineck *et al.* [7] concludes from their study that there was no significant difference between the two. Though the qualitative feedback suggested that the *Stage Metaphor* was preferred for its intuitiveness.

Nixdorf and Gerhard [12] describe in their work a system called RITZ which is built to provide real-time sound spatialization of sound sources. They describe how the system is built to be a practical and powerful interface and one of the few viable for spatializing sound in real-time, such as at a concert. An example of their future work is to make speakers dynamic allowing the system to be changed to adjust speaker positions. They conclude that they do not expect musicians to flock to their system immediately, but now its available.

In the work of Carrascal and Jordà [1] they proposed and developed a multi touch application that made use of the *Stage Metaphor* to give the users an alternative way to interact with the parameters available on a mixing console. They compared the user interface of their application to the user interface of a mixing console. In the comparison they had five participants with no previous experience mixing music and one sound engineer testing the user interface. From the comparison they concluded that overall the application they had designed were the best as not only did the participants spend less time composing a mix they were satisfied with, the use of the metaphor in the design made it much more intuitive for novice users which meant they could easily understand the user interface and starting mixing the music more quickly.

Cross-Device Interaction

Schmidt *et al.* [14] study the interactions for mobiles as well as shared interactive displays. In their work they present cross-device interactions between a mobile and the shared interactive displays. They propose to use the mobile like a style for interactions with the shared interactive displays. They develop a series of interactions for both input and output between the two surfaces and describe application concepts in which they can be used. They conclude that further research would be beneficial and would include an evaluation of the techniques over a longer period and expanding the interactions to use multiple surfaces.

In the work of Hamilton and Wigdor [8], they present *Conductor* a prototype framework that sets a baseline on how to create cross-device applications. The framework allows devices to be connected in a variety of ways, essentially extending the functionality of one device to another, allowing for more advanced interactions than a single device can perform. In their study they have each of their test persons make use of up to 10 tablet devices to solve a sense making task. Their study showed each test participants made good use of the cross-device functionality to make the task easier for themselves.

Nielsen *et al.*[11] explores the use of multiple devices in the settings of sharing photos. They created *JuxtaPinch*, an application where the users with three different pinch gesture could pair devices together to show a picture shared across all the connected devices. The purpose was to create a flexible way of sharing pictures via collocation with others. Their findings were, that participants engaged in the new interaction for sharing pictures with each other, but that there were challenges with simultaneous use of the application.

In the work of Dong *et al.* [3], they conducted an interview study, interviewing 29 designers and developers, to better understand the difficulties you can face when designing cross-device experiences. They highlight three major challenges that needs to addressed in order to help ease the designing of multi-device systems. They also suggest doing more research on simulating multi-device experiences, to lower the barrier for developing good multi-device experiences.

In the work of Wäljas *et al.* [18], they proposed a list of three themes for cross-platform usability. Their list is composed based on qualitative data collected through a field study, where their participants had to do semi-structured diaries about their interactions and experiences with a set of services.Looking at the data and correlating the services with activites and their context the users used them in, Wäljas *et al.* present distinct characteristics, in the form of a list, for cross-device environments. The characteristics they found are: Composition, Continuity and Consistency which highlights parts that have an impact on the user experience of the cross-platform services.

In the work of Sørensen *et al.*[17], they describe a framework called the 4C framework. They describe the theme *Complementarity* which covers the idea of interactions with multiple devices, where one device gets complemented by another providing the same or additional functionality. The two principles *Remote Control* and *Extension* each cover a different type of interaction to achieve this. The principle *Remote Control* simply maps the possible interactions from one device to another device, allowing the new device to control the other without necessarily adding new functionality. The principle *Extension* on the other hand is were a device can compliment the activity on another device with new functionality or other interactions.

CASE: MIXING MUSIC

The production of commercial music can be a long, expensive and complicated process with multiple steps, which involves musicians, producers and a lot of analog equipment [9]. Mixing panels had to be very large in order to support multiple channels and all their controls. For each channel the composer can apply a series of different effect components to the tracks, such as an equalizer or a compressor, which they use to adjust the sound of the track. If the composer wants to apply the same effect component to multiple tracks they can make use of a *bus* to reroute the sound of the tracks to the *bus* and then add the effect to it [10].

The digitalized work surface called *Digital Audio Workstation*(D.A.W) were modeled after the *multitrack tape recorders* and *mixing desks* to fit the traditional work environment [4, 13]. This meant the expensive equipment a composer normally would need to acquire themselves have been digitalized which opened up for new possibilities for importing or creating their own effect and easily add multiple of them to a track to get the sound they want.

The interface and general feel of the digitalized surface stayed true to the original physical mixer by retaining the layout with switches, wheels and faders, and the idea of a mixing tap [4]. The idea of a mixing tape became the *Channel stripe Metaphor*. With the computer as the new workstation it is possible to connect to multiple devices at the same time making it possible to apply cross-device interactions.

The app *Music Mixing Surface* [5] explores the *Stage Metaphor*, for mixing music in stereo where the position of the tracks on the iPad determines panning and volume. This way the composer can work spatially and be able to literately see where a track is positioned rather than having to imagine where a specific track is placed based on its panning and volume. Furthermore the app was designed to be a stand-alone app that could remote control the *D.A.W* through a simplified interface to better represent the *Stage Metaphor*, but loses some of the functionality the *D.A.W* could provide.

PROTOTYPE

Working from this setting, an app was designed and developed to mix in surround sound. It was designed as a companion app that helps an *D.A.W*. This way it can help reduce some of the complexity of the *D.A.W* by moving the functionality onto an iPad and change the way it is represented using the *Stage Metaphor* control scheme.

The developed app is based on Gelineck *et al.* work with the *Stage Metaphor*. In this study the app has been modified to work as an *Extension*, as described in the 4C Framework [17], and moved from stereo mixing to the domain of surround sound mixing.

The system consists of a program on the computer (*Ableton Live*) and an app on the iPad (*Spatial Mixer*). The setup can be seen in figure 2. *Spatial Mixer* compliments *Ableton Live* by extending its functionality and providing another way to interact with it. The changes made in one of the application are mirrored to the opposite application. The *Spatial Mixer* is built around the *Stage Metaphor* and provides a visual representation of the track's position relative to a listener on the stage. This should make spatial mixing more comprehensible by abstracting away from the *Channel Stripe view* where the data is represented as values.

Figure 2. A picture of the connected system, with *Ableton Live* running on the computer and *Spatial Mixer* running on the iPad.

The two systems are connected through a MIDI bridge in order for them to communicate with each other. The communication itself happens through the Wi-Fi.

Ableton Live

*D.A.W*s are a very used tool for music production and the study wants to explore the interaction between them and other devices. For this study it has been decided to work with *Ableton Live* compared to *Logic Pro X* because of the accessibility of a MIDI API which *Ableton Live* offers. With this API it is much easier to setup the communication compared to if it had been *Logic Pro X*, since it does not have a public MIDI API.

To understand the setup and how the prototype works, it is required to know how *Ableton Live* works and looks of it. *Ableton Live* is a *D.A.W* used both for live performance but also music productions and offers similar functionality as other *D.A.W*'s with effect plugins, controls for music and effects. *Ableton Live*'s interface is partitioned into mainly three parts, which are illustrated in figure 3. The red frame indicates the area where the channels are displayed. The yellow frame indicates the area where the effects for a channel are placed and can be controlled. The green frame is the menu where the user can access a variety of tools, for instance effects, plug-ins and audio samples.

The channel contains either a track or work as a bus where multiple tracks' output comes through. Each channel has its own set of controls. On each track there is a menu for selecting where the audio should come from and where it should go. A track can have senders which control how much of the given track should be sent to a return channel, which can be used to decide which speaker the sound is sent to. In the illustration, in figure 3, there are four senders, one for each return channel which represent a speaker each. A channel also have a fader

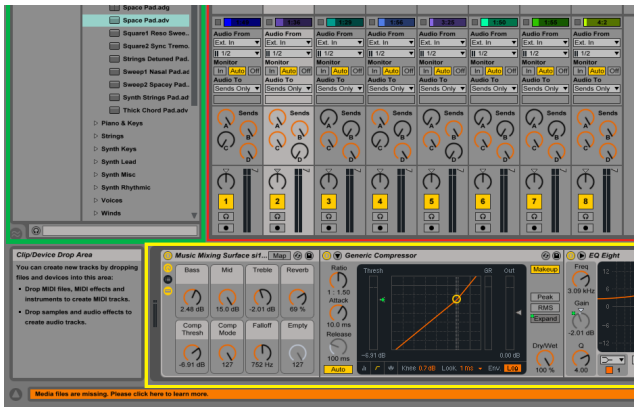

Figure 3. This picture is section of *Ableton Live* with a project loaded. The three discussed areas are marked by the colored boxes.

to control the volume, a sender for panning and a button for muting (the yellow square). Each channel can have a series of effects attached to it, which are displayed in the view indicated by the yellow frame. A track's effects are displayed when the track is selected. The *Music Mixing Surface* is a group of eight senders where seven of them are mapped to different parameters of different effects, which can be unfolded as seen on the figure. The parameters in the *Music Mixing Surface* is the ones affected by the *Spatial Mixer*.

Spatial Mixer

Spatial Mixer's design is based on the *Stage Metaphor*, where tracks are positioned on a stage. The tracks position are visualized as bubbles (*Track Bubbles*) in the spatial room relative to a user (*Stage Person*). A *Track Bubble* has a variety of interactions available to the user. A screenshot of the *Spatial Mixer* can be seen on figure 4. Around the *Stage Person* are two rings. The inner ring illustrates the area of the volume and the outer ring illustrates the area of the fall-off effect on a track. On the top left in the figure a series of mix buttons can be seen, which are used to switch between different mixes of the same music number. A mix can be copied from one mix to another to better be able to make changes to mixes with the same point of origin. At the end of the series of mix buttons can be seen an undo button, which when tapped will undo the last change the user made. On the right can be seen a list of the different tracks on the stage. On top of that list is four buttons. The first button from the left locks the *Stage Person* so it cannot be moved by accident. The second button shows or hides the list of tracks. The third and fourth button are used to connect the *Spatial Mixer* to *Ableton Live*.

A *Track Bubble* can be moved relative to the *Stage Person*, to indicate which direction the track's sound should come from and how loud it should be. On picture A in figure 5 the stage and the *Track Bubbles* together with the tracks' volume and senders can be seen. On picture B both *Track Bubbles* have been moved with the drag gesture.

By moving the *Track Bubble* away from the *Stage Person* the volume would decrease until the *Track Bubble* crosses the inner ring after which the volume would be kept constant. If

Figure 4. A picture of the *Spatial Mixer* on the iPad.

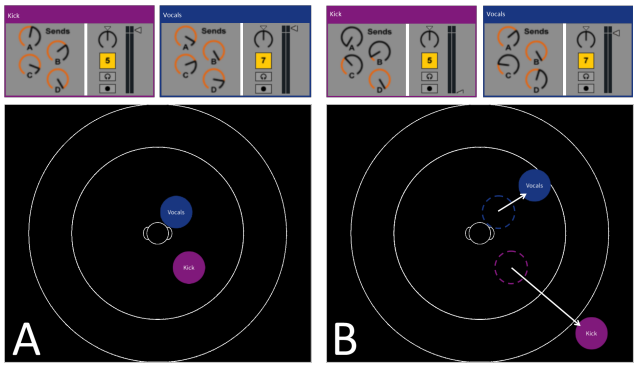

Figure 5. Illustration of the tracks moving and the corresponding changes.

the *Track Bubble* crosses the outer ring border the volume turns all the way down. Moving a *Track Bubble* results in changes to the track's sender and volume levels. *Vocals*'s volume have been turned down, while *Kick*'s volume turned all the way down, because the *Track Bubble* is outside the outer ring. The sends for the two sends have changed as well. These changes can be seen on picture A to B in figure 5. This interaction corresponds to adjusting the volume slider and four sender levels individually in *Ableton Live*.

The *Stage Person* can likewise be moved which adjusts all the tracks' sender levels and volumes. On picture A in figure 6 the *Stage Person* stands in the middle of the stage with *Track Bubbles* around him. On picture B the *Stage Person* have been moved with the same drag gesture the *Track Bubbles* utilize.

The movement of the *Stage Person* results in all the *Track Bubbles*' values to change, which can be seen from picture A to B in figure 6. Picture A shows three *Track Bubbles* together with their fall-off effect levels. On picture B the *Track Bubble Vocals* have been moved.

If a *Track Bubble* is between the inner ring and the outer ring, then the fall-off effect is applied to the track. The closer the *Track Bubble* is to the outer ring the bigger effect the fall-off has. In figure 7 a *Track Bubble* is moving further away from the *Stage Person* within the outer ring.

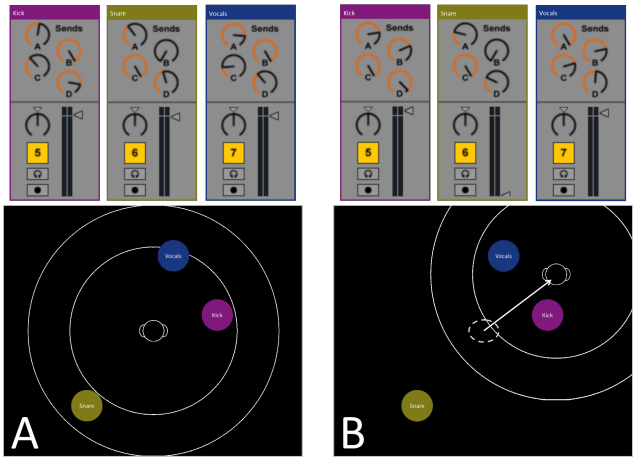

Figure 6. This shows how the *Stage Person* can be moved the same way as a *Track Bubble*.

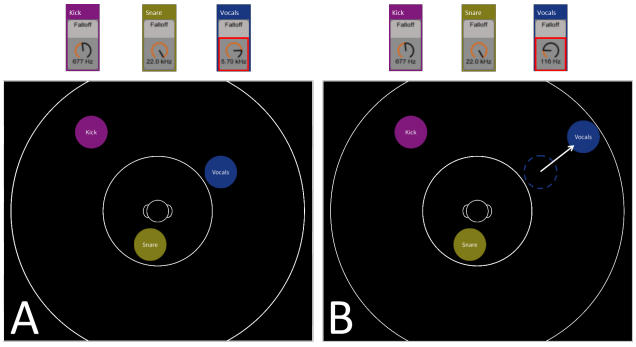

Figure 7. An illustration showing a *Track Bubble* being moved around in the fall-off zone and the effect of this movement.

The movement of the *Track Bubble*, *Vocals*, results in a change in the tracks fall-off effect. This can be seen from picture A to B in figure 7. An important note is that the smaller the value is, the more powerful the fall-off effect is.

The inner and outer ring describe the volume and fall-off and they can be resized. Resizing the inner ring changes the minimum value of the volume when crossing the inner ring. The smaller the inner ring the higher the minimum volume would be when crossing the inner ring. The fall-off effect is affected by the distance between the inner and outer ring. The bigger the ring the smaller the increase in fall-off effect when moving the *Track Bubble* towards the outer ring. On picture A in figure 8 the stage with all the *Track Bubbles* together with the track's volume and fall-off effect levels are shown. On picture B both rings have been moved.

The movement of the rings results in *Extras* and *Cymbals* having zero volume since they are now outside the outer ring. *Kick* and *Guitar* now has fall-off on them due to being between the two rings. The changes are marked by the red squares on the two pictures in figure 8.

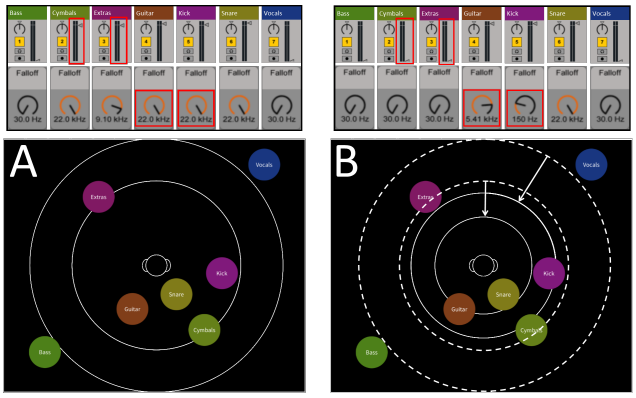

Figure 8. An illustration of the two rings being moved and the effect of the movement.

It is possible to mute a track by tapping the *Track Bubble* which corresponds to muting it in *Ableton Live* . This could also have been done by tapping the track in the list of tracks. The tapping interaction is illustrated on picture A to B in figure 9.

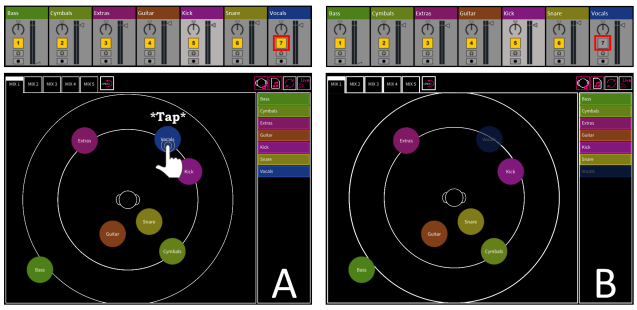

Figure 9. Illustration of a user muting a track and the effect of it.

The tap gesture results in the track being muted in *Ableton Live*. When a track is muted its color fades both on the *Track Bubble* and in the list of tracks. This is illustrated from picture A to B in figure 9.

A user can with the long press gesture, on the *Track Bubble* or the track in the list of tracks, mute all other tracks corresponding to the first track being soloed. The idea is that only a single track can be soloed at a time. This interaction can be seen in figure 10 from picture A where the user long presses, to picture B where the changes happen.

Picture A shows the user long presses *Vocals* resulting in all the other tracks getting a faded color, both the *Track Bubble* and the track in the list of tracks, indicating that they are muted and that *Vocals* is now soloed. The effect carries over in *Ableton Live* which is marked in the pictures by the red squares.

By double tapping on a *Track Bubble*, a user can open the effect menu which displays the track's effects as slices (*Effect Menu*). Figure 11 shows the interaction.

Figure 10. An illustration showing an user long pressing a *Track Bubble* to solo the track.

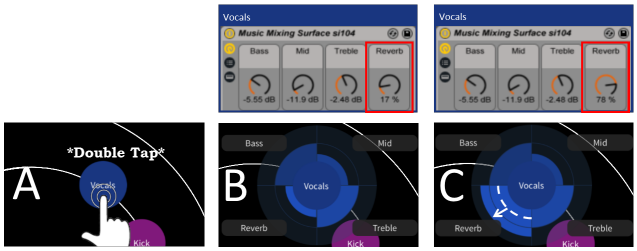

Figure 11. An illustration of how a *Track Bubble* can be double tapped to open the *Effect Menu*, together with the adjustments of a slice.

The user can then, by dragging the slices bigger or smaller, adjust the three preset filters on the equalizer and the compressor threshold in *Ableton Live*. Picture A in figure 11 shows the user double tapping the *Track Bubble* to open the *Effect Menu*. Picture B shows the *Effect Menu* with the value in *Ableton Live*. On picture C the user has dragged the reverb effect bigger showing a change in the effect in *Ableton Live*.

The user can also pinch the *Track Bubble* bigger or smaller to adjust either the compressor or expander on it, this can respectively seen in figure 12 and figure 13. Picture A in both figures shows the tracks standard size. On pictures B the user either pinches the track bigger or smaller.

As long as the *Track Bubble* is bigger than the standard size, the compressor is applied in bigger or smaller degrees depending on its size. The bigger the more compressor effect, this effect can be seen on picture B to C in figure 12, where the second parameter indicates it is the compressor effects by the 0 value. As long as the *Track Bubble* is smaller than the standard size the expander is applied. The smaller the size, the more effect is applied. This can be seen on picture B to C in figure 13, where the second parameter indicates it is the expander effect with value 127.

IMPLEMENTATION

The developed prototype system is built from the code base which Steven Gelineck provided for the study. The system consists of *Ableton Live*, a plug-in (LiveOSC) for *Ableton Live*, a MIDI bridge and an app on the iPad. The development in this study was done mainly on the app and the MIDI bridge, while the two others were used as they were. The system is implemented so the app connects to the MIDI bridge

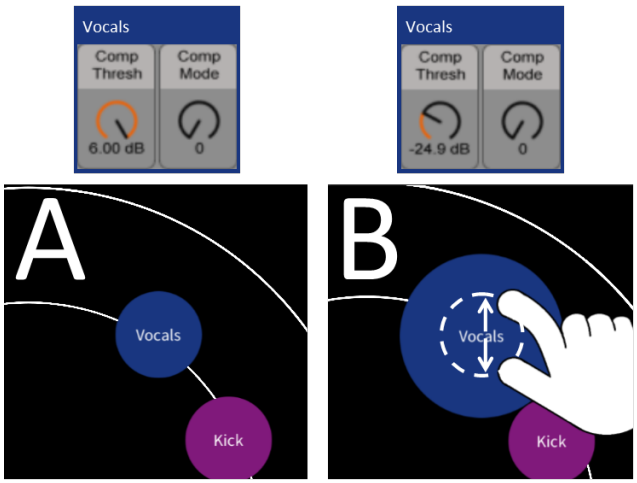

Figure 12. An illustration of the user pinching a *Track Bubble* bigger applying the compressor.

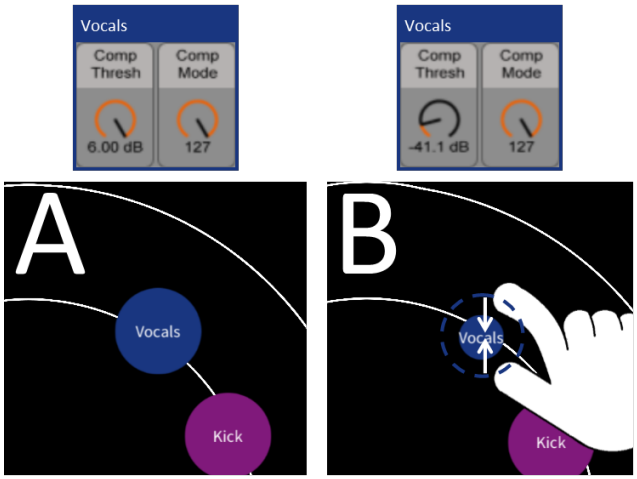

Figure 13. An illustration of the user pinching a *Track Bubble* smaller applying the expander.

on the computer. The MIDI bridge ensures that the app can communicate with *Ableton Live* with the help of the plug-in. An illustration of the system architecture can be seen in figure 14. The MIDI bridge came with the code base but has been changed to add more routes to facilitate the implementation of surround sound and the changes to existing functionality.

Several major changes has been done to the app. These included the implementation of surround sound, which involved new algorithms for calculating the senders levels, the volume and fall-off values for *Ableton Live*. The implementation of surround also included reimplementation of the gestures with additional techniques. The communication between *Spatial Mixer* and *Ableton Live* was changed to include the values necessary to facilitate surround sound. Outside of these changes the code has also been refactored, adding new data fields and implemented a movable *Stage Person*.

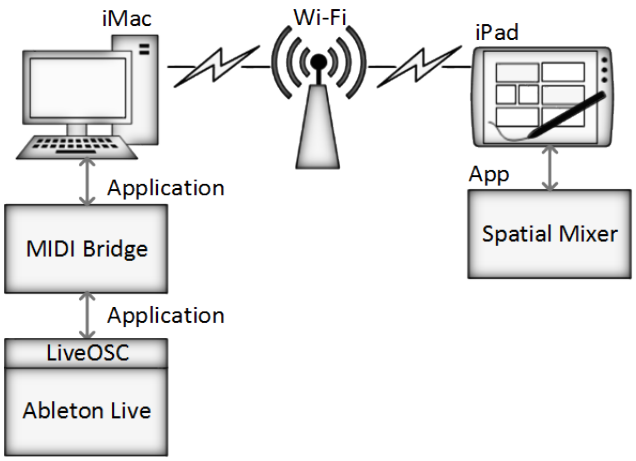

Figure 14. A diagram of the architecture of the system.

A problem with the implementation was how the tracks' position was updated based on the volume or fall-off without colliding with the position based on the senders' levels. Therefore the volume and fall-off from *Ableton Live* are not used for positioning the tracks.

STUDY OF USE

The purpose of the study was to evaluate the cross-device interaction between the computer and the app in the setting of music production and as a result finding some implications when designing for cross-device interaction, in the context of music production.

Participants

For the study of use five participants (P1-P5) were asked to participate in the study. The participants were aged 21 to 28, all male and all studied "Popular Music and Sound Production", two on 2. semester and three on 4. semester. The participants were asked to rate their experience with different subjects on a scale of 1 to 10 where 1 meant no experience and 10 meant extensive experience. When rating their experience with touchscreen they rated an average of 6.2 with the highest being 10 and the lowest 4. On how much experience they had with *Ableton Live* they rated an average of 2.0, with 3 as the highest and 1 as the lowest. None of the participants had any experience with working with surround sound. 3 of the 5 participants owned a smartphone, and 2 out of 5 owned a tablet, though they commented, that they did not really use it. Only one of the participants did not own either a smartphone or a tablet.

Procedure

The test was conducted over a week, where for each participant the test and interview took a total of three hours. The test consisted of three tasks followed by a semi-structured post interview. In all the tasks the participants had to edit some music tracks to follow a sound quality using surround sound. The sound quality is a term for describing the style of the sound and used to compare sounds with each other. All the tasks had a time limit and a timer to give the participants an overview of how much time they had left. A test facilitator manage the test and helped the participants if there were any problems, while a test logger logged the tasks and interview. A picture from the study of use can be seen on figure 15.

Figure 15. Picture from the study of use.

To have some baseline data to compare the cross-device interaction to, the first task was only using *Ableton Live*. This was also to give the participants a change to familiarize themselves with *Ableton Live*. The first task lasted 30 minutes and they worked with the music number "Heard it Through the Grapevine" by Marvin Gaye. After this base task the participants had two tasks using both *Ableton Live* and the *Spatial Mixer*, which lasted 55 minutes.

Before the second task the participants were shown a demo of the interactions available on the iPad. In the second task the participants had to edit "Heard it Through the Grapevine" again, and they were given some subtasks to make sure they tried the different aspects of the *Spatial Mixer*. The third task was a more open task about editing "Next To You" by The Police, where they did not have any subtasks and the participants decided whether they wanted to use the *Spatial Mixer*, *Ableton Live* or both.

All the tasks and the interviews were filmed with a video camera, the computer and iPad was recorded with a screen recorder when used. The interview was fully transcribed and the tasks were logged to document the data and extract important information. The data was then sorted into different themes. These themes were discussed and used to suggest some design implications when designing cross-device interactions in the setting spatial mixing in surround sound.

Test Setup

The test was conducted at Musikkens Hus in Aalborg in a music practice room. The setup can be seen on figure 16. The participants used an iMac with iOS X: El Capital (10.11.4) with an *Ableton Live* 9 (9.6.1), an iMac keyboard, an iMac mouse and an iPad Air 2 (64GB) with iOS 9.3.2. The participants were video recorded and the screen of the iMac and the iPad were also recorded. Besides the already mentioned equipment four speakers were used to set up surround sound and a mobile phone was used as a timer.

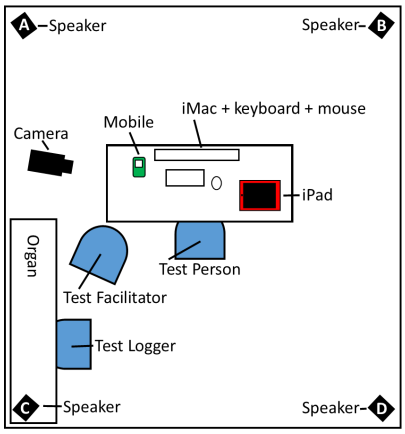

Figure 16. Picture showing the setup of the test.

Limitations

The music files for the first two tests were out of sync, making it more difficult for the participants to mix it sufficiently. Some recordings are missing. This includes the screen recording for the first task for participant 1 and the camera recording of the last part of participant 3's third task was lost because the memory card was out of memory. Participant four stopped task two before time claiming there was nothing left to do.

RESULTS

Through the conducted study of use a series of common themes have been composed based on the collected data. The data consist of recordings of the computer screen, the iPad, a camera feed of the participants using the system and logs conducted during the tests.

Spatial Mixing

By examining the video footage of the the participants' interviews and them testing the system, it was clear that all of the participants liked the idea of using the *Stage Metaphor* to make a visual representation of the tracks in a room. As can be seen from the comment:

> *"To be able to create a sound stage on this [the iPad]. That is brilliant, because it is actually a cool feature to be able to visualize it. And you have some programs in Logic [Logic Pro] which can do this a bit, which can get you to visualize it in some way, but not as concrete as this."* - P1

Not only did it give them a clear visual of the music they were composing but it also allowed for a more hands on approach to the actual composing as they could use the touch feature of the iPad to imitate some of the analog feel. As said by participant 3:

> *"It gives the possibility for your creativity/musicality to come through without you thinking too much about the boundaries/limitations there are, the ones you have acquired one way or the other. You skip all the boring numbers. It is something like the old school analog gear. There were not so many numbers either. There you had to turn it and feel one's way. It makes it more musical in a way, you do not sit thinking in numbers."* - P3

Though they explained that using surround sound was only feasible if it was meant for something more than music in itself. They explained that when they compose, they do it in stereo because the ordinary listener would not have access to a surround sound system or they would listen to the music through the radio which only broadcast in stereo. As explained by participant 4:

> *"The idea about using surround sound is fine, but in practice the ordinary listener uses two speakers or headphones or listen in mono on there phone, then I do not know what I should use surround for."* - P4

Cross-Device

Participant 3 found a track in *Ableton Live* and then used the iPad to adjust that track's compressor, and while doing this he would shift his attention between the computer and the iPad. Other participants also tried to change a track's effect on the iPad but looked at a different track on the computer. Participant 5 was confused by the fact that the color of a track on iPad did not match the color of the same track on the computer as he commented when talking about the connection between the two devices:

> *"The only problem was properly that the colors was fucked compared to the program [Ableton Live]."* - P5

Participant 4 did not see the reason to have the app as it was presented. If it should be on the tablet, he said, it might as well be able to do everything *Ableton Live* can do. The notion of moving all the functionality was also hinted at by participant 2 when he talked about the movability of the app:

> *"The advantage is if you could have a mixing-program on the iPad, then you could sit anywhere and mix. You just need the iPad and connect to a computer. Then you could make any place your mixing-studio if you just make sure the place is alright. The advantage is that it is portable and easy to use."* - P2

The participants used the tablet as a way to get an overview and make general modifications on the iPad and then make more advanced modifications on the computer. This was confirmed by participant 5:

> *"It gives another kind of overview than normally, because I use the computer to give an overview of where I am, while the app gives a greater overview because it is designed as it is."* - P5

Change in Music Production Process

Doing the first task all the participants would open the effects for the tracks one after the other and make adjustments to the compressor or equalizer before adjusting volume or panning, which was also confirmed by participant 2:

> *"Normally when I mix I usually do not make any panning at all before long into the process, usually everything is on top of each other in the center and then I make small adjustments on the equalizer and compressor."* - P2

When presented with the *Spatial Mixer*, they would immediately start to spread out the tracks on the iPad and experiment more with positioning than they did when just working with *Ableton Live* alone. This was also commented on by participant 5:

> *"I experimented more with the panning part because it is so easy compared to sitting there and then you have a track where you pan a bit that way [indicates he moves a track to his right], and then you find the other track and pan it a bit out there [indicates he moves a track to his left]. There it is easier to quickly move things around and get them thrown everywhere."* - P5

All the participants also made good use of the mute function on the iPad even though *Ableton Live* had this feature too. They also made good use of the solo function since *Ableton Live* did not provide this functionality when using return tracks. Participant 1 expressed how the app changed his way of thinking and how he found it fun:

> *"In reality when it is about new technology is thinking out of the box. We start making the practice room in the mix, and that is a completely different way of thinking."* - P1

Touch

During the test some of the participants expressed that they really liked working with touch compared to the keyboard and mouse. As they explained, the interactions are familiar as they are similar to other apps' interactions, so they could just go ahead and use it right from the start. What really made it intuitive to work with though was the fact that it felt similar to the analog equipment as explained by participant 3.

> *"[...] When you move over on the iPad then the information flow is drastically slowed and limited. You work more with static and simple forms, meaning they do not pulse or give you new numbers all the time. And I think it is there you see the intuitiveness and physical aspect."* - P3

From the observation it could be seen, that some of the participants would open the *Effect Menu* of a track on the iPad and then just listen as they moved the slider back and forth. They generally preferred to make use of the touch interaction whenever possible to change an effect's parameter as mentioned by participant 4:

> *"[...] because it is easier to use your fingers, and when you have a screen where you can work with it graphically and use your fingers, it gives another kind of precision."* - P4

Mapping

All the participants at one point used the computer to make adjustments to the effects of the tracks. Most of these were adjustments the iPad did not provide. 4 of 5 participants returned to the iPad when they had made their adjustments. Participant 4 commented that effects were too simplistic:

> *"I keep returning to the computer, because I feel I am missing some parameters to work with, and it makes it really hard to make a great mix on this one [the iPad]."* - P4

When he turned away from the iPad to make some adjustments on the computer, he tended to stay there and make further adjustments that the iPad also could do. Furthermore they also commented that the compressor effect on the iPad should adjust the ratio parameter instead of the threshold parameter as participant 2 commented on the use of threshold on a compressor:

> *"This means that the more I expand, the more it reacts, but it is no the same as it actually makes the sound bigger."* - P2

On another note regarding the compressor, participant 1 mentioned that he did not like the compressor changing to an expander if you pinched it small enough. Participant 1 commented that the volume drop is too little near the person and too much further away from the person. On the other hand participant 4 commented that he thought it all around was too sensitive.

Some participants adjusted the volume or sender levels in *Ableton Live* but this was not represented on the iPad and when they moved the track on the iPad the adjustments were overridden.

Novice vs. Expert Users

In relation to the fact they thought the app was too simplistic participant 5 commented:

> *"I just do not think I am the target group. I think it might be more suited for novices."* - P5

Other participants commented that they liked the metaphor behind the app as is made it easier to use. An example of these comments is from participant 2:

> *"I really really like you have moved outside the metaphor typically used in music production program which is about a tape recorder or other studio gear. I really like this metaphor. It is straightforward and intuitive and I think it appeals to a lot who does not necessarily know how a traditional music program works. But more have the idea that 'I just want the sound to come from over there or from over there or have this shape. I really like that."* - P2

Usability Problems

All of the participants at one point had difficulty remembering which interaction did what, so they had a tendency to solo or mute a track when they wanted to open the *Effect Menu*. Participant 1 commended that it was something he would get used to with time:

> *"There are of course some things you have to get used to, how you push. It comes to you nice and easy. And about making it a fluent work process. It comes nice and easy too."* - T1

Also none of the participants understood the principle behind the volume and fall-off circle. They either left them alone

completely or they placed them randomly making the fall-off circle really big and the volume border really small. Or they placed a track somewhere and then adjusted the fall-off effect on the computer. When asked about their his understanding of the fall-off and volume circle participant 5 said:

> *"I never got the hang of how it worked, because I probably just ended up having a lot here in the middle [around the stageperson]."* - T5

Doing the third assignment participant 5 asked if it was possible to get a bigger screen for the iPad as he found the iPad screen too small and he mentioned, that it might become a problem if there are a lot of tracks which modern music tend to have.

DISCUSSION

The themes from results will be discussed with a focus on developing extensions in general, and in setting of mixing music in the spatial room.

Spatial Mixing

The impression from all the participants were that surround sound was rarely used as none had mixed in surround before. Spatial mixing could be used for mixing in stereo, but it is more interesting to use surround sound and investigate the effect of it in music production, since it differs from the normal way of mixing music. This could lead to new inspiration when mixing music.

From the recordings it is possible to see, that the users rarely used the senders in *Ableton Live* and did not really create any particular sound setup. One participant explicitly commented that it was hard to mix surround this way using the senders. This could indicate, that they were not really comfortable with the representation of the tracks and did not have an understanding of the senders effect.

At the time where the participants got to work with the *Spatial Mixer*, they were much more encouraged to utilize the spatial room and created different sorts of setups of the tracks compared to when they did not have the *Spatial Mixer*. The participants would for instance move a track around the *Stage Person* while listening. This kind of behavior was not observed in the first task of the study of use. This suggests that the participants could better understand the spatial aspect with the *Stage Metaphor* compared to the *Channel Stripe Metaphor*. One of the participants said that he did not find the *Spatial Mixer* useful, but from the recording it is possible to see, that even if he did not like the app he still used it for controlling the surround setting. This shows that even if the user said it was unusable he still understood the *Stage Metaphor* better than the sender controllers.

So by utilizing another view and interaction, i.e. the *Stage Metaphor*, the participants were more enticed to work with spatial mixing and were capable of setting up the tracks the way they wanted. So in this case the *Stage Metaphor* have made it more convenient for the participants to do spatial mixing by providing them with a metaphor, which they could better understand and use in their production. This is supported by some of the statements from the participants, who commented that this new way of producing music is enticing, simpler and makes way for more creativity in the production. So for an extension to be attractive for a user, it is required to find a metaphor which brings the design closer to the users' understanding.

The way the *Stage Metaphor* is implemented, means the volume and fall-off on a track depends on the distance to the *Stage Person*. Their limits can be set using the two rings around the *Stage Person*. From the result of the study of use, it can be observed that none of the participants understood the rings and their purpose. One of the participants, when having the principle explained to him, commented that in modern music production this would not make sense, since in most cases you do not aim for the acoustic representation but really more the electronic, where you can adjust the volume and fall-off effect independently. What can be concluded from this is, that users might not want what is a realistic case, but instead the functionality they are already accustomed to. So if an app is providing a new way to illustrate an effect which is not a standard parameter such as volume or panning, then the user should be able to decide if they want to use it or not. This way the app does not take away control from the user.

Cross-Device

When working with a cross-device system the participants would use the iPad to get the general overview of the tracks and make use of the *Effect Menu* to modify the the pre-defined parameters in the *Music Mixing Surface* in *Ableton Live*. When there was something they could not do on the iPad they would turn to the computer and do it in *Ableton Live* instead. As some of the functionality was not mapped to reflect changes on both sides of the system, the system ended up in a state where the data on one side no longer corresponded to the other. This caused frustration with the participants because their work got overridden when they changed anything on either side. Sometimes when modifying parameters on the iPad some participants would look at the computer monitor, while others would just focus on listening to the modifications they were making. This could indicate that even though they could hear the difference, some participants wanted to see the exact changes they were making to the parameter they were moving on the iPad.

In the test 3 of the 5 participants would make modifications on the iPad and look at a different track on the computer thinking it was the same track as on the iPad. This clearly indicates the participants were not able to link a track on the iPad to the right track in *Ableton Live* which made their work more inconvenient. Some participants actually began selecting the track they were working with on the computer before they went to the iPad to find the same track and started working with it. This supports the statement, that the participant had troubles linking tracks together over the two devices. So an extension has to make it very clear to the users what data is being represented so they do not have to rely on the other device to determine what data or functionality they are working with. One way is when they are making modifications or selecting a track on the iPad, the track is also selected on the computer. Another way is to make clear indication which

tracks are linked on the computer and on the iPad, for instance by clear color similarity.

Change in the Music Mixing Process

One major change in the participants' normal routine was the change from stereo to surround sound, which many of them had not tried before. Without the *Spatial Mixer* the participants did minimal spatial mixing while as soon as they got the *Spatial Mixer*, they experimented with the panning and tried different setups of the sound in the spatial room. One participants told, he would normally do panning in one of the last steps in his production, but with the *Spatial Mixer* he did it as one of the first things and afterwards began changing the sound effects. This is a rather radical change because mixing would be done so it fits the setup the other way around.

With the *Extension* and the *Stage Metaphor* the mixing also became more physical to the participants as it was closer to how a physical mixing surface would feel. One participant said he liked, that it became more about feeling how the music should sound instead of working with numbers. He liked the "Hands-on" feeling instead of a mouse as it made it more intuitive. Most of the participants mainly used the *Spatial Mixer* and only moved to *Ableton Live* when there were something they could not do in the *Spatial Mixer*. There was one participant that did not like using the *Spatial Mixer*, because he felt that it was inaccurate and he could not mix the way he wanted to. So the approach with making the mixing more about feeling is appreciated by the participants but it needs to be very accurate.

The cross-device interaction allowed the participants to switch between the computer and iPad and do work on both. Often the participants used the *Spatial Mixer* as an overview while *Ableton Live* were more about working with turning effects. The participants did not express any frustration with shifting between devices, which shows that cross-device interaction can support music production without a big learning curve. A problem the participants did experience with the cross-device interaction was *Ableton Live* receiving input, which caused a lot of values in *Ableton Live* to change. This is a critical problem because two participants lost work they had done and felt it was really annoying they had to redo when it happened. Therefore cross-device interaction can be used to support music mixing but the communication and the devices together have to be robust so the user does not experience any sort of problems due to information loss.

Mental Model

Based on the observations about the participants use of the spatial aspect of the *Spatial Mixer*, it can be seen that they quickly understood how the *Stage Metaphor* worked. This shows that the *Stage Metaphor* can be a good way to facilitate the very logical and hard to determine positioning of the track, as opposed to the *Channel Strip Metaphor*, as it gives a good overview of the tracks and their proximity relative to the *Stage Person* and each other.

Despite the comments about the effects being too simplistic, many of the participants returned to the iPad and adjusted either the mid, bass, treble effect or simply began working with another track after having made some more advanced adjustments in *Ableton Live* than available on the iPad. This could be evidence for, that the participants liked having the analog feel of adjusting sliders. The comments about the simplicity could also indicate that the participants actually had the understanding, that if they are able to adjust one effect, they should be able to adjust the other effects from the same place, like the way *Ableton Live* works. Even if the users thinks an *Extension* is too simplistic at first, because it is missing a lot of the functionality they are accustom to, they are still able to see the purpose of the cross-device system. It is still however very important to evaluate and find the functionality that they use the most and balance the complexity of the *Extension* so it does not end up being a replacement instead. In the setting of mixing music it is also important to create a similar "hands-on" feeling as from analog gear.

The pinch gesture used to increase or decrease the presence of a track on the sound stage was not done correctly. The participants mentioned that it should change the ratio parameter instead of the threshold to have the effect which they thought it should have. Another issue was, the participants did not think the way which a tracks presence was decreased was implemented correctly. They commented that the effect used for decreasing the presence did not make much sense, which shows they had another understand of how to regulate the presence of a track than was implemented.

CONCLUSION

In this study cross-device interaction have been studied in the context of spatial mixing. The study of use showed, that it was possible to design a cross-device system the participants could use for mixing music. The study was conducted with a developed prototype app, which was tested by five participants who studied music production. The collected data was used to form themes and find implications for designing cross-device interactions within the principle of *Extension* in the setting of spatial mixing in surround sound.

An implication which was found, was when designing a cross-device system, it is really important to understand the context in which the system should be integrated. In the study some of the participants commented, that the *Spatial Mixer* was simplistic and did not provide the things they needed. They wanted more functionality in the *Spatial Mixer* even though *Ableton Live* had that functionality already. The users wanted to be able use the interactions available on more of the data from *Ableton Live*, making it more a stand-alone application than an extension for *Ableton Live*. The implication found from this was, that it is important to evaluate which functionality should be extended while balancing the complexity of the extension. Another implication regarding the functionality of the extension is that an action on either device should have a corresponding change on the other device, this is to ensure that a cross-device system never gets in a state where data on one side are not corresponding to the other. When designing an extension an implication is that users should be able to quickly identify the same data across the different platforms in the cross-device setup. This is to ensure that the users never get confused navigating between the systems or make errors

because they thought they were working on something else. This is especially important when designing an extension because the functionality of the main system gets extended and therefore the users have to be able to distinguish between the data.

Another implication for designing extensions is that the communication between the systems have to be very robust. When linking two systems using different metaphors, that handle data differently, it is very important to make sure all their functionality is mapped accordingly, so they do not have unexpected behavior.

Using touch devices is a good alternative to achieve the "hands-on" feel of analog consoles, though an implication when designing apps in the context of spatial mixing is, that the touch interactions are required to have similar precision to that of the gear they represent.

In this study there have been worked with cross-device in the setting of spatial mixing and ways for the users to interact with it. Here the *Stage Metaphor* was utilized to try and bring a new understanding of how the sounds were placed in the sound picture. From the study of use it could be seen, that the users had a better understanding of the sounds placement relative to *Stage Person* and they were more enticed to play around with the surround sound setup compared to when they were using the *Channel Strip Metaphor*. This shows that the developed extension provided a new way for the users to interact with a subset of the data available in *Ableton Live*. Based on this experience an implication was found, for when designing cross-device interactions, different metaphors can improve the quality of an extension and help in the process of creating a more understandable user interface for the users.

From the study of use with the spatial mixing implications for designing a cross-device system in regards to extensions has been found. These can help highlight the important considerations when designing an extension.

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Implementation 4

This section describes the details about the implementation of the Spatial Mixer described in the research paper. The system consists of an iPad with the app *Spatial Mixer* on it and a computer with a MIDI bridge and *Ableton Live*. *Ableton Live* has a plug-in that allows it to communicate with the MIDI bridge. The bridge connects the computer and the iPad through a peer connections via their IP addresses. The information from the iPad is a message that can contain multiple parameters, the bridge picks up the message and breaks it into singular parameters and packs them into MIDI calls before sending them to *Ableton Live* where the plug-in receives the calls and translates them into actions. To alter the functionality of the source app (*Music Mixing Surface*), it was necessary to do a good deal of refactoring as the *Music Mixing Surface* had the functionality to be a stand-alone app. As the goal of this project was to make an app to extend *Ableton Live*, the interface of the app got an overhaul to remove unnecessary functionality, such as the import local project button, master volume slider and fall-off slider. The stage box was redesigned to better support surround sound editing and to allow the *Stage Person* to move around the stage. The communication module of the code base had a few new functions added and some of the existing functions redesigned to support sending the senders values for facilitating surround sound. Solo and muting were redesigned to be done through touch interactions instead of the buttons same with opening the effect menu on a *Track Bubble*.

The surround sound setup was done in iterations to try out different ways to calculate the parameters. The first iteration calculated the volume and fall-off levels by how far away the *Track Bubble* was from the *Stage Person*. The sender level distribution was based on the angle to the *Stage Person*. This way, unless the *Track Bubble* was just around the *Stage Person*, at most three senders would be active with one sender being turned up completely and the two flanking senders would be turned half way up. The final iteration based the sender level distribution on the distance from the *Stage Person*, so moving a *Track Bubble* towards a corner will turn down all other sends than the send associated with that corner, and the opposite send would turn down faster than the flanking sends. On top of this the volume value was also calculated based on the distance to the *Stage Person*.

The code base introduced its own class structure for handling touch interactions. Though it was too complex so it was scrapped in favor for the standard gesture classes of iOS. The gesture classes were much simpler since the they already had a good control structure to handle which gestures should be executed when a user interacts with the iPad.

5 Future Work

During the study of use, different technical as well as metaphorical and usability problems were observed. These problems are relevant to look at in further studies.

The technical problems: The mixes on the iPad did not store all the correct information about the setup and after a while not being used they would lose the stored information. The communication between the two devices also required some more refinement, as sometimes after the user had made adjustments on the iPad it would take a while before *Ableton Live* would receive the data. A minor visual glitch arose twice for the same participant which indicates a problem with how elements gets drawn on the screen.

The metaphorical problems: As none of the participants understood the inner and outer ring functionality, they should be redesigned or completely removed in favor of a different approach. The idea that a track's presence is reflected by its size was not completely captured. The idea was good, but requires more work to function correctly, the participants suggested using the ratio parameter instead of the threshold for the compressor.

The usability problems: The three different interactions for mute, solo and effects could require some redesigning as all of the participants had trouble remembering which did what, though the problem may be negligible if they use the system enough. The participants found it frustrating that modifications on *Ableton Live* to the senders and fall-off levels were not reflected on the iPad and later would be overridden by moving the track iPad. Therefore it would be necessary to find a way to reflect changes done in *Ableton Live* to these effects on the iPad.

6 Conclusion

Music production and particular mixing of music involves fine turning and adjustments to get the desired sound quality. By adding the complexity of mixing for surround sound the task gets even more difficult. To make the mixing of surround sound more comprehensible for the users, spatial mixing can provide a different visualization. In this study spatial mixing was implemented with the *Stage Metaphor* which provides a visual representation of how the tracks actually are positioned relative to each other. The *Stage Metaphor* together with the theme *Extension*, known from the 4C Framework introduced by Sørensen *et al.* in the field of cross-device interaction, have been used to design and develop *Spatial Mixer* tested in the study of use. This was done in order to answer the research question for this study.

> *Can cross-device interaction be used in spatial mixing of surround sound and what are the implications for designing cross-device interaction within context of mixing music?*

From the study it was concluded that the participants were able to use cross-device interactions with *Spatial Mixer* for spatial mixing. Some participants thought the solution was too simplistic and did not provide all the functionality they wanted the app to have but still the participants used it when they had to do the spatial mixing while the fine turning took place in *Ableton Live*. This indicates that the participants could better manage the spatial mixing through the *Stage Metaphor* compared to the *Channel Strip Metaphor*. Thus it is important to evaluate which functionality should be extended while balancing the complexity of an extension. It also implicates that an extension can benefit from utilizing a different metaphor than the main application to provide a better experience for the user. Therefore it is very important to understand the context which the extension is to be used in and which platform it is on.

From the study another implication is that users should be able to distinguish data across the multiple devices in the cross-device setup. This is important so they always know exactly which data they are working with on both devices without doing the managing themselves. It is also very important that the systems are integrated so they act as a full system where changes can go both ways i.e an implication is that extended functionality should work both ways else it will cause frustration with the users. The communication between the systems also have to be very robust.

A finding from working with music is that it is important that the controls are tight e.g. that the controls are accurate. This finding is are very context depended because

music mixing requires pretty fine precision while other domains might not required as much. Another finding was that utilizing touch the users got a more "hands-on" feels as if they were working with analog gear. This implicates that, depending on the context, it could be relevant to choose a device which support different kinds of interactions like touch.

The answer to the research question is, it is beneficial to use cross-device interactions for spatial mixing, because it provides the users with a visualization, which can reduced the complexity of spatial mixing.

Appendix

Tasks for Study of Use A

Velkommen til vores brugertest, vi vil kort sige mange tak fordi du gerne vil deltage og hjælpe os med vores test. Hvis der er spørgsmål i forbindelse med denne brugertest tager du blot kontakt til test koordinatoren.

Vores hovedformål med testen er at undersøge multi-device interaction, som er hvordan folk bruger flere forskellige enheder på samme tid.

Opgaver:

Der vil være 3 opgaver der skal løses og mellem hver vil der være 5 minutters pause. Den første opgave varer 30 minutter og de to sidste opgaver varer 55 minutter hver.

Ved siden af computeren ligger der en iPad hvor appen, som vi gerne vil have testet, er installeret på. iPad'en skal bruges i opgave 2 og 3.

Af hensyn til vores forskning område skal alle numrene der skal produceres i løbet af testen vil være i surround sound for at udnytte en af de vigtige funktionaliteter som app'en tilbyder.

I løbet af testen er der nogle retningslinjer der skal følges:

- Du må ikke indsætte andre effekter foran den "midi bridge" som ligger på alle tracks.
- Du må ikke kopiere et track, dog må du gerne fjerne og indsætte tracks.

Opgave 1:

Varighed: 30 minutter

Opgaven tager udgangspunkt i "Marvin Gaye - Heard It Through The Grapevine". Vi har forberedt et Ableton Live projekt hvori du finder et antal grundtracks, som du skal bruge til at producere et værk som har anderledes lydligt udtryk end den kommercielle udgave af sangen. Du må selv vælge hvilket klangideal du lader dig inspirere af og vi vil gerne have du informere test koordinatoren om dit valg. I redigeringen skal du kun anvende computeren.

Opgave 2:

Varighed: 55 minutter

Opgaven tager udgangspunkt i "Marvin Gaye - Heard It Through The Grapevine". Vi har forberedt et andet Ableton Live projekt hvori du finder samme antal grundtracks, som du skal bruge til at producere et værk som denne gang skal have samme lydligt udtryk som den kommercielle udgave af sangen. I redigeringen skal du både anvende computeren og iPad'en. For at sikre at app'en bliver brugt har vi listet nogle ting du skal udnytte eller prøve af i løbet af opgaven:

- Brug de effekter der allerede er tilknyttet et track inden du indsætter din egen effekt.
- Værket skal redigeres således at det udnytter det spatiale rum.
- Bruge kompressoren eller expanderen.
- Så vidt muligt brug det spatiale design (app'en) til at styre panning såvel som lydstyrke.
- Bruge "fall-off" funktionen.

Opgave 2:

Varighed: 55 minutter

Opgaven tager udgangspunkt i "Next To You - The Police". Vi forberedt et Ableton Live projekt hvori du finder et antal grundtracks, som du nu skal bruge til at producere et værk med et klangideal efter eget valg. Værket skal have ligesom opgave 2, udnytte det spatiale rum.

Interview Questions B

- Hvordan var din umiddelbare oplevelse af at bruge det kombinerede system?
- Hvordan var det at bruge computeren og iPad'en samtidig? Ville du, hvis du fik muligheden i fremtiden udnytte et lignende system eller ville du foretrække kun at bruge iPad'en eller computeren? Hvorfor?
- Forklar de fordele og ulemper du så ved at bruge iPad'en i stedet for computeren?
  - Forklar hvordan iPad'en/app'en skulle være, for at være bedre for dig at bruge end computeren?
- Forklar hvordan produktions processen i denne test afviger fra din normale proces?
  - Gav dette setup anledning til nye ideer? fik du ny inspiration?
  - Hvilke værktøjer manglede du på iPad'en?
  - Havde det at skifte mellem de to enheder en indvirkning på din process?
- Forklar hvordan du forstår de forskellige interaktioner du anvendte på iPad'en?
  - Evt spørg ind til de forskellige interaktion de IKKE anvendte! Hvorfor bruge de dem ikke?
- Forklar hvordan det lydbillede der er afspejlet på iPad skærmen forholder sig til det lydbillede du hører?
  - Var der nogle aspekter af denne afspejling der virkede anderledes i forhold til din forståelse? Hvilke og hvorfor?
- Hvad er dine tanker omkring at anvende det spatiale rum i produktionen af musik? Hvordan giver det mening? Hvorfor?

Data from Study of Use C

C.1 Test Participant 1

C.1.1 Assignment 1

Recording at 1:00: Test person: points out that none of his fellow students have worked with *Ableton Live* before.

Recording at 1:26: Test person: asks if the track is actually playing.

Recording at 1:51: Test person: opens the track view for a track.

Recording at 2:05: Test person: tries different shortcut keys on the keyboard.

Recording at 4:24: Test person: minimizes the view bar at the bottom and tries to scroll.

Recording at 4:51: Test person: tries multiple times to mark a track by clicking at it with the mouse.

Recording at 6:28: Test person: asks if he should focus on the surround part which the test facilitator answers he should.

Recording at 6:40: Test person: reads the assignment.

Recording at 7:00: Test person: asks if the song sounds like it should which the test facilitator answers "no" to, there are a lot of effects on.

Recording at 7:16: Test facilitator: explains to the test person where he can see the effects for a track and how to get the detailed view of the effects.

Recording at 7:38: Test person: tries to close the bar view again but closes the help view and effect description view instead.

Recording at 8:22: Test person: expands the macro to get a detailed view of the effects.

Recording at 9:10: Test person: tries to find the track view again by double clicking on the tracks without luck.

Recording at 9:47: Test person: tries to solo a track from the track view which does not work with our setup in *Ableton Live*.

Recording at 11:10: Test person: starts the individual tracks one at a time by clicking their small green play button.

Recording at 11:40: Test person: starts and stops the tracks multiple times, tries to reset them.

Recording at 12:35: Test person: opens the effect view of the track.

Recording at 13:00: Test person: mutes all the other tracks except one.

Recording at 14:35: Test person: opens the effect view again to look for the equalizer.

Recording at 15:00: Test person: adjust the points on the equalizer.

Recording at 15:55: Test person: selects another track by clicking on it.

Recording at 16:40: After the test person had listen for a while, he opens the effect on the selected track.

Recording at 16:50: Test person: unmutes the drums and comments that they sound diffuse.

Recording at 18:00: Test person: is a bit confused about the setup of the compressor.

Recording at 18:53: Test person: adjust on the equalizer points.

Recording at 19:29: Test person: unmutes another track and expands the effect detailed view.

Recording at 20:05: Test person: mutes the track again and moves to another track. The test person opens the track view for the track to see when it starts.

Recording at 20:27: Test person: comments that it is not optimal that he has to keep an eye on how the long the track is in. The test person also mentions that the tracks are not in sync.

Recording at 20:52: Test person: umutes all the tracks to check if the tracks starts as they should. He selects different tracks to see when they starts in the track view.

Recording at 21:35: Test person: tries to reset all tracks in an effort to put the tracks back into sync. He then wants to turn down the reverb of a track but opens the track view in an attempt to find the effect view.

Recording at 22:55: After looking around the test person comes to the conclusion that the tracks has different length which might be a part of the problem.

Recording at 23:10: Test person: goes through all the tracks and turns all the reverb off.

Recording at 24:13: Test person: comments that it does not sound like the tracks are at their right place.

Recording at 27:09: Test person: comments that it sounds like the tracks are not in the same tempo.

Recording at 29:35: After looking closer a drums, the test person sees that there are fall-off on the track which was why it sounded funny.

Recording at 32:32: Test person: jumps between two tracks and adjusts a bit on each of them.

Recording at 33:16: Test person: tries to adjust an effect but he cannot really hear any difference in the sound. The test facilitator points out that the test person is on the wrong track which actually does not play.

Recording at 33:52: Test person: is annoyed that he has to start the tracks every time they are done.

C.1.2 Assignment 2 - Video Recording 1

Recording at 0:30: Test person: wants to listen to the original song.

Recording at 2:08: Test person: reads the assignment.

Recording at 3:30: Test person: comments that the *Expander* is not normally used.

Recording at 4:40: Test person: watches the demo videos.

Recording at 10:01: Test person: comments that it is the first time he is working with surround mixing and that it is going to be fun. He then drags a track around on the iPad.

Recording at 10:15: Test person: notices the connection between the iPad and computer, where he drags a track around on the iPad and see the changes on the computer.

iPad screen at 1:42: Test person: opens the overview of the tracks on the iPad.

iPad screen at 1:47: Test person then opens the effect menu on one of the tracks.

Recording at 11:26: Test person: ask if it is possible to make it play form the app.

Noted at 10:03: Test person: "Kan jeg få den til at spille herfra?"

Recording at 11:40: Test person: starts the music and looks at the iPad.

iPad screen at 2:06: Test person: first moves the volume ring a bit, then mutes and unmutes and track and finally drags on one of the effect on the track with the open effect menu.

iPad screen at 2:10: Test person: closes the effect menu again.

iPad screen at 2:20: Test person: tries to open the effect menu but mutes and unmutes it before getting the menu open.

iPad screen at 2:27: Test person: tries to move an effect in the menu but gets hold of one of the tracks underneath instead. After he moved the track underneath he adjust two of the effect setting and closing the menu. While he is trying to close the effect menu he accidentally mute it also.

iPad screen at 3:10: Test person: open the effect menu on a track, adjust some of the effects and closes the menu. He then moves it around the person. The test facilitator explains he can solo it to only hear that specific track which he then does.

iPad screen at 3:20: Test person: opens the effect menu makes some more adjustments and closes it. He then opens it again and make some more adjustments before the song ends.

Recording at 13:15: Test person: moves his attention from the iPad and to the computer because the song has ended. After he started it again, he moves his attention back to the iPad and closes the open effect menu.

iPad screen at 4:59: Test person: opens the effect menu a track and begins to adjust its effects. After he is done he closes the menu again.

iPad screen at 5:19: Test person: solos a track and opens its effect menu and makes some adjustments.

iPad screen at 5:56: After the test person had worked on a solo track, he simple solo another track and began working on it.

Recording at 15:30: Test person: comments that it would be nice if it were possible to move from a track with a open effect menu to another one, closing the menu of the first track and opening the menu on the new track.

iPad screen at 7:10: In an effort to unsolo the test person closes the effect menu and have to ask the test facilitator how to do it.

Recording at 17:20: Test person: ask how the volume worked, and the test facilitator explains it to him.

Recording at 18:25: Test person: have the feeling that the settings for an effect on a track are not saved correctly and tries to reproduce the error without luck.

iPad screen at 9:50: Test person: plays around with the tracks, dragning one of the tracks around and listens to where the sound comes from.

Recording at 19:50: Test person: comments "Jeg synes enligt det er sjovt nok at lege med." after the test facilitator informs him that he of course also may use the computer for it.

Recording at 20:05: Test person: "... når man arbejder med sterio mix giver det god mening at have det sådan her."

Recording at 20:45: Test person: comments that there something weird about the volume and moves his attention to the computer where he begins to mute tracks.

Recording at 21:04: Test person: "Det med volumen... Det med at rykke den væk giver for mig ikke så god mening så jeg tror jeg hellere ville arbejde med volumen herover." He looks at the computer screen.

Recording at 21:12: Test person: "Det her er rigtig godt til at skabe et lydbillede generalt. Jeg ville gerne have at det var rumklang jeg kunne styre sådan her." and makes a swiping motion away and towards himself. He relates it to theory that they have been taught about the sound box.

Recording at 22:20: Test person: experiments with muting on the computer and looking at the iPad seing the connection between them.

Recording at 26:29: Test person: unmutes two tracks on the iPad and then moves to the computer to unmute the last 5 tracks.

Recording at 26:45: Test person: has to move his attention back to the computer to restart the tracks and back to the iPad.

Recording at 27:15: Test person: moves a track a bit on the iPad and then goes to computer to find the effect view of that tracks effects.

iPad screen at 18:00: Test person: accidentally opens the effect menu when he tried to solo it.

Recording at 27:00: Test person: goes from the computer where he is adjusting on some effect to the iPad to solo the track and goes back to the computer to continue working.

Recording at 29:30: Test person: wants to set a track on a specific volume level while having a fall-off effect on it so he places it on the inside the volume zone and then moves to computer to set fall-off effect on it.

C.1.3 Assignment 2 - Video Recording 2

Desktop screen at 40:25: Test person: adjust the volume for a track. The test facilitator explains that it is going to be overriden because of how it is implemented.

Recording at 8:42: Test person: "...Jeg ville gerne kunne skrue ned for volume uden jeg laver et high-cut."

Recording at 9:10: Test person: comments that he have worked thinking stero so he tries to place the tracks around the person instead. He then moves his attention to the computer where he is selecting different tracks.

Recording at 9:55: Test person: "Tramporin er meget høj, se nu er der skruet op for den igen!".

Recording at 11:00: Test person: is frustrated that when he sets the volume on the computer it is not represented on the iPad but that the other way works.

iPad screen at 39:50: Test person: uses the pinch gesture to try and adjust the compressor.

Recording at 12:50: Test person: wants to see the compressor that he is trying to adjust so he moves his attention to the computer and finds the track with the compressor. He is then using the iPad to adjust it and looks at the computer for visual feedback.

Recording at 13:05: Test person: comments that it is the ratio and not the threshold that we should adjust. He thinks that it would be smarter to how much compression there is on the iPad instead of the threshold because it something he much rather would do on the computer.

Recording at 15:35: Test person: comments that he does not like the idea it can move directly from compressor to the expander with the way it is implemented because it makes it possible to suddenly do something that they did wish for.

Recording at 19:12: Test person: comments that a track does not sound as it should and that the program somewhere have reset the setting to something wrong.

Recording at 20:10: Test person: suggest that we make it possible to conduct or "draw" the route how the music should move. He thinks that idea of the stage metaphor fits the idea of drawing routes for delays, effects and actually get a visual representation of it would help a lot.

C.1.4 Assignment 3 - Video Recording 1

Recording at 0:30: Test person: begins to read the assignment.

Desktop screen at 1:22: Test person: uses the computer to turn down all the reverb on the tracks.

Recording at 3:01: After the test person had removed all the reverb from the tracks, he moves over to iPad and solos a track. Which he begins to adjust.

Recording at 3:45: Test person: looks at the computer without realizing that it is the wrong track which he were looking at compared to the iPad.

Desktop screen at 4:50: Test person: adjust the fall-off on the computer instead of the iPad. This is the result of not moving it so it has kept the preset value.

Desktop screen at 5:25: Test person: adds an additional point the equalizer.

Desktop screen at 6:30: Test person: adds an additional point more and adjusts the settings for the equalizer. After he is done is moves to the iPad and closes the effect menu.

Recording at 6:50: Test person: suggest that you could add these point he did on the computer through the iPad too.

Recording at 7:00: Test person: wants to show something in the effect menu but unsolos it instead.

Desktop screen at 8:10: Test person: adds a whole new effect to a track on the computer.

Recording at 8:05: Test person: uses the iPad to solo the track which he just added the effect and begins adjusting that effect on the computer.

Recording at 8:55: Test person: uses the iPad to unsolo the track he is working on to hear it together with the rest.

iPad screen at 10:01: Test person: takes a track and begins to drag it around on the stage and listens to the sound.

Recording at 10:15: Test person: tries to adjust the volume ring with two fingers like a pinch gesture. Since he can not get that to work he tries to unsolo the track and tries again.

Recording at 11:20: The additional points which thetest person added before the equalizer now causes problems because it is now the wrong points which receives our signals.

Desktop screen at 13:02: Test person: removes the additional points and adds a new equalizer outside the bridge where he adds them again to avoid the problem which he encountered.

Desktop screen at 14:10: Test person: is adjusting the effect of the new equalizer on the computer.

Recording at 14:23: Test person: explains the different points that can be used on the equalizer.

Recording at 15:20: Test person: unsolos a track on the iPad and discovers that it does not sound quite right with the new equalizer so he goes back to the computer adjust it a bit more and then goes back to the iPad to work with a new track.

Recording at 16:10: Test person: encounters a problem where he can not interact with a track because a muted track with a open effect menu was on top of it.

Recording at 16:50: Test person: selects a track on the iPad and begins to adjust its effects after he had open the effect menu.

Recording at 18:02: Test person: "Det ville være smart hvis jeg bare kunne klikke over på den her, uden at skulle lukke den anden ned" in context to the problem earlier where he solos a track and the effect menu stays open.

Recording at 18:20: Test person: sees a track on the iPad and moves to the computer to find the track view of that track to find out what the track actually is.

Recording at 18:58: Test person: uses the overview to solos tracks compare to part 2 where he mainly used the actually track on the stage.

Desktop screen at 21:11: Test person: uses the computer to jump in a track to rehear a certain part of the track.

Recording at 21:30: Test person: expands the volume ring. "Jeg er ikke fan af der her volume ring." Test facilitator: "Hvad er det der gør du ikke er fan?" Test person: "Det er meget at lydproduktion er bleven så uvirkelig at det her er blevet en naturlig foranstaltning som man måske faktsik ikke ønsker fordi når jeg rykker den langt herud forsvinder den i volume og så laver den også et high-cut, det som I kalder fall-off. Det er måske man ikke ønsker der skal fall-off på men den bare skal have en svag volume..."

Recording at 22:58: Test person: has troubles moving a soloed track under some muted tracks.

Recording at 23:50: After the test person had expanded the volume ring, he comments that the volume drop is too little near the person and too much further away from the person.

Recording at 24:50: Test person: "Det giver lige pludselig mening at jeg bruger den med venstre hånd og musen med højre..." after the iPad had been moved to the left. (He is left handed)

Recording at 25:40: Test person: has troubles moving a soloed track which is under some other tracks.

Recording at 27:30: Test person: suggest that he can open the effect menu also from the track overview on the iPad. He comments that it would be nice for when you have a lot of tracks and possible to have a zoom function.

Recording at 29:08: Test person: uses the iPad to mute all the tracks which are not drums.

Recording at 30:30: Test person: uses the iPad to adjust the effect of a track and uses the computer as an overview.

Recording at 35:04: Test person: has the feeling that he can make it sound weird by doing something on the iPad.

C.1.5 Assignment 3 - Video Recording 2

Recording at 3:57: Test person: jumps around in the tracks on computer.

Recording at 5:30: Test person: starts to spread the tracks more out in the room since he feels that he have mixed it.

Recording at 9:00: Test person: experiences the problem again where a value suddenly changes.

Recording at 10:07: Test person: makes some fine adjustments on the iPad after he have placed the tracks more spread out on the stage.

Recording at 12:30: Test person: moves a bit on his chair to better listen to the sound.

Recording at 13:20: Test person: aims to make a rehearsal room where the drum tracks are together on one side and the strings on another side.

Recording at 14:31: Test person: "... det er ikke sikkert at det holder volume mæssigt."

Recording at 15:04: After the test person had listen to the surround setup, he changed it setup so drums were in the back and guitars in the front.

Recording at 15:55: Test person: comments on the way that the sound is distributed to speakers and thinks it make sense. On the side he argues that you could think more electronic way and only send sound to the speakers you chose. Realism vs. what you want to archive.

Recording at 17:44: Test person: "Det er faktisk en hel ny mulighed at man kan bygge et trommesæt."

C.1.6 Interview

Recording at 0:17: Test facilitator: ”Så kan jeg da lige prøve at høre først hvordan din umiddelbare oplevelse af at bruge systemet her? Bare sådan grundlæggende. For at få en følelse af hvordan at...”

Recording at 0:24: Test person: ”Jamen altså der har været nogle fundamentale ting som ligesom skulle... nogle ret grundlæggende ting jeg lige skulle vænne mig til i om med jeg har arbejdet med Ableton i dag og det har jeg aldrig gjort før. Og så det der med at integrere det. Der er selvfølgelig lige nogle ting man lige skal vænne sig til, hvordan man trykker. Det kommer stille og roligt. Og så det der med at gøre det til en flydende arbejdsproces. Det kommer også lige så stille og roligt. Så det har været meget sjovt. Men det er også det der med lige at... i virkeligheden det handler om når det er en ny teknologi at tænke ud af boksen, ikke. Det der med at nu begynder vi i virkeligheden at lave et øvelokale i mixet, og det er en helt anden måde at tænke på. Eller man kan også tænke det der med at have en øvelokale lyd, men det her er bare at gøre det visuelt og virkelig sådan... Det er faktisk meget sjovt."

Recording at 1:12: Test facilitator: ”Det gør det også en del nemmere for dig, ikke også, da vi fik det flyttet over på den anden side.”

Recording at 1:16: Test person: ”Bestemt. Det var også det der med, at som venstrehåndet så bliver det lige pludselig en fordel. Det der med at du kan have venstre hånd der [på iPad’en] og højre hånd på musen. Det var faktisk ret fedt.”

Recording at 1:26: Test facilitator: ”Super. Hvordan var det sådan at bruge både den her [computer] og den her [iPad] samtidig? Sådan i... kan man sige.... I forlængelse af hinanden.”

Recording at 1:36: Test person: "Yeah. Det er det der med at. Nogle gang når jeg sidder her [på iPad'en] så, det var også det jeg sagde, så er der nogle mangler. Man mangler nogle ting og så er man nødt til at arbejde herovre [på computeren]. Men det er også med at gøre det til hvad det er. Det var også det. Jeg skulle lige finde ud af hvad jeg kan bruge den her til. Og det er det der med, som jeg har nævnt, det der med lydscenen... at kunne opsætte en lydscene her på [iPad'en]. Det er jo genialt, fordi det er faktisk en fed ting at kunne visualisere det. Og det har man nogle programmer i Logic som lidt kan, som kan får dig til at visualisere det på en måde, men alligevel ikke så konkret som det der. Så det er en helt anden måde sådan at... så der kunne jeg godt se at det var faktisk en fed forlængelse og sidde og arbejde... med det her. På den der [iPad]. Men når jeg skal ind og sådan... hvis jeg skulle sidde og... og specifi... oh det er en rigtig kuglepen det der [testpersonen har taget den forkerte pen]... Hvis jeg skulle sidde og finjusterer som jeg begyndte at gøre lidt på det her nummer, så følte jeg ikke helt at det var... så var jeg nødt til at rykke herover [på computeren]. Men det er jo også det der... Det er jo også... så har man finjusteringerne herovre [på computeren] og så har man måske de mere grove justeringer her [på iPad]. Det ville måske være en god ide til at starte ud med et mix, ligesom for at placerer tingene hvor du egentlig tænker de skal være, og så kan du gå herover [computeren] og arbejde senere sådan... Sådan kunne man måske godt se det. Og så stadig det der med at sådan at justerer det lidt der."

Recording at 3:13: Test facilitator: "Ville du selv... Hvis du fik sådan et værktøj der stillet til rådighed i fremtiden, hvor der rent faktisk... kan man sige... har nu de her basic ting vi nu har snakket om her, og det selvfølgelig fungerer som det skal, men har basically samme idé som den her. Er det noget du tror du ville bruge?"

Recording at 3:31: Test person: "Øhm... Det ved jeg sku ikke, for jeg har ikke en iPod... iPad. Eller sådan en Pad der. Og det er ikke noget jeg har tænkt mig at erhverve sådan, så... det tror jeg umiddelbart ikke. Men det... det er bare mig som ikke bruger det medie, så. Men jeg kan godt se ideen i det, og jeg kunne godt forestille mig at der er... Altså, set fra andres s... Det er en anden... Men det er også det der med... Det er en anden ting og det er man også det man nød til at forstå. Det er en anden teknologi og det er en anden måde at bruge tingene på. Det der med at... man skal ligesom tænke ud af boksen og gøre det til hvad det er frem for og... når du følger de regler der er herinde [på computeren] herovre [på iPad'en]. Så giver det ikke så god mening. Men det der med at lave sine egne regler og ligesom lave sin egen arbejdsproces, som du har herovre. Og det giver godt mening. Så jeg kunne godt forestille mig at der var nogle der kunne bruge det. Også det der med at kunne tegne. Det var faktisk ret fedt."

Recording at 4:36: Test facilitator: "Ja."

Recording at 4:37: Test person: "Jo. Måske kunne jeg godt finde på at bruge det i virkeligheden. Det der med at... Hvis jeg kunne, som jeg nævnte, det der med at... kunne få det til at flyve frem og tilbage. Altså man kan lave en rute som instrumenterne går på. Der er en ting der hedder automation, det ved jeg ikke som det specifikt hedder herinde i Ableton, men det er netop det der... det er noget man kan bruge herinde [på computeren] for, for eksempel, at få bassen til at flytte herovre på et tidspunkt og flytte tilbage igen. Hvis man kan integrere det her med automation, både det der med... nu siger vi tremble, at den kan man automate. Så kan du gå ind og trykke to gange her, og så kan du trykke på den der knap, sådan så du kan gøre de her sjove ting. Så gør den det på et tidspunkt, ikke. Det ville faktisk være rigtig fedt. Og så kan jeg begynde at se en bedre ide i det... en endnu bedre idé i det også. Fordi at um... Så det der fordi...

Det kan godt være lidt sådan... så sidder du og øh... laver lidt nogle ting der måske er federe at lave i hånden i virkeligheden."

Recording at 5:40: Test facilitator: "Ja."

Recording at 5:41: Test person: "Fordi det bliver en mere kreativ proces. Og fordi det er en lidt mere kreativ ting end at sidde og finjusterer. Så jeg ser... jeg vil egentlig se det der som en lidt en kreativ udfoldelse i virkeligheden. Og lave musikken på, ikke. Og arrangerer musikken på, og så her [på computeren] der sidder du og finjusterer, ikke."

Recording at 6:14: Test person: "Har jeg besvaret alle spørgsmålene eller hvad? [test-monitoren sidder og kigger hans papirer igennem].

Recording at 6:16: Test facilitator: "Nej, jeg sidder lige og venter lidt for at give ham[Test loggeren] lidt tid til at følge med."

Recording at 6:19: Test person: "EJ, han er ved at gå helt død."

Recording at 6:22: Test person: "Det her behøver du ikke skrive ned."

Recording at 6:34: Test facilitator: "Du har været lidt inde på det med de der fordele og ulemper, men hvad er egentlig af de ulemper du fandt ved iPad'en til forhold af... at bruge computeren?"

Recording at 6:48: Test person: "Ja. Øhm... Der var selvfølgelig det der med systemerne der skulle snakke sammen. Og der var der et eller andet som... der gik ind og ændrede på noget... ubevidst. Det er selvfølgelig en fejl som vil være lavet når det rigtige produkt kommer ud. Øhm... Hvad var der af fordele og ulemper, udover det jeg har sagt..."

Recording at 7:19: Test facilitator: "Altså hvis du kan huske dem og sådan hurtigt ridse dem op."

Recording at 7:25: Test person: "Ja. Men altså fordelen er det der med du kan visualisere det. Det er en kæmpe fordel, og det er også... det at dreje på en knap for en musiker, det er en ting, men det der med... det er jo kunstneriske mennesker, ikke. Som man... det er bare en fed måde at gøre det på. Og jeg har det også sådan at jeg kan godt lide at mine programmer... Logic det er jo et meget æstetisk smukt program, vil jeg kalde det. Jeg har en kammerat som bruger Ableton, og han er meget sådan... han har bare brug for alle sine funktioner. Alt det bare... at det giver god mening. Og jeg tror også det er lidt ligesom diskussionen mellem Apple og lad os bare sige Windows, Windows er også blevet mere sådan brugervenligt, ikke, men sådan som det var i Windows 95, eller sådan noget, hvor det bare var sådan en grå boks og du skulle ind og finde... lede i programmerne, ikke, hvor Apple er mere brugervenligt, ikke. Og det vil jeg måske nok også se det der som i virkeligheden. Det der med at gøre det tilgængeligt. Tilgængeligheden i det. Og så er der også det der med at forstå... fordi jeg begyndte jo at se om jeg kunne finjustere her [på iPad'en], og det tror jeg måske ikke er det man skal bruge det til. Så... Det er godt til at give et overblik."

Recording at 8:37: Test facilitator: "Godt til at lave de grove træk, og godt til at sådan lige... få sat det hele op, så man siger 'nu har jeg et udgangspunkt at gå efter'."

Recording at 8:44: Test person: "Ja."

Recording at 8:45: Test facilitator: "Så kan man jo sidde og finjusterer lidt efter det."

Recording at 8:46: Test person: "Og så... både det der med... altså, det er det der med... det kan skabe en masse kreative processer. Og det der som jeg har snakket om, det der med automation, det der med du kan få en bass til at gøre sådan her, ikke, i lydbilledet. Det er ikke noget man ville starte med at gøre. Det er noget man ville sidde og... Når du har lavet sådan et grundlæggende mix så sidder du sådan 'hvordan kan jeg så... nu skal jeg give det noget kant igen." Og så laver man måske... Altså det er meget ekstremt... du ville aldrig opleve en bass der bare gør sådan her, ikke. [Test person gestikulerer at bassen bevæger sig meget hurtigt frem og tilbage over lydscenen] Det er man stoppet med fordi det var pisse irriterende at høre på. Men stadig så kan man... det der med at finde den der grænse, ikke. Man kan jo godt lave nogle ting som er vildt fede. Og der tror jeg det vil kunne fremprovokere nogle mere kreative tilgang til at producere musik."

Recording at 9:39: Test facilitator: "Ja."

Recording at 9:43: Test facilitator: "Altså de effekter vi nu havde lagt herned [på iPad'en]. Var de udmærket at bruge til forhold af at bruge dem deroppe [på computeren]?"

Recording at 9:51: Test person: "Øh... ja. Men det er jo igen det der med... det der med at sidde og specificere, sådan... for eksempel en equalizer. Den er bare svær at ligge... Nu ved jeg godt i har lagt bass, mid, og tremble. Men simpelthen også... Hvad er bass, mid og tremble? Og mid den kan du også dele op i flere sektioner, ikke. Ret grundlæggende så snakker man om low-mid og high-mid. Og tremble der er også... Jamen, den kan du også dele ind i mange parametre, ikke. Så det der med at... det kan godt være med til at skitsere nogle grundlæggende træk, men..."

Recording at 10:27: Test facilitator: "Så det ville være for simplificeret det her?"

Recording at 10:29: Test person: "Ja. Især med equalizer. Equalizer og kompressor. Det stødte vi også på det der med at kompressoren, ikke at... Der var det faktisk ratioen jeg gerne ville ændre på og det tror jeg også I vil høre fra de andre, men skynd jer at ændre det inden, så siger de ikke noget til det."

Recording at 10:50: Test person: "Men... Igen det der med hvis man skulle gøre det her til en, lad os kalde det legestation i virkeligheden. Det der med at nu er det eksperimenternes time og man skal være kreativ, så ville det jo måske være fedt det der med at man har det der plus eller noget i den stil hvor du så kan... Jamen, så vil vi have en distorsion her. Så kan du styre... Så kan du bare smide en distorsion her, og så skifte den ud. Og sådan generelle effekter, så find den del i hver effekt som... nu nævnte jeg i stedet for threshold i kompressoren så brug ratioen. Reverb'en, der tror jeg i har brugt reverb time eller mix... mix har i nok brugt i virkeligheden, og det er også den der er mest relevant. Det der med at finde... fordi inden for hver effekt der er der så mange parametre du kan ændre på den effekt, men find sådan grundessensen, og det er som regel mixet af selve effekten, ikke. Og så kunne tilføje de her effekter her. Så kunne man sidde hurtigt og smide effekter på og sidde og prøve at høre det, ikke. Samtidig med du har den her visualisering af det hele. Det tror jeg faktisk kunne være meget fedt. Øhm... Hvad var spørgsmålet igen?"

Recording at 12:07: Test facilitator: "Det var... med henhold til selve effekterne..."

Recording at 12:15: Test person: "[Afbryder] Ja. Så var der selvfølgelig også det med at øh... hvad fanden var det... Jo. Det der med at man skal kunne klikke hurtigere, så i stedet for at skulle gå ud af en ting for at gå ind i en ny ting, så skal man bare kunne

gå ind i en ting, og så er det automatisk at du går ud af den anden. Så var der også den ring der [Om fall-off eller volume cirklen]. Den var jeg ikke så glad for. Men det kan godt være det bare var mig. Men det finder I ud af med de andre hvad de siger til den."

Recording at 12:39: Test facilitator: "Jamen det... det er det jo... Men det vil sige så effekterne her de ville egentlig være okay som et udgangspunkt men det er mere noget man så bare skal kunne finjustere mere på i stedet for. For eksempel gennem Ableton."

Recording at 12:55: Test person: "Jamen det kan også godt være man kan lave det sådan at det er smartere... Altså måske kan man trykke reverb der, og så kommer der nogle parametre op her, så du lige hurtigt kan fixe nogle forskellige ting. Men det er også det der med om det skal være... Fordi lige nu der er jeg ved at anlægge det som om at dette skal være generelt, ikke. Fordi det behøver det nødvendigvis jo ikke være. Fordi at altså hvis jeg kunne trykke på reverb så kommer der alle reverb parametrene op her og så kan jeg trykke på en anden ting, og så hopper de væk igen, ikke. Fordi at så kan man også sidde lidt mere avanceret og sidde og lege her, på den her, ikke."

Recording at 13:30: Test facilitator: "Ja. Men det kan man jo så også sige at med det udgangspunkt vi tog før, der er der jo så... Der ville det ville måske ikke være sådan man gør, men mere at man sætter det generelle setup op, og så kan man så sidde og arbejde med tingene mere specifikt."

Recording at 13:41: Test person: "Præcis."

Recording at 13:43: Test facilitator: "Så det er mere grove træk, og så finjusteringer det kan så være på computeren."

Recording at 13:48: Test person: "Det er også sådan jeg tænker. Men altså igen, nu har jeg siddet og leget det der med at lave en lydscene som... man prøver måske at lave sådan noget her, ikke, når man sidder og mixer det. Der tror jeg bare ikke man laver det på samme måde. Det er en anden ting det her. Og nu er det så også... altså nu er det ikke bare stereo... Det er surround sound, ikke altså..."

Recording at 14:10: Test facilitator: "Ja. Det er også en helt ny..."

Recording at 14:11: Test person: "Det har jeg faktisk aldrig prøvet at leget med før. Fordi det var vi heller ikke lige mulighed for. Men der med at kunne lave sådanne øvelokaler, det kan du jo stadig selvom du har stereo-spektret, ikke. Så kan du smide en trommeslager, og det er også... sådan tænker man også når man mixer det, at du vil gerne have sådan det... det får lidt den der fornemmelse... Det er bare noget andet at du kan side at visualisere det."

Recording at 14:33: Test facilitator: "Ja."

Recording at 14:57: Test facilitator: "Nu prøvede du jo også at bruge de forskellige taster... det der med at flytte og enkelt klik for at mute og long click for solo og den slags. Men jeg kunne se lidt igennem at du en gang i mellem havde lidt problemer med at huske om det var den ene eller den anden. Tror du det er noget der ville forsvinde hvis du brugte det gennem længere tid?"

Recording at 15:19: Test person: "Ja."

Recording at 15:21: Test facilitator: "Ja. Så du..."

Recording at 15:23: Test person: "Det er jo bare det... det er ligesom at vide at i Logic der... 'p' så får jeg panorode frem osv. Det er bare det med at kende sine genveje, ikke, og det er jo en form for genveje, ikke, så det er bare om at kode det ind i hjernen."

Recording at 15:37: Test facilitator: "Føler du det giver mening altså at long click er... for eksempel er solo og... enkelt klik så muter du?"

Recording at 15:46: Test person: "Øh... Ja det gør jeg nok. Altså det der med at mute og... ja, det gav god mening."

Recording at 16:10: Test person: "Ja, eller måske... det der med at holde den inde. Det ville måske være federe... det ville jeg nok synes var federe at hvis jeg holder den inde så kommer den her frem[effekter], fordi den er sådan lidt mere avanceret end bare at sidde og klikke rundt hurtigt, ikke. Hvis man sidder og klikker rundt hurtigt og bare skal finde sådan ud af at nu muter jeg lige den her, så gør jeg det... Men mere det der med at holde den... hvad er det jeg laver her? [han trykker i app'en] Er det solo?"

Recording at 16:41: Test facilitator: "Ja."

Recording at 16:42: Test person: "Det skulle måske bare være to klik og så den der med at lang... at holde den inde det skulle være de der to klik, så de blev byttet om. Det er også bare det der med at vænne sig til det, ikke."

Recording at 16:53: Test facilitator: "Um. Helt sikkert."

Recording at 16:57: Test facilitator: "Det lydbillede der sådan blev præsenteret her på skærmen, føler du også at det var det der rent faktisk kom ud af højtalerne? Altså lyder det som du forventede? Recording at uhørligt: "

Recording at 17:10: Test person: "Ja, til dels. Jeg havde måske forventet at der ville være en lidt mere kraftig volume nedgang her, som der kan måske godt være... Men det ved jeg ikke om man kan ændre på den her... Det kan jeg måske."

Recording at 17:20: Test facilitator: "Altså, den yderste her du ændrer på det er fall-off'en. Så du har sådan et bredere spektrum du kan ligge de der fall-off på, hvor at volumen her, ja, den ændre på... hvad kan man sige... du har max her... og der fra ham og derud til, så går det ned til det minimum det kan være herovre på, og det kan du så se det var på lige under den streg vi har herovre [på computeren]. Hvor den så... når den kommer forbi den så kapper den så... så bliver den på den."

Recording at 17:54: Test facilitator: "Ja."

Recording at 17:55: Test facilitator: "Frem for hvis du så trækker den her ind, så vil den lige så stille hæve lydniveauet herude. "

Recording at 18:01: Test person: "Jah."

Recording at 18:02: Test facilitator: "Fordi den vil så... det punkt hvor at de kapper... hvor den kapper af... eller sådan siger nu stopper vi her. Den hører... den forøger det der kommer ind"

Recording at 18:15: Test person: "Yeah. Altså de der ringe der, dem nåede jeg heller ikke at sætte mig ordentligt ind i. Det brugte jeg heller ikke så meget tid på. Det ved jeg ikke, altså... Det er også det der med at bruge teknologien og forstå teknologien. Det kunne godt være at hvis jeg havde siddet her en time at så havde jeg brugt det... begyndt at bruge dem også, men det må i prøve at se på med de andre, fordi jeg har

ikke rigtig nogle kommentarer til det. Udover at jeg fandt det sådan lidt... Jeg brugte dem ikke. Og synes de var... de begrænsede mig måske endda. Eller gjorde nogle ting jeg ikke ønskede. Og det var det der med at så begynder den at lave et high-cut eller et fall-off. Men eller så... Jo, der var det der med at kompressionen der, at så bliver det til en extender..."

Recording at 19:01: Test facilitator: "Expander."

Recording at 19:02: Test person: "Expander, ja... Det var måske lidt uheldigt tænker jeg. Fordi det er to modsatte ting. Og det er også det, hvis jeg så kan gå ind og klikke og så sige at nu vil jeg have min kompressor eller blab blab nu vil jeg have min expander, at, så er det sådan at det er... For hvis jeg gør den lille... og hvis jeg gør den lille nok så begynder den at expande. Principielt så giver det mening, men det er bare når man sidder og arbejder med effekten så er det ikke det du ønsker."

Recording at 19:30: Test facilitator: "Nej. Okay så for at... hvordan ville... hvis du skulle arbejde med en kompressor eller en expander, lad os starte med kompressoren i det her tilfælde, hvordan ville den... eller hvordan ville du så se dem som repræsenteret... hvordan det giver mening for dig?"

Recording at 19:44: Test person: "Jeg ville bruge den lige som den her. Ja, det tror jeg egentlig. For det der med at gøre sådan her, det giver heller ikke så meget mening for mig. Så mere det der med at have den som en parameter, ligesom reverb, bass, mid og tremble. Og så kunne man måske endda... Jamen det ved jeg ikke om man kan... om man kan trykke på den her og så gøre den større og så kommer der måske i stedet for fire kun så måske få fem eller seks. Og så for hver gang man tilføjer noget så bliver den måske større, eller så noget. Det ved jeg ikke. Men det der med at man måske ikke er fastlåst på fire ting..."

Recording at 20:28: Test facilitator: "Når du siger den, er det så track'et selv eller er det ringen her omkring den?"

Recording at 20:32: Test person: "Track'et selv. Og de effekter der er tilknyttet til dem. At du kan tilknytte flere effekter til track'et."

Recording at 20:42: Test facilitator: "Jah. Det vil så sige at track'et her det bliver så... Jo flere track du egentlig tilføjer så gør den sådan der eller hvad?"

Recording at 20:48: Test person: "Kun når du går ind i den."

Recording at 20:50: Test facilitator: "Kun når du går ind i den?"

Recording at 20:51: Test person: "Ja. Fordi ellers så er den... den er jo ikke... den er jo træls når den er stor herude, når jeg ikke skal bruge den. Men når jeg er inde i den, og den har mange parametre der kører, så ville det meget... Der er masser af plads til at... fordi hvis der var syv-otte... og det kan godt være det egentlig er tilgængeligt selv med sådan en der, og sidde... Men det bliver bare noget pilværk, hvis der er for meget... lad os bare sige den er halv, ikke, så bliver der lige pludselig... det vil man finde frem til, for meningen er jo at det er super tilgængeligt lige nu. Det skal man ikke tage fra den."

Recording at 21:22: Test facilitator: "Så det vil sige... og det vil så os gøre det samme med expanderen hvis det nu var en expander du skulle bruge..."

Recording at 21:27: Test person: "Ja."

Recording at 21:28: Test facilitator: "Så i stedet for kompressoren så lagde du bare en parameter ind."

Recording at 21:31: Test person: "Præcis. Der kunne måske være sådan et lille plus tegn her, eller sådan noget. Sådan at når man trykker på den der... for når man er på den der så er du alligevel kun herinde og arbejde og så kan du godt ligge et plus herude, fordi det er stadig her du arbejder. Så kan du godt have et plus der ligger uden for det her, fordi hvis plusset lå herinde så ville det være irriterende, men hvis der ligger et plus der eller... Et vilkårligt symbol i virkeligheden, men et plus det giver bare god mening."

Recording at 22:04: Test person: "Og så måske at man har en effekt boks her, og så kunne du bare trække en effekt ned sådan, 'distorsion, kør'."

Recording at 22:12: Test facilitator: "Okay, ja. Så skal man bare have sådan en til rådighed til forhold af hvad der er af effekter i for eksempel Ableton."

Recording at 22:19: Test person: "Præcis. Alle de der effekter... så bare have sådan en effekt boks hvor du bare kan... effekter og så popper den ud som 'aha' en masse forskellige ting her. Og så kan du bare vælge 'jeg skal bruge noget distorsion', pling, kør. Så behøver man slet ikke det der plus. Så har du bare sådan en effekt boks og så trykker du der og trækker den ned."

Recording at 22:54: Test facilitator: "Hvad er dine tanker omkring det at vi prøver at bruge det spatiale rum i produktionen af musik her."

Recording at 23:01: Test person: "Jamen, altså. Igen, det at det bliver visualiseret det synes jeg er vildt fedt. Og det giver bare en anden fornemmelse for det. For en ting er at du kan sidde derinde, og så kan du have... normalt så har du en knap. Og så kan du sige om det er left eller right. Jeg ved faktisk ikke hvordan det ser ud når det øh..."

Recording at 23:23: Test facilitator: "Det er panning'en. Det er den du har der."

Recording at 23:24: Test person: "Yeah."

Recording at 23:26: TM: "Så den kører bare fra den ene side til den anden side."

Recording at 23:27: Test person: "Yeah. Normalt... I normale situationer så arbejder du med et stereo mix. Og når du arbejder med stereo mix så har du bare sådan en knap der viser dem. 'Nu er guitaren i left eller i right, ikke'. Her der har du en helt anden måde at kigge på det, ikke. Så det der med at kunne arbejde med det spektrale[Her mener han nok spatiale] rum, i forhold til rumklangen, øhm... Det var det der med at... der cuttede den jo fra og det er måske ikke det man ønsker."

Recording at 24:02: Test facilitator: "Så, den der..."

Recording at 24:03: Test person: "Var det... du sagde det spatiale rum?"

Recording at 24:07: Test facilitator: "Ja, simpelthen den måde at arbejde med det her."

Recording at 24:13: Test person: "Jamen, ideen med det der med at jeg kunne lave et øvelokale eller jeg kan... sådan visualisere det, det synes jeg er en meget fed ting. Og det er jo også en kæmpe fordel ved det her, ikke. At netop visualiseringen af det. Fordi det er ikke altid nødvendigvis at... især med sådan et program her, der synes jeg... det er også derfor Logic... jeg synes det er et vildt fedt program at arbejde i fordi det er et meget visuelt program. Visuelt stimulerende, om man vil. I forhold til det her hvor

man bare er kasser på kasser og du ændre det bare. Det synes jeg er fedt. Og det kunne man måske også spille lidt mere på i virkeligheden og sådan tage udgangspunkt i... 'nå men Logic, hvad er det?' Der er bløde kanter, der er noget omkring det der har sådan et kvalitativ design, ikke. Og selve designet af det... Nu må man sige... Nu er der nogle farver, ikke... Selvom det var meget simpelt, ikke. Men det er stadig... Hvis man finder nogle farver der sådan lidt... hvad skal man sige... Lidt ligesom bare sådan noget her farve ikke... Sådan noget der er... jeg ved ikke hvordan man skal beskrive det. For det er ikke det jeg arbejder med. Det der med at gøre det sådan... sådan designet. For det er jo det der med det er et visuelt element du tilføjer i produktionen, ikke. Og det er jo det man spiller på, så det der med at... Det ville jeg i hvert fald synes. Måske har man sådan to designs man kan bruge, som et er et meget simpelt, som ham min kammerat der som jeg snakkede om, som arbejder i Ableton, kan godt lige det bare er simpelt og det er tilgængeligt. Det betyder ikke noget for ham hvordan designet er, men for sådan en som mig der betyder det noget. Så det der med at... hvis I skal... I skal prøve at tjekke Logic ud. Prøve bare at gå ind i de forskellige ting som man kan gå ind i. Og der er bare en anden form for design end i Ableton. Og det kan man måske godt spille på her."

Recording at 26:06: Test facilitator: "Ja. Så til forhold af det spatiale rum, Så ville du ikke... der som du siger, du har ikke rigtig lyst til at have de her volume her, men hvad så med selve fall-off? Altså det... hvad var det du kaldte det..."

Recording at 26:18: Test person: "Øh... High-cut."

Recording at 26:20: Test facilitator: "Ja, det der high-cut. Fordi ideen har var sådan set at vi skulle... at når du lige så stille kom væk fra ham så begyndte du mere at få rumklang, fordi du placere instrumentet længere væk, og så begynder der at komme den der rumklang, fordi det er egentlig det du hører mere end du hører selve instrumentet."

Recording at 26:34: Test person: "Yeah. Men det var også det som jeg nævnte før, det der med at en ting er at... fordi... det udnytter nogle akustiske fænomener, som egentlig foregår... at når en lydkilde den bliver... fjerner fra dig... at så volumenmæssigt der bliver den svagere, men den mister jo også nogle af dens høje frekvenser, fordi de frekvenser de bevæger dig meget længere. Men det er ikke altid det man ønsker. Og langt fra i virkeligheden. Fordi du kan godt have en rumklang, hvor du putter ualmindeligt meget rumklang på, og så skruer du bare helt op for de høje frekvenser. Men det er også igen det der med at... hvad er det man går efter... naturligt akustisk rummiljø, og det tror jeg ikke der så mange der går efter i virkeligheden. Det kan da godt være. Men jeg producerer ikke sådan. Jeg producerer efter hvad jeg mener... Jeg tænker slet ikke sådan akustik ind i det, sådan naturlig akustik... Jeg tænker bare at 'hvordan skal den her rumklang lyde, hvordan skal det fremhæve instrumentet.' Så den tilgang til det... er slet ikke noget jeg overvejer."

Recording at 27:42: Test facilitator: "Nej, Okay."

C.2 Test Participant 2

C.2.1 Assignment 1

Desktop screen at 06:20: Test person: Pans the return tracks

Desktop screen at 11:30: Test person: Plays with the effects of the strings and the EQ's band

Desktop screen at 13:30: Test person: Tries to loop organs

Desktop screen at 14:10: Test person: Adjusts the EQ's bands for the Organs track

Desktop screen at 15:00: Test person: Adjusts bass, mid and treble for guitar

Desktop screen at 15:45: Test person: Mentions that he has never worked in surround before

Desktop screen at 16:55: Test person: Moves the EQ's bands for the Tambourine track

Desktop screen at 17:25: Test person: Changes the sends for the Lead Vocal track

Desktop screen at 19:50: Test person: Adjusts the compressor level of the Lead Vocal track and adjusts the ratio

Desktop screen at 20:15: Test person: Asks if the only make-up gain he got is in the pre-inserted effects

Desktop screen at 20:20: Test facilitator: Explains that the four effects available are just a way to get an idea of how it can work

Desktop screen at 20:50: Test person: Asks for a low-cut for the EQ for the Lead Vocal track

Desktop screen at 22:10: Test person:Tries to find out how to unloop a track

Desktop screen at 24:58: Test person: Solves the looping problem by looping the whole track

Desktop screen at 29:18: Test person: Discovers that it is a send and not panning when he changes which speaker the sound is send to.

Desktop screen at 32:45: Test person: Inserts a low-cut to the Bass track

C.2.2 Assignment 2 - Video Recording 1

Recording at 05:20: Test person: As he moves a track it jumps to the lower right corner

Recording at 06:00: Test person: Tries to unsolo a track, by tapping it once, then double tapping it. The test facilitator tells him to long press to unsolo.

Recording at 07:50: Test person: Asks how he expands the volume border and the test facilitator shows him

Recording at 10:03: Test person: Tries to expand a track but instead it jumps to one of the two fingers he uses.

Recording at 10:12: Test person: Wants clarification on how the compressor works with the pinch gesture. The test facilitator explains how it works.

Recording at 16:00: Test person: Tries to close the effects by tapping outside the track

Recording at 16:55: Test facilitator: Tells the test person that a track is small enough now that the compressor have turned into an expander

Recording at 18:00: Test person: Wants to input more effects to a track, the test facilitator tells him that he should not do that when working with the app.

Desktop screen at 20:40: Test person: Makes use of the EQ's functionality not present in the app for the Strings track

Recording at 23:00: Test person: Asks if he allowed to change the parameters not present in the app

Recording at 25:00: Test person: Asks how many layers of effect we are working with.

Recording at 30:30: Test person: Tries to unsolo, but opens the effects

Recording at 34:00: Test person: Says that when two tracks have their effects open at the same time, the app have difficulties which to send to.

Recording at 36:00: Test person: Notices that the tracks are shifted slightly when changing between mixes.

C.2.3 Assignment 2 - Video Recording 2

Recording at 00:00: Test person: Spend a great deal of time listening and taking notes

Recording at 04:45: Test person: Says that the mixes have reset his fall-off for each track

Recording at 10:35: Test person: Says he really likes the interface. He thinks the idea of using the metaphor for a stage rather than a tape recorder metaphor is brilliant. He thinks it gives a completely different overview and way to know the layout of the tracks.

C.2.4 Assignment 3 - Video Recording 1

Recording at 06:30: Test person: Drags a track around the stageperson to listen to the sound go round the room.

Recording at 07:38: Test person: Tries to expand a track, but it just moves the track

Desktop screen at 10:10: Test person: Changes the other parameters of EQ than available in the app

Recording at 13:15: Test person: After having played with the compressor level of a track he says: "Der er en ting... Sådan som jeg forstår metaforen her, at jo mere man udvider den[a track] jo mere lyd skal der komme, jo mere punch skal der komme på den. Det der sker når man bruger... Sådan som jeg forstår det, styre den [pinch] thresholden?" Test facilitator: "Ja" Test person: "Det som en kompressor gør... Som en threshold gør det er, hvor langt kompressoren, det er den her [points a screen], det er hvor langt nede den skal gå før den tager fat. Det vil sige jo mere jeg udvider, jo mere tager den fat, men det er ikke ens betydninge med at den så også gør lyden større."

Recording at 14:00: Test person: Shows when the compressor no longer 'boosts' the sound when the threshold goes too low.

Recording at 14:33: Test person: "Her gain reductioner den rigtig meget og gain reduction betyder så der skal laves noget make-up gain igen og det virker som om at når man sådan er helt nede, så dykker den lige lidt fordi den laver ikke helt nok make-up i forhold til hvor meget der bliver fjernet. Det er lidt sjovt, bare sådan i forhold til metaforen."

Recording at 15:00: Test person: Explains how a compressor works.

Recording at 19:09: Test person: From this point on he does not make use of the tablet for a good long time

Recording at 28:30: Test person: Changes the functionality of some the EQ's bands

Recording at 29:09: Test person: Tablet turns off after not having been used for a while

Recording at 33:10: Test person: He starts using the tablet again, needing the test facilitator to tell him get the tracks loaded in again as the program had closed down.

Recording at 35:00: Test person: Again stops using the tablet long enough for it to turn off after awhile.

C.2.5 Assignment 3 - Video Recording 2

Recording at 09:09: Test person: Starts using the tablet again, adjust the reverb of some of the tracks

Recording at 13:00: Test person: Mutes a track instead of opening the effects

C.2.6 Interview

Recording at 0:08: Test facilitator: "Hvordan var din umiddelbare oplevelse af at bruge det kombinerede system?"

Recording at 0:14: Test person: "Umiddelbart var jeg meget forvirret i starten men det var mere grundet at jeg ikke sådan kendte Ableton Live. Så egentlig i den første test hvor jeg bare arbejdede i Ableton, der var jeg lidt forvirret. Men så snart vi kom herover og arbejdede på iPad'en og ligesom fandt ud af nåh okay hvordan interagerer det med hinanden så synes jeg faktisk det var lige til... Det var virkeligt, øh... Det var meget intuitivt, nemt at bruge."

Recording at 0:40: Test facilitator: "Det gav også et godt overblik eller?"

Recording at 0:42: Test person: "Ja, i den forstand hvis man vil bruge den til at skabe en forståelse af hvad det er for et rum man gerne vil skabe. Så synes jeg helt klart det er et rigtig, rigtig godt værktøj. Jeg tror sådan som app'en fungerer nu i forhold til interaktionen med programmet, så tror jeg ikke jeg ville sætte den først i kæden, jeg tror jeg ville bruge det her program når jeg er i gang med et mix-down og skal til at lave de sidste justeringer og finesse ting. Fordi lige nu der er den, den er meget sådan. Man er meget fastlåst i at der er de indstillinger der ligesom er, de EQ indstillinger, de reverb indstillinger der er. Typisk i et mix ville man gå meget mere ned i detaljerne og først fjerne små ting og så lave lidt med en kompressor og så fjerne nogle flere ting og så gå med en kompressor altså så typisk ville det være et... Jeg tror det ville være et genialt værktøj til sådan at lave de sidste finesser og panoreringen i et mix-down. Helt vildt fedt. Men jeg tror at de parametre man kan arbejde med inde i selve hver cirkel tror jeg man skal gøre mere fleksible, hvis man skal bruge det i mix-down-fasen lige fra starten af."

Recording at 2:01: Test facilitator: "Altså det her kan man sige det er jo bare en test for ligesom at sige at hvis nu du får nogle redskaber. Vi har jo bare sat et antal på ligesom han har arbejdet med. Det kunne selvfølgelig sagtens være færre eller flere eller nogle man selv kunne lægge til eller tage fra. Hvad det angår"

Recording at 2:18: Test person: "Helt vildt. Jeg tror det er et spørgsmål om tilvænning fra min side. Så ville det være at sidde med musen i venstre hånd og sidde og lave et eller andet her [På iPad'en]. Og lige lave nogle ting på keyboardet. Jeg kan rigtig godt lide den måde at arbejde på. Det vil jeg sige."

Recording at 2:42: Test facilitator: "Så hvordan var det at bruge computeren og iPad'en sådan samtidig?" "Det synes jeg var svært. Altså sådan umiddelbart det med at prøve at skulle have, koncentrerer sig om at have en skærm herover og en skærm herovre, så jeg tror egentlig at jeg kom til at arbejde mere først det ene sted og så det andet sted end at lave direkte parallelle arbejdsopgaver."

Recording at 3:07: Test facilitator: "Det tror jeg heller ikke man kan forvente, men det er også mere det her med at nu gør du noget herovre og så ser du eventuelt forandringen ske over i Ableton og omvendt."

Recording at 3:18: Test person: "Jeg kan faktisk bedre lide fra iPad til højtalere. Jeg kan faktisk bedre lide at jeg gør noget her [På iPad'en] og så sker der noget auditivt. Sådan den visuelle del i programmet er mere sådan en ahaoplevelse i at det er første gang jeg oplever det, men det er mere vigtigt at jeg auditivt kan høre at der sker noget med det samme. Så umiddelbart mere i forhold til højtalerne."

Recording at 3:50: Test facilitator: "Hvis nu sådan et program her blev udviklet sådan til... hvor man kan sige det bliver et stabilt program hvor man også... Hvis du får muligheden for at få et program tilsvarende til det her ville du så selv bruge det tror du?"

Recording at 4:08: Test person: "Ja. Jeg tror. Det kommer an på hvad man kan bruge det til. Sådan som programmet som jeg har prøvet det i dag, det nævnte jeg også, så ville jeg bruge som en sidste finesse tilpasnings ting i et mix-down men ja helt klart. Og jeg kan virkelig, virkelig godt lige at I har bevæget jer udenfor den der metafor man typisk bruger i musik produktions programmer med at det har noget med en båndoptager eller andet sådant studiegrej. Jeg kan rigtig godt lide den metafor. Den er lige til og intuitiv og jeg tror den appellere til rigtig, rigtig mange der ikke nødvendigvis ved hvordan et traditionelt musikprogram virker. Men mere har en forestilling om 'at jeg vil bare gerne have at lyden kommer herovre fra eller herovre fra eller har den her udformning'. Det kan jeg rigtig godt lide."

Recording at 4:56: Test facilitator: "Hvis den så... nu snakker du om, hvis den kun bliver brugt som den er nu. Hvis den nu... Hvad ville du selv umiddelbart sige der skulle ændres på den for at give... eller... hvad kan man sige... ideer til hvordan du kunne... hvordan du ville bruge det?"

Recording at 5:12: Test person: "Man kan sige de parametre. Der er de fire parametre du kan arbejde med lige nu. Der er bass, mid, tremble og reverb. Jeg tror umiddelbart. Så tror jeg at, at de mix vinduer der er herovre, så i stedet for at lave dem til at man har. Så har man et mix, så har man to mix, så har man tre mix så har man fase 1 fase 2 fase 3 fase 4 af et mix. Fordi så når du har lavet første fase så laver du noget behandling, så går du videre til næste fase og så laver du noget andet behandling. Og så kan du, alt efter hvad for en fase du er i, så kan du selv programmere hvad for nogle parametre det er du gerne vil kunne ændre på. Er det EQ? Altså med frekvenserne eller er det kompressor eller er det rum? Og så skal man selv kunne vælge hvad for en fase man så er i og arbejder med.

Recording at 6:04: Test facilitator: "Så det vil sige at i fase 1 lægger man nogle forskellige effekter på. Og så når man er færdig med den fase, så bibeholder den bare dem indtil den næste fase uden at du sådan set rykker på dem."

Recording at 6:13: Test person: "Yes, yes. Og det er meget vigtigt at de er, at de er. At man ligesom siger 'Første del af kæden. Anden del af kæden. Tredje del af kæden.' Sådan at man har effekten fra den første del. Har effekten fra den første og den anden del. Har den første, anden og tredje del videre med. Det ville være et rigtig, rigtig, rigtig, rigtig godt værktøj at mixe i. Men der skal være mange flere, specielt på EQ siden skal der være mange flere parametre at arbejde med. Og jeg tror også i er nød til at kigge på kompressoren, fordi lige nu der er der den med at du enten hæver eller sænker threshold'en. Så tror også... i og med hvis du vil have... hvis hvert fald man arbejder med den ide at jo større cirklen den bliver, jo mere punch kommer der ligesom på lyden. Så skal I også ind og have fundet ud af hvordan attack og release og knee, og nogle af de andre parametre der ligesom gør sig gældende i en kompressor for at, for at give en mere punchy lyd. Jeg ved ikke om man kan skræddersy en formel der ligesom får alle de ting til at fungerer, men at det kun er threshold'en man arbejder med det er misvisende i forhold til en kompressor egentlig er."

Recording at 7:32: Test facilitator: "Ja, okay. Helt sikkert."

Recording at 7:35: Test person: "Man jeg kan rigtig, rigtig godt lide ideen om det. Alt det der med at man så siger, 'okay, swiiisch den skal fylde mere her'. Altså hele den grafiske side af det er jeg helt nede med."

Recording at 7:44: Test facilitator: "Altså jo større den er, jo mere fylder den i lydbilledet."

Recording at 7:46: Test person: "Ja, præcis. Præcis. Genial tanke."

Recording at 7:50: Test facilitator: "Ja. Så det handler bare om at finde ud af hvordan vi for gjort det, at det rent faktisk også gør sig gældende i lydbilledet. Det rigtige lydbillede, så det ikke kun er grafisk."

Recording at 8:05: Test facilitator: "Hvad for nogle fordele og ulemper kunne du se ved at bruge en iPad her i stedet for en computer?"

Recording at 8:17: Test person: "Umiddelbart kommer jeg til at på nogle ulemper, men det er mere i forhold til... jeg er ikke... jeg har en gammel Nokia 3310 så jeg er ikke... mine pølsefingre er ikke så meget vant til det her touch. Der er... Den er ikke super sensitiv i forhold til det der med af skrue op og ned for de forskellige parametre. Så det vil jeg faktisk kunne gøre hurtigere, tror jeg, på en computer. Men hvis det bliver strømlignet så tror jeg... altså så ville det jo... så sidder du jo sådan set med alle parametrene indenfor dine fingre på en flade. Og så med de der forskellige stage eller faser man så kan skifte rundt imellem. Så ulempen er umiddelbart at den... at det stadig er en grov skitse af et program der kan blive helt vildt fedt. Men fordelen er helt klart at hvis du kan have et mix-program der bare ligger på en platform, her på en iPad, så kan du kan du jo sidde hvor som helst, og mixe. Og du skal have den her med [iPad] og koble den op til en computer. Så kan du jo i princippet gøre hvor det skal være til dit mixing-lokale hvis du bare sørger for at rummet er i orden. Så helt klart fordelen at det er portable og let tilgængeligt."

Recording at 9:29: Test facilitator: "Hvordan var det at du skulle skifte sådan frem og tilbage mellem computeren og så til iPad'en for eksempel at gøre nogle ting på iPad'en og så skulle gøre nogle andre ting på computeren?"

Recording at 9:37: Test person: "Det synes jeg egentlig ikke var noget problem. Nu fik jeg sagt det der med at jeg synes der skulle flere parametre herned man kunne arbejde med, og det kommer også an på hvad det er for en brugerflade det er I rent faktisk vil lave. Men jeg havde ikke noget imod at der var nogle ting jeg skulle sidde og lave heroppe [på computeren], men det er fordi jeg er vant til at lave det heroppe. Om jeg gør noget heroppe fordi jeg faktisk er vant til det, og så ved at 'nåh men så tror jeg måske at jeg skal gøre sådan her' i stedet for sådan at 'jeg holder mig lige væk fra at gøre det her' det ved jeg ikke... jeg ved ikke hvor meget afskrækkende, men jeg synes ikke det var noget problem... at veksle imellem de to."

Recording at 10:20: Test facilitator: "Kan du forklare lidt om hvordan produktionsprocessen her i den her test afviger fra din normale proces i at arbejde med det her lyd? Eller generelt med musikkomponering?"

Recording at 10:32: Test person: "For det første at tracks'ne vi arbejder med her overhovedet ikke er synkroniserede, så på dem måde er processen for mig helt anderledes i og med jeg skal forholde mig en lydbølge der bare... hvor alt bare høvler ind over hinanden, så på den måde adskilte den sig rigtig meget. Den adskilte sig også ved at jeg faktisk... normalt når jeg mixer så plejer jeg overhovedet ikke at lave noget der hedder panorering før langt henne i processen, der plejer alting at ligge i en kage lige i midten og så laver jeg små indgreb med EQ og kompressor. Og det er først efter når jeg har lavet rigtig mange indgreb at jeg begynder at lave panorering og rumklangs påvirkning overhovet. Det synes jeg er der er en fordel ved at gøre ved at man kan finde alle de ting der stikker ud inden man begynder at høvle det ud over... ud i rummet. Hvis man har alting til at ligge inde i midten, og rent faktisk bruger tid på at kunne høre de enkelte dele fra hinanden, selvom de ligger inde i midten, så får man rigtig meget ud af at, når man så spreder det ud. Så det ligger... Jeg tror man skal holde sig selv lige i fingrene med ikke bare at 'nåh yes' og så begynder man bare at sprede paletten ud. Så der adskilte det sig helt sikkert ved at ja 'gluk gluk gluk gluk gluk gluk' [Han gestikulerer at han flytter rundt på tracks'ne på iPad'en]."

Recording at 11:47: Test facilitator: "Du prøver det bare af."

Recording at 11:48: Test person: "Ja, præcis."

Recording at 11:55: Test facilitator: "Gav det dig anledning til at prøve noget nyt, eller fik du en form for ny inspiration af at. At du nu gjorde det lidt anderledes?"

Recording at 12:02: Test person: "Ja, jeg vil sige at jeg... Det der med at vi har et center som er lytteren og så at man i og for sig kan tage de enkelte elementer og så bare rykke dem rundt efter forgodtbefindende, det gør at jeg fik meget mere lyst til at eksperimenterer med 'nåh, men hvor filan skal det så ligge henne i rummet' i stedet for bare at ty til de metoder jeg ligesom kender. Nåh, jeg har med det her instrument indenfor den her genre, nåh men så ligger vi det her, og så ligger vi rumklangen på den her måde. Så her der var det bare intuitiv leg meget af tiden også. Det har helt klart en anden tilgang. Som jeg tror mange der arbejder med musik på, kunne have meget ud af at blive sådan... vi har alle sammen nogle rigtig fastlagte rutiner, som vi har tillært os alt efter hvor længe var har arbejdet med tingene. Det der er et rigtig godt lege-værktøj os til ligesom at blive... Få rystet posen og gøre noget på en helt ny måde."

Recording at 13:05: Test facilitator: "Vi har været lidt inde på det med de der nogen du snakkede om, de der værktøjer som du godt kunne føle manglede lidt på iPad'en. Det var måske lidt begrænset hvad mulighed vi egentlig havde med de her effekter. Så det tror jeg ikke vi snakker mere om, det har jeg vist skrevet. Det var bare hvis du gerne ville have muligvis lidt mere selvkostimatisering sådan i hvordan man kan måske trække tracks'ne eller effekterne ned på den og..."

Recording at 13:32: Test person: "Ja. Eller måske ikke så meget tracks men deres effekter, ja. Og helt klart i forhold EQ at... der er det i rigtig, rigtig, rigtig mange tilfælde der er det simpelthen ikke nok at have parametre der hedder bass, mid og tremble. Og når man så laver en EQ der shelver, ved at lukker noget af i bassen eller lukker noget af i toppen og så har man en til at lave noget i midten. Man skal simpelthen have mange parametre. Normalt laver man typisk et low-cut, et lille low-cut og så har man måske fire bånd til at lave små ændringer, skære noget væk eller forhøje en lille smule, og så har man måske et high-cut også. Man vil typisk have mange flere EQ bånd at gøre med."

Recording at 14:17: Test facilitator: "Jah. Jeg kunne nemlig også godt se at du sad meget over på computeren og flyttede rundt, og også bare det at flytte dem fra side til side."

Recording at 14:24: Test person: "Yes. Det er typisk også en ting man gør rigtig, rigtig meget når man mixer. Det er at man tager et EQ bånd og så gør man Q værdien rigtig høj så man får en meget smal kurve og så skruer man helt op for gain'en og så sidder man sådan... det hedder sweeping, så kører man sådan rundt for side til side for at 'oh er der noget der lyder godt eller er der noget der lyder skidt her', og så enten så ligger man... så skærer man bare fra med en høj Q værdi eller også sænker man den sådan den typisk har en gain på det der nu passer sig, det kan være hvad som helst, og så laver man en høj Q værdi sådan at det spreder sig ud så og ikke kommer til at være en markant [laver en høj klap lyd] lige på det her område, men mere sådan... hvad hedder sådan noget?.. Et diskret boost. Så det var derfor jeg sad og kørte sådan frem og tilbage."

Recording at 15:15: Test facilitator: "Helt sikkert."

Recording at 15:20: Test facilitator: "Havde det at du skulle skifte mellem de to enheder en indvirkning på din proces? Vil du sige eller mene."

Recording at 15:33: Test person: "Altså du mener hvornår jeg gjorde hvad eller?"

Recording at 15:37: Test facilitator: "Ja, simpelthen at. Nu standart så sidder du jo med... gætter jeg på i hvert fald, på computeren og sidder og mixer der, men i og med du så skulle... havde den her ovre [iPad'en] til at give lidt ekstra... have nogle ekstra værktøjer igennem den, ændrede det så den måde du ville korrigere på. Ja det kan man sige at det har jeg allerede har spurgt om. Den har jo ændret på hvordan du egentlig gør."

Recording at 16:02: Test person: "Ja. Ja, fordi netop det jeg nævnte med at jeg intuitivt allerede lavede panorering og rumklangsfordeling inden jeg havde lavet EQ og kompressor. Det ville jeg typisk ikke gøre før langt inde processen. Og det nåede jeg slet ikke til endnu i nogle af mix'ene. Hvor jeg typisk ville have gjort det. Det sidste jeg gjorde her i den sidste test. Der sad jeg faktisk og puttede en kompressor på, på alle tracks'ne og typisk derefter ville jeg så puttede en EQ mere på, og en kompressor og en EQ og en kompressor på alle tracks'ne. Og så først derefter ville jeg begynde at lave rum og panorering. Og yderligere effekter og den vej udad. Ja det ændrede en del af mine processer."

Recording at 16:47: Test facilitator: "Kan du forklare hvordan du forstår de forskellige interaktioner som der blev anvendt der på iPad'en?"

Recording at 16:55: Test person: "Det er jeg ikke helt sikker på jeg forstår."

Recording at 16:56: Test facilitator: "For eksempel med træk i... når du trykker på et track og flytter det eller når du trykker på det for at mute det og solo og den slags."

Recording at 17:08: Test person: "Jeg skulle lige vænne mig til... der var rigtig mange gange hvor jeg kom til at mute hvor jeg i virkeligheden ville... ville have... hvad skal man sige... hvad hedder den..."

Recording at 17:19: Test facilitator: "Når du ville have effekterne frem?"

Recording at 17:21: Test person: "Ja. Effekterne frem osv. Så der... nogle gange... det der med om det skulle det være et dobbelt klik eller skulle jeg holde den eller skulle det bare være et enkelt klik. Det forvirrede mig lidt en gang i mellem. Men ellers så synes jeg det var... det vare utrolig lige til at gå til. Altså. Og funktionerne lå lige for med det samme. 'Nåh okay. Lytter [Test person peger på lytteren på iPad'en]. Sigende. Bum.' Det var meget behageligt og... jamen, jeg har sagt det så mange gange. Intuitivt. Rigtig, rigtig nemt at gå til."

Recording at 17:58: Test facilitator: "Det lydbillede der ligesom bliver afbilledet på iPad'en. Kan vi høre lidt om hvordan så du det i forhold til det du hørte? Altså kan man sige. Passer det overens med hinanden?"

Recording at 18:16: Test person: "Jeg synes... der er måske nogle kalibrerings ting i forhold til sådan... det skal siges det har også noget med min u... jeg er ikke særlig erfaren i forhold til surround lydbilleder... men jeg synes godt at man kunne kalibrere enten programmet eller højtalerne, hvad man nu gør, til at... lidt mere nøjagtighed i forhold til når man gør... når man har panoreret meget ud i siderne enten foran eller bagtil. Jeg synes det er svært at høre forskellene på om man flytter i det her område eller det her område."

Recording at 18:57: Test facilitator: "Så i hjørnerne?"

Recording at 18:59: Test person: "Ja, i hjørnerne. Men ellers så synes jeg faktisk det afspejler rigtig godt. Selve fall-off... øh..."

Recording at 19:11: Test facilitator: "De her cirkler."

Recording at 19:13: Test person: "Ja. Jeg synes det sker meget brat. Det går fra man ikke rigtigt mærker eller hører at der sker en ændring, og så rykker man lige en lille smule, og så er det som om der bliver cuttet rigtig, rigtig meget af toppen. Så den tror jeg også man sagtens kan... den vil jeg anbefale at den laver man... at den skal man lave mere transparent."

Recording at 19:33: Test facilitator: "Det prøvede vi nemlig også, med at når man har cirklerne. Jo mindre cirklen er des hurtigere sker forandringen, men hvis du trækker den ud så øger du ligesom... Du kan sige det her er max og det her er slukket og så flytter du bare på hvor fintfølende den skal være."

Recording at 19:48: Test person: "Amen så er det bare mig der ikke har forstået det."

Recording at 19:53: Test facilitator: "Det er jo også noget vi skal finde ud af, hvordan vi kan... vise det igennem... i sig selv. Altså så det kan være lige så nemt at bruge som det var at bruge touch. Men øh."

Recording at 20:08: Test person: "Spørgsmålet er om man skal lave en akse der ligesom viser hvor man er henne i forhold til max og sluk. Det ved jeg ikke om man kan eller om det ødelægger hele æstetikken i forhold til... det er meget sådan... det er en meget afpoleret brugerflade i har. Det virker som om der ikke skal være flere funktioner end højest nødvendigt for så begynder det at blive forvirrende. Men det er jo altid... det handler jo altid om hvad det er for nogle brugere i henvender jer til. Hvis det er folk der arbejder i industrien, så tror jeg ikke det vil gøre noget at putte flere informationer ind. Men hvis det er et produkt I vil have ud til så mange som overhovedet muligt og som nødvendigvis ikke beskæftiger sig med musikproduktion i det daglige og skal til at lære det, så tror jeg det er en rigtig god idé at der er så få informationer som der er der."

Recording at 21:06: Test facilitator: "Hvad er dine tanker omkring at anvende det spatiale rum i produktion af musik? Altså det her med at surround og så have sådan en på tabletten. Det er nærmest det fysiske rum man sidder med..."

Recording at 21:20: Test person: "Jamen, det er allerede noget man gør i forvejen. Forskellen er bare at I har rent faktisk lavet en visualisering af det. Hvor af i dag der sidder man inde og arbejder med grafer og ligesom bruger mixer metaforen til at lave det rum man ønsker. Men I har rent faktisk manifesteret rummet her på tabletten. Så jeg vil sige det er allerede noget man arbejder med, men det bliver meget mere lige til at tænkte ' her er rummet rent faktisk så kan jeg arbejde med det her' i stedet for 'her er rummet [han peger på computeren] og her er rummet [han peger på sit hoved]. Altså rummet er inde i en metafor som egentlig ikke har noget med rum at gøre men har noget med en båndoptager af gøre, eller inde i mit hoved.' Men den er rent faktisk her [peger på iPad'en]. Ja, som jeg har sagt før så det kan jeg rigtig, rigtig godt li'."

C.3 Test Participant 3

C.3.1 Assignment 1

Recording at 0:38: Test person reads the assignment.

Recording at 1:57: Test person listens to the track and tests the shortcuts.

Desktop screen at 1:28: Test person gets a bit of introduction to *Ableton Live*.

Recording at 3:45: Test person wants to mix it so it sounds like a rehearsal room without to much processing.

Recording at 4:20: Test person gets an introduction to the senders and how the surrounds works.

Desktop screen at 4:01: Test person looks through the different preset effects on a track and begins to adjust on them.

Recording at 6:10: Test person makes slight adjustments and listens to the effect of the changes.

Desktop screen at 5:50: Test person adds a new point to the equalizer.

Recording at 7:45: Test person has to changes view to find the faders for setting the volume.

Desktop screen at 7:40: Test person uses some time on each switch adjusting it to what he wants.

Recording at 10:28: Test person explains the meaning behind the new point on the equalizer.

Desktop screen at 11:45: Test person uses the senders to move a tracks sound in front of him.

Desktop screen at 13:40: Test person uses a lot of time making small adjustment at the time on the effects.

Desktop screen at 15:15: Test person uses the senders again, there is a returning theme of him either switching it all on or all the way off. After a while he actually sets it somewhere in the middle but they do not represent a realistic way of sound directions.

Desktop screen at 19:24: So far Test person have used the volume a very little compared to how much time he actually spend to adjusting the effects.

Desktop screen at 25:26: Test person have spend the entire time jumping between track adjusting a bit on the effects.

Desktop screen at 25:58: Test person begins to use the sends to try and a position the sound in the room. The small and rather random adjustments indicates uncertainty about their impact.

Recording at 28:45: Test person tries to listen where the sound is coming from, leaning out of his seat to the right of him.

Recording at 29:49: Test person comments that he would like to be able to add more points to the equalizer.

Recording at 30:07: Test person "Jeg udnyttede faktisk surround til at få den storhed til de instrumenter der skulle fylde mest, altså at der er noget bag ved en og så som om bandet er foran en."

C.3.2 Assignment 2 - Video Recording 1

Noted at 9:37: Test person asks if it is the commercial song he should mimic.

Noted at 9:38: Test facilitator: Answers yes.

Desktop screen at 00:59: Test person and coordinator finds the original song on Youtube.

Noted at 9:39: Test person writes some notes down while listening to the song.

Desktop screen at 5:20: Test person starts watching the demo videos.

Desktop screen at 8:45: Test person is done watching the demos and switches back to *Ableton Live*.

Desktop screen at 9:15: Test person changes the sender levels in *Ableton Live* so the tracks comes from the two front speakers, instead of doing it on the iPad.

Noted at 9:45: Test facilitator: Explains that the changes Test person makes are going to be overridden when he start moving with tracks on the iPad.

iPad screen at 9:34: Test person changes to the iPad and begins to drag the tracks.

iPad screen at 10:24: Test person experiments with tracks on the iPad while the music is playing.

iPad screen at 10:54: Test person accidentally soles a track while trying to move it.

Desktop screen at 11:26: Test person goes back to Youtube to listen to the song again.

iPad screen at 12:27: Test person opens the effect menu of *Drums* on the iPad and immediately solos it. After a few seconds he unsolos it.

iPad screen at 12:33: Test person closes the effect menu for *Drums* without having changed anything and solos it again.

iPad screen at 12:38: Test person pinches *Drums* bigger.

iPad screen at 12:45: Test person opens the effect menu again and adjust the effects.

iPad screen at 13:07: In an attempt close the effect menu, Test person unsolos and solos *Drums* before he closes the effect menu.

iPad screen at 13:42: Test person makes similar adjustments to *Guitars*.

iPad screen at 13:51: Test person soles drums and then guitar again, where after he solos *Tambourine*.

iPad screen at 14:18: Test person pinches *Tambourine* smaller expanding the sound.

iPad screen at 14:55: Test person mutes few of the tracks to listen to three of them.

iPad screen at 15:54: Test person fiddles around muting, opening and soloing tracks before he solos the right track. In an effort to pinch *Tambourine* bigger he experience the track jumping between his two fingers until he get the pinch gesture right.

iPad screen at 18:05: Test person moves the *Guitar* outside of the volume ring which make the program apply falloff to the track. He then moves it back in and begins to adjust the rings sizes.

iPad screen at 18:23: Test person unmutes vocal, mutes it again and unmutes *Bass* which he moves closer to the person and begins to adjust.

Desktop screen at 18:55: Test person goes back to Youtube to listen to a part of the original song.

iPad screen at 20:10: Test person check the effects on *Guitar*, where after he moves to make adjustments to *Strings* which he moves closer to the right side of the person.

iPad screen at 20:28: Test person moves to *Organ* to make adjustments to it and places it to the right of the person.

iPad screen at 20:54: Test person soles *Voices* and starts to adjust it.

iPad screen at 21:11: Test person unsolos *Voices* and moves it closer to the person on top of *Strings*. After moving it about for a bit he pinches it bigger.

iPad screen at 21:23: Test person unmutes *Lead Vocal* and begins working on it.

Desktop screen at 22:06: Test person is back on Youtube to listen to a bit of the original song.

iPad screen at 22:15: After Test person had listened to the original he makes the *Lead Vocal* a lot bigger and solos it.

Desktop screen at 22:55: Test person moves from the iPad to the computer and opens bar displaying all the effect for *Bass* where he begins to adjust settings not available on the iPad.

iPad screen at 23:40: Test person moves back to iPad to unsolo *Lead Vocal* and rearrange it a bit.

iPad screen at 24:00: Test person accidentally mutes *Lead Vocal* instead of opening the effect menu.

iPad screen at 25:28: Test person makes the same mistake as before. After the effect menu is open he tries to adjust one of the effect but accidentally moves one of the track under the effect instead.

Desktop screen at 25:38: Test person is back in *Ableton Live* and tries to find the effects for the *Lead Vocal* which he was just adjusting on the iPad.

iPad screen at 26:58: Test person adjust the falloff ring a bit.

Desktop screen at 27:34: Test person selects *Strings* and goes to the iPad to adjust the settings.

iPad screen at 27:48: Test person adjust the tracks placing them closer to to each other at the center.

Desktop screen at 29:08: Test person selects *Lead Vocal* to adjust some effects settings which are not available on the iPad.

iPad screen at 30:35: Test person tries to use the pinch gesture to make *Organ* bigger.

Desktop screen at 31:00: Test person goes back to Youtube to listen to the original song again.

Desktop screen at 31:24: Test person tries to close the effect menu after he done with it but accidentally solos it instead. After he closed the effect menu he unsolos it.

iPad screen at 33:24: Test person in an attempt to move the *Lead Vocal* he accidentally solos it, that he unsolos as soon he is finished moving it.

C.3.3 Assignment 2 - Video Recording 2

Recording at 0:50: Test person listens to the music where after he goes to the computer to find the original song again.

Recording at 2:54: Test person tries to select a track to bring it to the front but instead mutes it. After this he tries to open the effect menu but mutes it again.

Recording at 3:05: Test person tries to adjust an effect in the effect menu but can seem to get it to move before after a few tries.

Recording at 4:20: Test person uses the computer to jump to a specific place in the song and then moves to the iPad to continue working.

iPad screen at 41:42: While moving with the *Bass* it jumps the left corner which is caused by the way Test person has his hands which can be seen on the camera recording at 4:52.

iPad screen at 41:55: Experiences a similar problem with drum which start to jump around.

Recording at 5:18: Test person decides to use more of the room by distributing the tracks more in the room.

iPad screen at 43:08: Test person moves *Strings* all the way to the bottom end of the stage he expands the falloff ring.

Recording at 6:55: Test person tries to pinch the *Bass* smaller but mutes it instead. He then moves it a bit and tries again.

iPad screen at 40:10: Test person moves the *Stage Person* downwards so the bottom tracks comes into the volume range again. After he places the *Stage Person* at the center again and moves the track from the bottom inside the volume range.

iPad screen at 8:28: Test person moves the *Strings* up closer to other tracks and listens for a while. Afterwards he decides it sounded better where it was before and move it back again.

Recording at 10:04: After Test person had listen for a while he moves his attention from the iPad to the computer to look at *Organ* effects.

Recording at 10:45: Test person finds *Organ* in *Ableton Live* and then uses the iPad to adjust the compressor. While he doing it he shifts hes attention between the computer and iPad.

Desktop screen at 49:24: Test person is fine turning in *Ableton Live* on the different tracks.

Recording at 17:38: Test person does the same trick again where he is adjusting something on the iPad but is watching it on the computer.

Desktop screen at 55:36: Test person looks through the effects on the computer to find an effect which he needs which are not available on the iPad.

iPad screen at 55:40: Test person solos *Lead Vocal* so he can better hear it and set the settings.

C.3.4 Assignment 3 - Video Recording 1

Recording at 0:10: Test person comes in and reads the assignment and listen to the original song.

Recording at 2:55: Test person writes comments to the original song on a piece of paper in front of him.

iPad screen at 3:48: Test person starts moving all the tracks in front of the *Stage Person*, where one of the tracks jumps to different place on the screen and then back again.

Desktop screen at 4:20: Test person looks around in *Ableton Live* and changes to *Session View* where after he moves his attention back to the iPad.

iPad screen at 4:35: Test person tries to solo two a time but realize it is not possible so he begins to mute all other tracks instead.

Recording at 4:59: Test person moves his attention to the computer where he selects a track, where after he moves back to iPad to open the effect menu.

Recording at 5:30: Test person made some changes to a track and shifted his attention to the computer where he selected the same track and expanded the effects so he see the detailed view.

Recording at 6:01: After Test person had made some adjustment not possible on the iPad, he move his attention back to iPad, unmuting another track, open its effect menu and started working on it.

Recording at 6:30: Test person makes a similar interaction where he looks at details on the computer, selects another track and moves his attention to the iPad.

Recording at 7:54: After he had made some changes on the iPad, he moved to the computer to make some changes to effects which were not present on the iPad.

Recording at 8:10: Test person tries to close the effect menu by tapping on empty space on the stage.

Recording at 8:20: Test person tries to tap a track to unmute it but the tap was not registered by the iPad, it succeeded on the second try.

Recording at 8:30: Test person had to hold the iPad because it moved with his finger.

Recording at 8:55: Test person tries to double tap to open effect menu but the iPad only registered a single tap resulting in muting the track instead. Test person had to then unmute and double tap again.

Recording at 9:05: Test person tries to doubles tap a muted track, nothing is suppose to happen. Test person then single taps which should unmute it but nothing happen. He then tries again succeeding in unmuting the track and then double taps for opening the effect menu.

iPad screen at 9:25: Test person tries to adjust the *Mid* effect but the slice jump back and forth making it hard to get the wanted level of effect. Test person had to lift his finger from the iPad and place it again before it responded so he could use it.

Desktop screen at 9:48: Test person is back on the computer to work on some the effects which are not represented on the iPad. pad 10:05 screen 10.16

Desktop screen at 10:20: Test person uses the computer to jump in the tracks to a specific place in the song.

iPad screen at 10:41: After Test person finds the right place in the song, he goes back to the iPad to continue working on a track.

Desktop screen at 11:00: After adjusting the compressor with the pinch gesture on the iPad Test person moves to the computer to adjust on more detailed settings.

Desktop screen at 11:35: Test person selects a track in *Ableton Live* and moves to the iPad where he solos it. After this he goes back to the computer to work with the detailed view of the effects.

Desktop screen at 12:45: Again Test person uses the iPad to solo a track, then finds it on the computer and finds the detailed effect view, using the settings not available on the iPad.

iPad screen at 13:10: Test person unsolos the track and listens to all tracks except one together.

iPad screen at 13:55: Test person then solos the track which were muted and finds it on the computer.

iPad screen at 14:18: After Test person is done he solos it and listens to all the tracks together again.

iPad screen at 14:28: Test person experience a track jumping around while he tried moving it.

iPad screen at 14:45: Test person uses the undo to move tracks back to their position after the jump while he was moving them.

Desktop screen at 15:10: Test person moves a bit on the tracks on the iPad and then goes to the computer to adjust an effect on one of them.

Desktop screen at 19:19: Another example on how Test person uses the computer for the detailed effect view and adjustments while iPad at 19:08 he used it for the more overall adjustments.

Desktop screen at 20:31: Test person uses the computer to add a new effect to a track.

Desktop screen at 22:30: Test person uses the iPad to mute the track which he is about to add a nice effect to.

iPad screen at 27:19: Test person have multiple times jumped between two check soloing them and making some slight adjustments.

iPad screen at 35:55: Test person moves two tracks out into the fall-off zone.

iPad screen at 38:15: Test person goes through all the tracks and solo them to listen to them individually.

iPad screen at 43:00: Test person has not really utilized the whole stage so far and more went for a stereo mix.

Desktop screen at 45:16: Test person adjusts on an effect which he himself have added.

Desktop screen at 47:07: It a common theme that Test person selects the track on the computer and then solos it on the iPad fx 46:43.

iPad screen at 51:47: Again a track jumps while he tries to move it.

C.3.5 Assignment 3 - Video Recording 2

Recording cuts off here due to technical difficulties.

C.3.6 Interview

Recording at 00:07: Test facilitator: "Så, hvad er den umiddelbare oplevelse ved at bruge det kombineret system?"

Recording at 00:11: Test person: "Det var overraskende intuitivt og jeg vil sige meget interessant og en let, jeg vil sige, tilvænning/benyttelse af appen. På den måde var det... Jeg vil sige... Det virkede på en eller anden måde faktisk meget naturlig, som en meget naturlig udvidelse"

Recording at 00:42: Test facilitator: "Det der bliver vist på skærmen er også sådan som det...[lyder]?"

Recording at 00:45: Test person: "Åh ja, helt klart, jah, det virker meget intuitivt, det er et godt ord. Fordi der bliver brugt lidt de der, ja sådan iPad bevægelser som man er vant til at gøre. Det er ikke fordi man skal kode alt muligt ind. Man går bare i gang og så kommer det hele meget hurtigt. Man forstå hurtigt hvad der sker, især også når man i realtid kan se det sker oppe i ens program. Man kan se de kedelige detaljer hvis man kan sige det sådan, så man sådan kan se, åh jeg gør det så meget og sådan. Så kan man sådan få en fornemmelse for, udover at man kan hører det, hvor meget man egentlig påvirker det."

Recording at 01:33: Test facilitator: "Hvordan var det så at bruge de to på samme tid? Altså både iPad'en og computeren?"

Recording at 01.37: Test person: "Det virkede ikke som at det var så'en særlig destruktiv at bruge den. Det var som om at den gav en visualiseringen som egentlig understøttede de tekniske detaljerne meget godt, så man kan sige der var et godt samarbejde mellem skærm og iPad. Så på den måde virkede det som noget meget konstruktivt at få ud af det."

Recording at 02:20: Test facilitator: Hvis der nu udkom sådan et program, tilsvarende det her, og du fik nogle muligheder som de her, vil du selv tænke, du ville bruge sådan et?"

Recording at 02:30: Test person: "Jeg kunne faktisk godt overveje at bruge det. Som sagt var det så nemt at bruge og jeg lage også mærke til, at jeg gjorde nogle ting gennem den her app, som jeg umiddelbart aldrig ville gøre, når jeg kiggede på det. Det giver mulighed for at ens kreativitet/musikalitet kan komme igennem uden at man tænker for meget over de rammer/grænser der er, som man har fået tillært sig på en eller anden måde. Man springer alle de kedelige tal over. Den er lidt i samme stil som det old school analogt gear. Der var heller ikke så meget tal. Der måtte man dreje og føler sig lidt frem. Det gør det sådan mere musikalsk, man sidder ikke og tænker tal."

Recording at 03:50: Test facilitator: "Så du vil mene at setupet gav anledning til at prøve noget nyt? Og komme med nye idéer? Gav det dig også ny inspiration til at prøve noget andet?"

Recording at 04:05: Test person: "Den gav mig i hvert fald lyst til ikke at tænke de helt [små?] finurligheder med stereo billede og komprimering. Altså så var jeg ikke bange for at gøre for meget eller for lidt. På den måde, med at prøve nye ting, så var det ikke

sådan, at så vil jeg lige se hvad der sker når jeg gør det her, altså at eksperimentere på den måde, men mere bare sådan at kører med flowet. Så på den måde var det en ny oplevelse. Man kunne sådan give mere slip. Det er de vigtigste redskaber der er der, men det er ikke dem der ændre lyden på samme måde som f.eks. en delay chorus, som ændre/tilføjer mere til bølgeformen, hvis de ellers var der ville det jo give meget mere mulighed for at eksperimentere mere lydmæssigt."

Recording at 06:36: Test facilitator: "Havde det en indvirkning på din proces at du skulle skifte mellem de to enheder?"

Recording at 06:45: Test person: "Jeg vil sige, i og med at man, jeg vil ikke sige mister overblikket, man har jo stadigvæk et godt overblik her [indikere tabletten] igennem den her app, men jeg vil, at på skærmen og i Ableton Live får man rigtig mange informationer hele tiden som man skal tage stilling til og man tænker meget når man kigger på Abeltons skærm, tænker man meget i forhold. Man skal sørge for at det hele er balanceret, det hele kan høres og så ser man alle de her informationer som bombarderer en. Hvor man kan sige, når man flytter over på den her [indikerer tabletten] der er informationsstrømmen drastisk sænket og begrænset. Man arbejder mere med sådan nogle statiske/simple former i form af de ikke pulserer eller hele tiden giver dig nye tal og det er der hvor jeg tror, der kommer meget af den der intuition og kropslighed. Det der med at man bliver mere musikalsk og det tror jeg virkelig meget er i at det bliver meget simplistisk og ikke så teknisk på den måde at jeg ikke længere skal tænke de der tal [og deres forhold]."

Recording at 08:14: Test person: "Så jo, når jeg skulle til at fornemme kompression og sådan noget så tyde jeg faktisk over på den her [indikerer tabletten] fordi at den, fordi man har muligheden for at gøre det med hænderne et eller andet sted. Det gør at man lidt bedre kan føle sig frem i stedet for at sidde med musen og dreje ligeså stille. Fordi musen er jo et medium til det [Programmet på computeren] og her [indikerer tabletten] kommer man mere direkte ned i kødet. Så jo, jeg finder ikke noget problem at skifte. Det skete faktisk meget naturligt når man havde lyst til, at nu skal jeg til at bruge det. I havde jo stillet nogle krav, men jeg syntes faktisk jeg glemte lidt om dem fordi det kom egentlig meget naturligt fordi det tydet lidt automatisk hen på den og glemte fuldstændig hvad det var jeg sku', så på et tidspunkt var jeg sådan helt; 'har jeg overhovedet gået igennem dem alle', og jah det har jeg gjort fordi jeg havde slet ikke tænkt over det. Det kom bare af sig selv."

Recording at 10:08: Test facilitator: "Nu har vi snakket lidt om fordelene. Kunne du umiddelbart se nogle ulemper?"

Recording at 10:19: Test person: "Jeg vil sige, umiddelbart er der den ulempe og det er der, den bliver sådan en dobbelt siddet mønt[sværd?] og det er at man jo ikke får informationsstrømmen. Der er rigtig mange variabler, hvor der er at jeg bliver nød til at gå ind og pille ved computeren for, at jeg kan tilpasse appen til lige præcis det behov eller lige præcis en bestemt funktion, f.eks. med EQ, jeg ved ikke hvor henne når den siger mid hvor det så er jeg rykker rundt henne og når det kommer til musik produktion, så EQ det vigtigste redskab og der er de der frekvenser meget nødvendige. Jeg spekulerede over hvordan jeg skulle få stor tromme og bassen til at skille sig ad. Jeg havde lyst til at gøre det med EQ, men det var jo begrænset til kun at have én mid, så derfor havde jeg allerede brugt den til en funktion, så jeg kunne ikke gå rundt og bruge forskellige frekvenser. Så måtte jeg jo til at tænke kreativt og finde på en anden løsning, men der helt klart noget med fleksibiliteten fordi når man ikke længere har kontrol over variablerne. Så bliver man et eller andet sted begrænset i sine muligheder for virkelig at gøre musikken så god som

mulig. På den anden side må man tænke kreativt og gøre det man kan og det kan så lige pludselig gøre at musikken bliver meget mere levende i stedet for at det bliver så tørt."

Recording at 12:05: Test facilitator: "Jeg tror ikke jeg fik det sagt tidligere, men iPad'en her er jo sådan set en hjælp til programmet her, så det er ikke meningen den skal være singulær, så hvis der er noget du ikke kan gøre på tablet så gør det på computeren."

Recording at 12:20: Test person: "Det fungerede også fint at jeg gik op og pillet ved det, så kunne jeg gøre det bagefter. Man kan også sige at den del hvor jeg skal op og pille og så gå ned, gøre noget igen, så var det som om der skete en lille form for disconnect, hvor jeg lige skulle føle mig frem, men den gør ikke lige det jeg vil, så går jeg op og piller ved noget og så er det som om, jeg allerede er i gang der [Ableton Live] så kunne jeg lige godt tage hugget i stedet for at føle mig frem her. Hvis den så kunne få de flere variabler, altså man kunne være lidt mere omhyggelig med det, så tror jeg det kunne være super."

Recording at 13:35: Test facilitator: "Så hvis du synes den skulle være bedre, så ville det være at den skulle have lidt flere effekter og ned og kan bruge og så være mere fleksibel i de effekter den så kan komme med?"

Recording at 13:50: Test person: "Ja. Der var også en ting jeg tænkte over og det var; inden for musikproduktionsverdenen har vi sådan en lydscene, hvor der var noget med fall-off effekten, at lydniveauet mellem midten og helt ude ved fall-off kanten ikke var stor nok, men det var måske der man skulle ændre cirklen? Det forstod jeg ikke helt. [Test facilitator forklarer hvordan volumen og cirklen hænger sammen.] Fall-off forbinder jeg med endnu mere afstand, men det har jo også noget at gøre med rumklangen. Det forvirrede mig at det var sat op som en scene og at det at rykkede det ud ikke ændrede på rumklangen. Mest af alt fordi den ligner en lydscene og jeg tror det meget tilvante at på studiet så giver en afstand jo også en forøgelse i rumklangs forhold. Man får mere buldren. Det er jo nok ret banalt."

Recording at 16:50: Test facilitator: "Altså vi kender jo ikke så meget til... Vi er jo ikke eksperter inden for musik, vi ved ikke hvad... Vi prøvede noget ud fra den viden vi allerede har, så lavede vi det her... og det er jo så derfor vi prøver det for at se om det giver den effekt som der skal bruges."

Recording at 17:07: Test person: "Jeg vil i hvert fald sige, at den der, med hensyn til lydscenen, at når der kommer større afstand så falder lydniveauet også og det giver super god mening. Jeg tror netop at det var meget med at lydniveauet ikke faldt nok når jeg trak den ud."

Recording at 17:35: Test facilitator: "Nu har du jo prøvet at bruge de her forskellige interaktioner. Kan du forklare lidt om hvordan de var at bruge? Altså din forståelse af interaktionerne, sådan hvad der skete når du gjorde noget?"

Recording at 17:46: Test person: "Det var meget nemt at gå til og det der med jeres lærings video, at det var må man sige forholdsvis meget simple handlinger man skal gøre for at opnå det man gerne vil. Det var egentlig nemt at rykke rundt, gøre større eller mindre dobbelt klik for at få flere muligheder og sådan noget. Så på den måde var det egentlig super nemt. Der var nogle ting jeg så'n snublede lidt over som f.eks. så dobbelt klikker man for at udvide mulighederne og så det med at jeg fandt mig selv klikke uden for boblen for at lukke den igen. [Fordi det er normalt er noget man kan gøre i andre apps].

Recording at 19:00: Test person: "Der er jo lag i det, så der var et problem med at tracksne overlappede hvilket gjorde jeg ikke kunne komme til stortrommen pga. vokalen. Når jeg trykkede på stortrommen så kom den ikke foran vokalen, så den var lettere at arbejde med. Så blev jeg nød til at flytte vokalen, ændre på stortrommen og så flytte vokalen tilbage. Det kunne gøre at man mister lige det spot man har fundet. Der var også en jeg vil ikke sige modsigelse eller modsætningsforhold men en [symmeron?]. Det der med at komprimere så gør man den større, hvor det er kan man sige, godt nok gør komprimering at det lyder højere. [Kompressor og expanderen gav ikke mening. Så kompressor og expanderen ikke var repræsenteret korrekt]."

Recording at 22:20: Test facilitator: "Kan du forklare hvordan det her lydbillede på skærmen forholdte sig det lydbillede du hørte?"

Recording at 22:33: Test person: "Jeg vil sige at det faktisk overraskende, kan man sige 1:1 forhold, mellem det jeg sat det til at være og det jeg hørte. Der var godt nok et tilfælde og det er jo klart når det er blevet sat på den måde [indikere de fire højtalere der står i hvert hjørne af rummet] at det var som i overgangen mellem, skråt højre f.eks. og så skråt bagud til højre, der var et eller andet sweet spot her i mellem hvor det var som om den lige sprang, en lille tand, det var jo selvfølgelig pga. rummet her og lytte forholdene. Ellers så lagde jeg ikke noget der virkede fuldstændig mærkeligt, altså forkert eller sådan noget."

Recording at 24:18: Test facilitator: "Hvordan syntes du det var at bruge det spatiale rum i produktionen af musik?"

Recording at 24:24: Test person: "Jamen jah, intuitivt det er det ord der krænger igennem, meget kan man sige, både begrænset på en god og dårlige måde. Jeg var meget fascineret over det der med at jeg netop lavede nogle drastiske beslutninger da jeg brugte det, beslutninger som jo også ved det analog gear gjorde rigtig meget, altså det var alt sammen på gefühle. Der er mennesker der har lavet de vildeste ting på den måde også selvom det måske ikke var 'teoretisk'/'teknisk' rigtigt. Man kan selvfølgelig sige i en digital sphere at du kan ikke klemme det samme ud af det som en analog. Altså ved analog maskiner der kan du overstyrer på dem og gøre muligt og så giver det en anden farve, mens den digitale verden der er alting meget sterilt. Hvis du overstyrer så begynder det at skratte på en rigtig grim måde. Det føles rigtig meget som et analog gear, men så alligevel ikke fordi man netop er 'begrænset' af det digitale. Men hvis man virkelig ønsker at tilnærme sig det analoge gear så meget som muligt, så føler jeg det er sådan her. Det er den bedste måde, fordi touch funktionen efterligner bare det der med at få hænderne ind på det, og det er rigtig godt."

Recording at 26:05: Test facilitator: "Jamen det var sådan set det vi havde at spørge om. Har du lige en sidste kommentar til noget du tænker over?"

Recording at 26:15: Test person: "Det er et rigtig godt design vil jeg sige. I og med at det var så naturligt for mig efter at have set jeres videoer og lige prøvet at rører ved det. Bare at begynde at benytte sig af det og tænke kreativt med det, viser også bare at en konservativ verden som musikproduktion er, at det først er nu her at den digitale produktion bliver accepteret fordi man altid har været sådan lidt hardcore omkring analog. At det er så nemt at benytte sig af og det er sådan en naturlig udvidelse gør at den lettere kan finde plads i junglen, især når det bare er, ligesom her, en iPad man bruger det på. Så det er ikke engang fordi man skal dedikere sig til et helt nyt stykke grej eller noget. Det gør det utroligt tilgængeligt og utroligt let anvendeligt. Ja super simpelt faktisk og det er altid godt især når det er sådan en udvidelse af noget der allerede er ret komplekst. Så i

stedet for at skulle gøre sig en kæmpe indsats, altså overkommen en enorm læringskurve på noget som allerede har en kæmpe læringskurve. Super fedt!"

Recording at 27:50: Test person: "Jeg tror også et eller andet sted, at i det her med at kropsligheden og det intuitive kommer frem på en meget speciel måde i forhold til hvad man plejer med keyboard og mus, at det synes jeg faktisk var meget en attraktiv feature, som jeg tror vil være super fed at tilføje til sit setup. Især fordi at analog gear i dag koster jo flere tusinde kroner og det fylder rigtig meget. Plus det kræver strøm og alt og forberedelser og hvad fanden der nu er. Derfor er det bare en super let måde at komme uden om det i dag hvor at det digitale gør lige så godt hvis ikke bedre end analog gear."

C.4 Test Participant 4

C.4.1 Assignment 1

Recording at 0:50: Test person starts the track and turns down all the effects already on each of the tracks.

Desktop screen at 2:40: Test person uses the track view to jump in the tracks, clicking where he wants to go in the track.

Recording at 4:20: Test person turns a beat indicator on in *Ableton Live*.

Desktop screen at 4:55: Test person finds the large sound wave view of tracks which he wants to be able to clip in the sound files.

Recording at 7:00: Test person makes the assignment a bit more complicated where he wants to actually remix the song.

Desktop screen at 7:20: Test person makes the sound wave view really big, so it fills about 75 percent of the screen. He then tries to mark the bit which with wants to clip with the mouse. When he realize the can not do it, he makes it small again.

Desktop screen at 10:40: Test person adjusts on the equalizer and the high cut.

Recording at 16:18: Test person explains the reason why he changes the type of the points on the equalizer and how he uses it to filter the frequencies.

Recording at 18:05: Test person is annoyed because he accidentally made some adjustments on a wrong track.

Recording at 18:50: Test person can not find where in *Ableton Live* he has to go for finding the volume switch. He looks in the effects.

Desktop screen at 21:10: Test person goes through the tracks almost systematically and adjusts their effects only having a couple of tracks muted.

Recording at 22:50: Test person finds out that it is the falloff that made the sound weak and turns the falloff down. He does it for all the tracks.

Desktop screen at 25:03: Test person isolates a track to better being able to listen to it and adjust its effects.

Recording at 27:47: Test person "... Det er faktisk svært at mixe i et rum, altså surround."

C.4.2 Assignment 2 - Video Recording 1

Recording at 0:10: Test person reads the assignment.

Recording at 1:21: Test person "Hvad er falloff i det her tilfælde?" Test facilitator "... Det er high cuttet." Test person "Så repræsentativt så er det her lyd, altså jo længere væk de er fra en jo lavere er de ikke?" Coordinator "Ja" Test person "Godt, er det her så det de ikke kommer til at høre? Coordinator explains how the two zones works and Test person seems to understand that outside of the volume zone a high cut is applied.

Recording at 5:04: Test person "...okay, hvordan får jeg den så til at spille?" Coordinator explains that has to do it on the computer.

Recording at 5:35: Test person moves all the track into the volume zone around the person and says "De fire højner er så panorering?"

Recording at 6:00: Test person tries to move the track around and listens to the music. He then solos and unsolos a track. Opens its effect menu and closes it to solo it and then reopen the effect menu to make adjustments.

Recording at 7:45: Test person uses the pinch gesture to add more compressor to the tracks and then moves them closer to the *Stage Person*.

Recording at 11:24: Test person have played around with tracks on the iPad but have begun to adjust the effects on the computer instead and use the iPad to solo and unsoloing tracks.

Recording at 14:43: Test person explains which frequency range fits certain instruments.

Recording at 16:05: Test person "Hvordan soloer man to ting af gangen?" Test facilitator then explains he can not and has to mute the other tracks instead which he then does.

Recording at 17:31: Test person "Det jeg praktisk talt bruger den til er at solo..."

Recording at 18:00: Test person opens the effect menu on a track and makes some adjustments and then first tries to unsolo but have to unmute all the other tracks.

iPad screen at 20:21: Test person opens a tracks effect menu, make some small changes, then moves to another to do the same.

Recording at 21:50: Test person moves the singer in front of him. Test person begins to rearrange the tracks so string and drums is in the back and voices in front.

Recording at 23:50: Test person tries to solo but instead mutes a track.

iPad screen at 24:50: Every track is rather clumped together.

Recording at 25:25: Test person uses the mix tabs to quickly switch between two setups to listen to them.

C.4.3 Assignment 3 - Video Recording 1

Recording at 0:10: Test person reads the assignment.

Recording at 1:20: Test person tries to move a track while another track is soloed.

Recording at 1:50: Test person moves all the tracks onto the person, surrounding him with them.

Recording at 2:30: Test person adds a new effect on the computer before he has done any changes the preset effects.

Recording at 2:55: Test person uses the iPad to solo a track. After he has listen to it he removes the effect again.

Recording at 3:20: Test person opens the effect menu on the iPad and starts to make adjustments. He moved the track a bit before opening the menu and another track, as if he moved them away so he could see the effects slices better.

Recording at 3:40: Test person goes to the computer and finds the detailed effect view to make changes. He uses the iPad shortly to solo the track he is working with.

Recording at 4:20: Test person had selected the wrong track compared to the track he worked with on the iPad.

Recording at 5:40: Test person comments that it would be cool to another value that you could change on the iPad with equalizer because he thinks it is important to be able to set how much each point on the equalizer should be.

Recording at 6:20: Test person solos a track and works with it on the iPad.

Desktop screen at 6:30: Test person seems to be looking for the track which he just had worked with on the iPad but seems to have trouble locating it. After he finds it he start doing some finer adjustments on the equalizer.

Recording at 7:50: Test person uses the iPad to solo a track he is working with on the computer.

iPad screen at 8:49: While Test person is working on the computer a visual glitch happens on the iPad.

Recording at 9:25: Test person looks at the iPad to solo a track while the visual glitch is happening. He looks at the glitched track and then solos it and continues to work on the computer as nothing had happen.

Recording at 10:40: Test person opens the effect menu on a track and makes an expression of something is not right and then moves to the computer to find the track and the overview of its effects. After he finds it he solos it.

Recording at 13:05: Test person adjusts to and makes small adjustments on the iPad moving the tracks and their effects.

Desktop screen at 13:23: Test person have placed all tracks around the person stack.

Recording at 13:50: Test person copies the tracks to another mix tab and can hear that the settings did not persist through the copy and past. That something changed.

Recording at 15:01: Test person works on the computer.

iPad screen at 17:25: Test person moves the volume ring closer to person without have any of the tracks outside in the falloff zone which indicates that he does not understand it.

Recording at 17:45: Test person solos a track and then moves to the computer to make the adjustments.

iPad screen at 18:40: The visual glitch happens again.

Recording at 19:10: Test person seems to move around with the tracks because he wants to get to a track underneath them.

Recording at 20:00: Test person uses the mix tabs to listen to different setups.

Recording at 20:40: Test person makes the volume bigger again.

Recording at 21:10: Test person comments that the settings have been reset again. Which he uses the computer to set back.

Recording at 22:58: Test person uses the iPad to make some quick adjustments and then listens to them which he then corrects a bit.

Recording at 27:40: After Test person had listened for awhile he solos a tracks on the iPad and finds it on the computer to make some changes to it.

Recording at 28:20: Test person comments that the setup limits him because he wants to add more points in the equalizer. Test person also thinks that instead of setting the threshold it should be the ratio when adjusting the compressor on the iPad.

Recording at 30:31: Test person adds a new effect to the track. To focus on the new effect he used the iPad to solo the track.

Recording at 36:52: Test person have focused a lot on the computer testing out different effects while the iPad is only used to solo and unsoloing tracks.

C.4.4 Assignment 3 - Video Recording 2

Recording at 3:00: Test person have tested a lot of different effects and do not know quite what else he should do. The Test facilitator suggest that he could try and aim for a rehearsal room sound.

Recording at 4:20: Test person begins to spread the tracks a bit further out from the person.

Recording at 8:21: Test person is back on the computer to add a new effect after he have been moving the tracks around.

Recording at 12:17: Test person have been sitting soloing and unsoloing the tracks and just listen to the music, making small adjustments on the computer.

Recording at 18:07: Test person have really just been listening to the song not doing much.

C.4.5 Interview

Recording at 00:05: Test facilitator: "Hvordan var din umiddelbare oplevelse af det kombineret system?"

Recording at 00:10: Test person: "Øhm det der med at bruge en iPad samtidig med at sidde og mixe. Det fungerede ikke umiddelbart for mig, men jeg er heller ikke vant til at mixe surround. Min udfordring det var lidt det der med hvordan jeg helt skulle bruge

jeres ring system der gjorde at I havde et high-cut, som man så skulle bruge til at på en eller anden måde at panorere noget længere væk. Hvis man på en eller anden måde skulle skabe den der illusion om at der var noget der var på afstand, så kunne man eventuel gøre det ved hjælp af f.eks. at man skal definere et rum på forhånd og når man så rykkede det ud, så samtidig med at det tog noget af de høje frekvenser så vil man også få lidt rumklang med blandt andet for, på en eller anden måde hvis man skulle have den der distance illusion i mixet."

Recording at 01:04: Test person: "Øhm men jeg kan godt... Det er jo meget nemt og komme til, altså når man kommer i gang med det og sidder der med komprimering og så dobbelt tapper man og kan solo nogle ting og sådan. Det synes jeg synes jeg fungerer rigtig godt. Men igen som jeg også nævnte i løbet af testen så mangler jeg bare nogle flere parametre at arbejde med, altså flere bånd, altså mulighed for at justere kompressor sådan så det ikke bare... En kompressor hjælper jo ikke særlig meget hvis man ikke kan gå ind og justere på attacken og releasen, medmindre man virkelig er lige heldig at presettet rammer godt der, som jeg sagde hvis man gerne vil have en tromme kompressor så vil du gerne have nogle [transere?] der ryger igennem først, ved at have måske et forholdsvist kort attack og så derefter komprimere man alt hvad der følges derefter, hvor det er sådan noget som vokaler så er det fint nok at der ikke er noget attack, så kan man bare komprimere det en smule."

Recording at 01:55: Test person: "Ja hvad ellers... Altså det jeg primært brugte det til var at jeg ikke rigtig kunne solo det i Abelton. Så der var det meget lækkert at kunne sådan vælge én specifik, men igen hvis jeg havde arbejdet i Logic Pro f.eks. så ville jeg kunne gøre alle de her ting bare ved et hurtigt klik. Men ideen er der. Jeg ved ikke bare ikke lige helt hvordan jeg skulle bruge det. Hvordan det er brugbart for mig, som til at sidde og lave lyd, sidde og mixe sange til brug fordi altså... ideen med surround er fin nok, men i forhold til at alle bruger praktisk talt... bruger to højtalere eller headphones eller hørt i mono for den sags skyld i mobil, så jeg ved ikke lige hvad jeg skulle bruge surround til sådan set. Måske kunne det være rigtig fedt hvis man skulle sidde og lave lyd til film eller et eller andet og justere lydkilderne på den måde og så jeg kunne sidde og lave noget der [indikerer iPad'en] eller hvis man havde en automatisering så jeg kunne også godt se at det kunne give lidt mere mening. Man kunne lave nogle fede surround sound ting, men sådan når man tænker sådan statisk arrangement, så har vi jo som udgangspunkt en lydscene vi stiller tingene op i forhold til. Hvor at idéen med en optagelse det er jo på en eller anden måde og repræsentere en live oplevelse på en eller anden måde. Hvor at surround delen skulle måske sidde i en eller anden session midt i et eller andet, men der er bare nogle ting som man bliver nød til og dele op, så vil man nok, hvis man kigger i forhold til mixet [viser IPad'en til kameraet], så har jeg lagt det hele virkelig tæt omkring mig [lytteren] og det er sådan, så har jeg lagt meget af rytme gruppen sammen [de ligger på række bag lytteren]. Jeg har trommerne og bassen ligger umiddelbart lige bag mig og så en guitar herover omkring [indikere skråt mod højre foran sig]. Hvis det nu skulle være 360 fuldstændig, og så har vi nogle vokaler lige og det ekstra krydderi herover [indikerer foran sig og lidt mod venstre] og det er sådan, ja det er igen meget tæt sammensat fordi at man nok stræber mere efter at høre det samlede mix foran sig."

Recording at 04:13: Test person: "Men ja det var jo spændende at arbejde med og jeg syntes det var rigtig sjovt og prøve at gøre det på den her måde, altså man har noget visuelt, for det har man jo normalt ikke, når man sidder og mixer. Så skal man jo bare have sådan et multimeter, hvor man kan sidde og se hvor man panorer tingene hen så på den måde. Hvis man havde det i forhold til lydscene eller et eller anden så kunne man helt sikkert lave nogle anderledes ting der, som gjorde det meget mere intuitivt at sidde

at mixe og rykke tinge rundt i mixet. Men når det kommer til det rigtige lydredigeringer så som kompressor og effekter og så videre, så tyer jeg nok mere til at gå direkte ind og gøre det fordi det er allerede på forhånd lavet overskueligt og nemt at arbejde med. Men igen det er jo fordi jeg er forudindtaget skal det jo siges, fordi jeg arbejde med Logic og jeg arbejder jo med lydredigeringsprogrammer normalt. Så måske for en der ikke er så vant til at arbejde med lyd, så er det her være nemmere. Har I testet på folk som ikke har arbejdet med lyd hverdag?"

Recording at 05:13: Test facilitator: "Ikke endnu nej."

Recording at 05:15: Test person: "Nej, det kunne godt være det ville være lidt anderledes hvad de havde at sige til det."

Recording at 05:18: TS: "Jeg tror ikke de kan finde ud af at mixe."

Recording at 05:20: Test person: "Nej, det kan der jo selvfølgelig være noget om."

Recording at 05:22: Test facilitator: "Man kan jo sige vi har prøvet det på os selv. På det punkt og vi kan jo ikke finde ud af at mixe, så det er bare sådan helt mærkeligt. Så vi prøvede jo bare at lave det så godt vi nu engang kunne og det vi har fået viden fra dem der ved noget om det."

Recording at 05:42: Test facilitator: "Men du snakkede noget om med det her om at du lægger dem sådan meget tæt på hinanden, er det så også fordi de ca. skal have den samme lydstyrke også?"

Recording at 05:54: Test person: "Øhm ja nu nu var det jo sådan at de her stems her, det kunne jeg hører at der var jo, de var jo redigeret, altså der var sket noget på dem så deres lydniveau når man lægger, hvis man lagde hele mixet sammen så tror jeg faktisk det ville være nogenlunde som indspilningen nogle gange er. Så lydmæssigt var der ikke voldsomt meget forskel men altså det har bare været nogle småting, så har jeg siddet og justeret, fordi der var alligevel en stor volume forskel i hvor lidt jeg, altså selvom jeg ikke rykkede dem særlig meget så kunne man godt ryk 1 eller 2 decibel op uden sådan lige at tænke over det og så blev det lige pludselig meget kraftigere at høre. Så altså de ligger forholdsvis tæt nu som det er, men de er ikke samme lydstyrke, altså bassen f.eks. den er jo lige lidt længere væk og det er også svært at sige nu. Alt efter hvor meget jeg komprimere dem så ser det ud som de er tættere på, men det er de jo nødvendigvis ikke. Jeg tror ikke, der ER en forskel i lyd, helt klart, de jo ikke alle sammen på samme lydniveau, men det handler jo selvfølge også om hvor meget jeg komprimerede dem, at så bliver de højere altså jo mere du komprimere. Ofte så bliver outputtet højere af det også, så det er sådan en kombineret ting. Det var ikke så brugbart et svar tror jeg."

Recording at 07:49: Test facilitator: "Kunne du forklare nogle af de fordele og ulemper du ser ved sådan at bruge sådan en iPad her i stedet for at bruge computeren."

Recording at 07:56: Test person: "Fordelene er igen at du har en visuel panorering. Du kan se hvor tingene ligger i mixet. Det er sådan den fordel jeg ser. Ellers ser jeg mange begrænsninger i den. At konstant skulle vende tilbage, skift mellem to interfaces, også i det at du er begrænset til og have de tre her [indikerer bass, mid og treble] som så skal til at redigere herind [indikere computeren] alligevel, så du kunne lige så godt skrue op og ned for, der i stedet for at gøre det her i [indikerer iPad]. Men når du selvfølgelig sådan lige hurtig laver nogle få redigeringer så er det fint nok. Så kan man faktisk godt lige gøre det, altså sidde og redigere EQ'en og så måske skrue lidt op og ned for reverb, men igen der mangler simpelthen parametre man kan arbejde med her, fordi det er meget simplificeret.

Men i hvert fald arbejder jeg primært på computeren. Jeg vender hele tiden tilbage til computeren, fordi jeg føler at jeg mangler nogle parametre at arbejde med og det gør det virkelig svært og lave et godt mix på den her [iPad]. Så for mig der er umiddelbart tage panorering tingen som fungerer og jeg havde lidt svært ved at arbejde med jeres high-cut [fall-off] ting her, som så skulle være zonen hvor man begynder at bevæge sig i tilpas afstand til, at man mistede de høje frekvenser. Viste ikke helt hvordan jeg skulle bruge den optimalt. Det jeg gjorde for at f.eks. den der 'Through the Grapevine' så jeg trak jeg jo bare bassen ud, fordi jeg godt viste, jeg ikke skulle bruge noget af toppen der. Så jeg brugte den egentlig bare som et high-cut frem for at bruge den til at distancere mixet. Fordi ofte så, altså de to numre her I har givet mig 'The Police' som der er sådan punk skæg ting der, i det her tilfælde, i det her nummer er rimelig punk, så skal det helst bare være et tæt mix. Og 'Through the Grapevine' er et pop nummer som der ikke ændres. Det nytter ikke noget hvis du separerer det hele fuldstændig, fordi så har du slet ikke sammenspillet længere. Du har ikke grooved. Så det der gør sangen fed. Så det var svært på en eller anden måde at bruge, men jeg kan helt klart se potentiale i det i forhold TIL sådan noget som, det ved jeg ikke... Skabe spilmiljøer eller lydlige rum. Der kan man da godt arbejde med det. Hvis man skulle sidde med det inden for animation og så sige at man placere nogen karakterer i forhold til lytteren eller... Men sådan lige som musik redigering lige nu, så har jeg lidt svært ved at bruge det."

Recording at 11:00: Test facilitator: "Hvordan vil du sige din normale proces her afviger når du bruger appen her?"

Recording at 11:13: Test person: "Det tror jeg, jeg har svaret på, det er panoreringen."

Recording at 11:20: Test facilitator: "Giver det anledning til nye idéer eller noget andet, når du har lavet det på den der måde? Eller var det bare..."

Recording at 11:28: Test person: "Nej, det vil jeg ikke sige. Altså det er ikke fordi jeg lige lod mig inspirere så meget af det. Jeg ved ikke, det er igen... Nogen gange så har man tildens til at gøre ting mere visuelt end man gør det auditivt. Hvis man sidder og arbejder med et mix hvor man har en eller anden grafisk repræsentation og det kan nogen gange gøre det nemmere andre gange gør det faktisk, at man ikke lytter ordentlig efter. Man skal være lidt påpasselig med det. Panorerings delen var det der fungerede, altså det var bare det, noget med det er en god ting i forhold til at når man sidder og laver et mix, så er det en god idé at sprede mixet så meget så muligt, så de ikke alle sammen ligger i den samme panorering. I det her tilfælde har vi jo så surround sound, så der er jo masser af plads at arbejde med. Men ellers så er det en god måde lige at få repræsenteret hvor tingene nu engang ligger i lydbilledet og så kan man arbejde ud fra det og så begynde at tildele de forskellige lydspor til hvor de nu engang skal være panorerede. Men ja, det er ikke sådan... Det er ikke lige noget hvor jeg bliver inspireret som sådan. Så skulle der nok være en masse forskellige effekter eller et eller andet, sådan noget mulighed for at tælle keys, altså et midi interface hvor man på en eller anden måde kan begynde at producere. Hvis man så det som en måde at lave elektroniske musik på så tror jeg helt sikkert man kunne udvide det. Så er det her et godt udgangspunkt og så måske have forskellige menuer hvor man arbejder inden for, hvor man kan lave forskellige ting. Jo måske én ting, det er play/pause funktion det vil være fedt. Bare kunne tænde musikken her igennem [iPad'en] noget så simpelt som det eller sidde og scrolle i den hvis man havde en eller anden track det vil helt klart gøre at jeg vil bruge det meget mere. At jeg kunne sidde og bestemme forskellige... Bestemme hvor jeg er i mixet også tidsmæssig og få repræsenteret lyden filen som du så, hvor jeg prøvede at redigere i en lydfil til at starte med, hvor jeg tænkte jeg skulle lave et remix af det eller et eller andet. Hvis man på en eller anden kunne få

det op på iPad'en og sidde og zoome på det, bruge hænderne til det. Det tror jeg helt sikkert kunne være en fed mulighed for at arbejde med det. Inden for mixing også at man kunne finde specifikke steder i sangen når det kommer til automatisering og så vil kunne gå ind og kigge på lydbølgerne enkelte steder og finde ud af hvor man kunne automatisere det derefter og bedre så kunne sidde og tegne automatiseringen, det ville være en kæmpe hjælp, i det man tit bare sidder og bruger en halv time på at plotte det der ind i alle tracksne på et nummer."

Recording at 14:37: Test facilitator: "Kan du forklare lidt om din forståelse af de forskellige interaktioner du nu engang har brugt her på selve iPad'en."

Recording at 14:43: Test person: "Jamen det var meget nemt efter at have set introduktions videoen. Så der var lige nogle svipsere engang i mellem, hvor jeg sådan lige 'hov hov, nu skal jeg lige huske om det var dobbelt tap eller om jeg skal holde den nede' og sådan. Men igen det er jo ting som man også er vant til fra andre interfaces at man har de der standard ting, som at holde nede, dobbelt tap, forstørre, formindsk med fingeren og så ellers bare rykke det rundt meget tilgængeligt rigtig nemt at bruge."

Recording at 15:16: Test facilitator: "Hvordan vil du sige at lydbilledet der afspejler sig eller som var på iPad'en passede sammen med det lydbillede du hørte?"

Recording at 15:25: Test person: "Det vil jeg sige var udmærket der var ikke sådan... Der var ikke det store der. Altså jeg kunne tydeligt høre når jeg rykkede trommerne bag ved eller rykkede det rundt. Igen så handler om hvordan højtalerne er vinklet, så hvis de [Højtaler foran ham] var vinklet ind mod mig de her højtalere og de her [Højtalerne bag ham] peger så mod mig... Så tror jeg at det havde føltes lidt mere 360-agtig, men ellers så kunne man nogenlunde godt hører det, igen det er meget lille rum så der er rigtig mange refleksioner der fiser rundt herinde, så det mudre det selvfølgelig en smule, men jeg synes at det var udmærket. Det var ikke lige det jeg tænkte så meget over."

Recording at 16:08: Test facilitator: "Ja, det har vi så været lidt inde på, med hvad dine tanker var omkring det spatiale rum i henhold til musik. Det var så det med at det giver måske mere mening i andre sammenhænge i stedet for at gøre det i surround her."

Recording at 16:22: Test person: "Det er også sådan når man sidder og mixer som jeg også nævnte, så mixer man til en forbruger og de har jo to højtalere oftest eller headset, det er de færreste som der har et surround sound anlæg som de sidder og hører musik på og hvis de endelig gør det så ved jeg ikke lige hvordan... Hvad tanken er bag fordi alting bliver lavet i stereo eller mono, når det kommer til at redigere lyd... Eller til at redigere musik oftest. Nu skal jeg ikke sidde og begrænse det her, fordi der er helt sikkert folk der sidder og gør det og har gjort det i lang tid, men det er bare ikke det JEG arbejder med specifikt og mange egentlig arbejder med.

Recording at 17:28: Test facilitator: "Så hvis man skulle tage et bud så ville du nødvendigvis ikke bruge et tilsvarende program hvis du fik muligheden?"

Recording at 17:38: Test person: "Igen det handler så meget om hvad, altså, hvor meget mere der kan være i det. Det her det er jo relativ simpelt og så skal der altså være mulighed for at gå ind i de forskellige parametre såsom EQ'en der kan du bestemme hvor mange bånd og bredden på båndene, Q-værdien. Kompressoren der skal du have attack, threshold har I allerede, men også sådan noget som kompres raten. Måske endda et sted hvor man kan styre needs, knækket der afgøre hvor blødt den komprimerer. Det er sådan nogle ting der virkelig er essentielle for at sidde og arbejde med et mix og det er sådan

nogle finesser der gør at mixet bliver godt og hvis jeg ikke kan gøre det her [iPad'en], jamen så tyer jeg jo direkte til programmet i stedet for. Men hvis man nu så det som værende tilhørende til et musik program der var eksklusivt på iPad'en og man fik udvidelser så kunne man helt sikkert, så var der muligheder der i hvert fald. Men som et supplement lige nu så ser jeg ikke sådan brugbarheden umiddelbart. Så skulle det mere være altså være i forhold til at være et lille midi interface eller hvis det var en x-y grid, som det hedder som man bruger til synthesizer og sådan noget samtidig kunne automate. Så man kunne gøre det på iPad'en, det ville være smart, fordi sådan en x-y ting der koster jo 700,- kr. hvis man skal have den og det er jo bare sådan en lille trackpad som du sidder og kører rundt på med din finger, så der kunne det være fint nok hvis man kunne få en app, til en tier eller fyrre kroner eller whatever på en iPad så kunne sidde og lave det f.eks. det kan man sikkert også hvis man kigger efter. Men i forhold til at mix så har jeg lidt svært ved at se brugbarheden lige nu. Nu siger I at I vil have automatisering og I vil udvikle på det og så vil det helt sikkert være meget mere brugbart og så vil jeg nok også gribe mere til det, fordi det er jo bare nemmere at sidde og gøre ting med fingrene, ikke også du har en skærm ikke også, hvor du grafisk også kan sidde og arbejde med det og bruge fingeren, som alligevel giver en hel anden form for præcision. Men som det er nu så synes jeg ikke rigtig det gør noget for min arbejdsproces."

C.5 Test Participant 5

C.5.1 Assignment 1

Recording at 02:00: Test person: Not used to working with *Ableton Live*, needs help finding the sound waves.

Desktop screen at 03:16: Test person: Starts by muting all tracks but one.

Recording at 03:50: Test person: Asks about the macro. The test facilitator explains how they work and that they are the most important parameters from our knowledge.

Desktop screen at 05:06: Test person: Starts by adjusting the compressor and then the EQ of the tracks, starting from the top.

Recording at 06:55: Test person: Says he is not used to work with the mouse as he usually works with a mixer console.

Recording at 11:00: Test person: Asks if it is on purpose, that the vocalist is in the back. The test facilitator explains that it is and that he is suppose to change it around as he sees fit.

Recording at 13:00: Test person: Says he finds it really cool to work in surround sound.

Desktop screen at 18:56: Test person: Have trouble selecting a specific channel and opens the waveform of the track.

Desktop screen at 22:26: Test person: Changes the sends of a track.

Recording at 20:30: Test person: Says it is fun to play with the surround.

Desktop screen at 23:01: Test person: Plays around with the sends.

Recording at 25:40: Test person: Exclaims:"BUBBER! Vi er snart i mål." when he sees how much time he has left.

Desktop screen at 27:50: Test person: Changes around the parameters presented by the macro.

C.5.2 Assignment 2 - Video Recording 1

Recording at 07:30: Test person: Moves all the tracks into fall-off circle except for two which are close to the stageperson.

Recording at 09:15: Test person: Tries to pinch a track, but the track moves with one of his fingers.

Recording at 10:45: Test person: Moves a track, and then seems to solo it by accident. Then says: "Det er jo strålende det her."

Recording at 11:25: Test person: Tests the volume and fall-off border.

Recording at 11:50: Test person: Ask for the reverb, as he can not remember how to get to it. The test facilitator suggests that he double taps the track.

Recording at 15:40: Test person: Plays around with the reverb and compressor on the iPad

Recording at 16:30: Test person: Plays around with volume and the fall-off circle and leaves the volume border very small.

Desktop screen at 18:20: Test person: Accidentally hits the volume slider when he wants to select a track.

Recording at 19:30: Test person: Plays around with different tracks parameters on the iPad.

Recording at 19:45: Test person: Makes use of the copy function.

Recording at 20:30: Test person: Moves tracks and adjust their compressor value.

Recording at 23:30: Test person: Experiments to try and to understand the volume and fall-off borders.

Recording at 26:00: Test person: Says: "Ja det er da til at fat det her." after moving the volume border and moving some tracks around.

Recording at 16:45: Test person: Asks for a bigger screen, as he finds the small screen frustrating.

Recording at 17:45: Test person: Opens the effects for a track and then tries to pinch the same track resulting in one of the effects been turn way up.

Recording at 28:50: Test person: Says "Jeg har lært det her [appen] meget hurtigere at kende end Ableton. Det er meget smart det her."

Recording at 29:45: Test person: Plays around with the fall-off border. *Ableton Live* have difficulties keeping up.

Recording at 31:30: Test person: Notices he has changed into the mix containing his commercial mix, as he calls it, which he did not want to change.

Recording at 32:20: Test person: Wants to solo/mute so he easily can hear two tracks at the same time without having to manually mute all the other tracks.

C.5.3 Assignment 2 - Video Recording 2

Recording at 00:00: Test person: Begins to play around with different effects

Recording at 01:40: Test person: Discovers that you can add more tracks and it will be added to the app.

Recording at 10:45: Test person: Tries to unmute a track which has been muted through another tracks solo.

Recording at 14:20: Test person: Changes to the commercial mix and discovers, that it has been forgotten by the app.

C.5.4 Assignment 3 - Video Recording 1

Recording at 02:05: Test person: Immediately spreads out the tracks, and then starts muting before playing.

Recording at 02:10: Test person: Says its much cooler when you have a kick.

Recording at 03:30: Test person: Opens the track he is working with and looks at the effect he is working with, still without a sound.

Recording at 04:00: Test person: Have difficulties remembering which interaction to use for mute, solo etc.

Recording at 04:25: Test person: Mentions it would be nice to be able to move tracks that are muted.

Recording at 06:02: Test person: Asks if there is a start/stop button on the iPad.

Recording at 06:50: Test person: Tries to pinch but the track moves with one of his fingers.

Recording at 08:07: Test person: Plays around with the volume border and the fall-off border, ending with a more condensed area to work within.

Recording at 09:55: Test person: Likes that a track can be soloed even when the effects are open.

Recording at 10:30: Test person: Expands the fall-off border making it go outside the edge of the iPad on the right as the stageperson is slightly off center.

Recording at 13:00: Test person: Moves a track back and forth to listen to it move to find the best placement.

Recording at 14:00: Test person: Is satisfied with mix he has made and will use the mix buttons to make a new mix, but is reluctant to change as the app have forgotten previous mixes. So he stays with the current mix.

Recording at 17:08: Test person: Mentions he would like to manipulate more parameters of an effect on the iPad, instead of the computer.

Recording at 18:00: Test person: Starts to add different new effects on to tracks, giving them radically different sounds.

Recording at 20:05: Test person: Gets confused by the color different between iPad track and *Ableton Live* track.

Recording at 21:00: Test person: Adds very special effects to the lead vocalist, but quickly removes again when he hears it. This goes on for some time.

Recording at 22:50: Test person: Adds a new track, and copies the sound of another track to it.

Recording at 24:20: Test person: Adds lead vocalist to the another new track.

Recording at 24:50: Test person: Adds a different effect to it instead of the mixing surface. It still works with the effects panel on the iPad but with different effects.

Recording at 28:40: Test person: Tries to pinch for compressor effect on the new track, but it does not have it, but changes another effect on the new effect.

Desktop screen at 29:30: Test person: Plays around with the effects on the new track

Recording at 30:00: Test person: Have turned the new track into a bus, for the Lead Vocalist.

C.5.5 Assignment 3 - Video Recording 2

Recording at 03:25: Test person: Forgets about the fall-off effect when he moves lead-vocalist out to the edge.

Recording at 04:00: Test person: Changes the sends on the computer for the bus, instead of moving it on the iPad.

Recording at 05:00: Test person: Plays around with more effects for the bus replacing the previous.

Desktop screen at 43:00: Test person: Moves the volume slider for the bus after having moved it to the corner on the iPad.

Recording at 08:45: Test person: Moves the bus around but changes the volume on the computer, which makes it move a bit.

Recording at 10:30: Test person: Plays around with more effects

Recording at 11:00: Test person: Changes the mix 1 to the first, but the app has forgotten it again. Still remembers the mix 2. So he can change back to his previous work.

Recording at 13:00: Test person: Explains how to make use of busses.

Recording at 15:00: Test person: Moves the bus around to show its effect.

C.5.6 Interview

Recording at 00:06: Test facilitator: ”Jamen nu har du jo prøvet vores produkt her, så hvordan var din umiddelbare oplevelse af at bruge det kombinerede system?”

Recording at 00:14: Test person: "Det var sjovt. Det var min umiddelbare oplevelse. Jeg synes det er i virkeligheden meget brugervenligt og det jeg nok glad for. Jeg synes det mest nederen ved det, var vi arbejdede i Abelton. Det er min umiddelbare reaktion.

Recording at 00:44: Test facilitator: "Hvordan var det at bruge computeren og iPad'en samtidig? Nu kan jeg se du meget af tiden brugte iPad'en. Men hvordan var det sådan at bruge dem samtidig?"

Recording at 00:56: Test person: "Jamen øhhh altså. Jeg syntes det var fint nok, hvad hedder det? Den, den kunne øhh den ku... JA! Jamen jeg synes det fungerede meget godt, altså den øhhh... De problematikker jeg oplever i forbindelse med at lave musik, det er gerne at jeg gerne vil væk fra at bruge musen, men det minimerede den desværre ikke, øhhh problemet med musen altså, men ellers så synes jeg egentlig at sammenspillet er ret fedt sådan på den måde."

Recording at 01:31: Test facilitator: "Ja øhh du ville gerne have den til at f.eks. når du vælger et track eller andet [på iPad'en] så det ret faktisk også er det track der bliver vist [på computeren]."

Recording at 01:36: Test person: "Ja lige præcis, når du... Ja det kunne være lidt fedt hvis der var en større integrering eller hvad det er man siger, hvad hedder deeet? Mellem... Hvis du muter et spor eller bare trykker på et spor så skulle den også gerne kunne vælge på den skærm der, så man kan sidde og følge med i... Øhh sådan at der også... At den også er monitor på samme tid, skærmen fordi det er jo i virkeligheden hovedsagligt det jeg bruger skærmen til, det er, når JEG arbejder, det er at bruge den som monitor i forhold til hvor er jeg henne i tracket, hvilket spor er jeg på, for at kunne se, finde det hurtigt. Jeg arbejder meget med du ved sådan et outboarding, med sådan en Mackie controller, med faderer og sådan nogle ting i [mixerpult], så jeg bruger næsten ikke den der [musen]."

Recording at 02:26: Test facilitator: "Så ville du kunne se, du kunne bruge sådan en der [appen] sammen med eventuelt din Mackie eller andet hvis at det... [blev aktuelt]?"

Recording at 02:35: Test person: "Altså ja det, det altså hvis du... Jamen det fede ved den der [appen] er i virkeligheden at det kører i øhh, hvad hedder det? I surround, det er jo det der er dens helt klare 'wow' factor at den kan det, eller at den er kompatibel med det. Så på den måde... Men Problemet er nok at det er så simpelt at det er meget, meget, altså meget den forsimplet version af hvad der i virkeligheden foregår inde i programmet. Du ved hvor det virkelig er små detaljer som er, altså, som man sidder og piller ved med EQ f.eks. så er det meget sådan, det der det er sådan... Lad os bare sige det som det er, det er nok sådan noget som børn med en iPad køber, indtil at det er... Jeg tror bare ikke jeg er målgruppen. Jeg tror det er der den ligger... Ikke nødvendigvis børn men nybegyndere... Nybegyndere."

Recording at 03:35: Test facilitator: "Så for at den skulle være mere i din målgruppe, så skulle der være noget mere funktionalitet. Altså flere effekter og mere øhhh ting man kan gøre?"

Recording at 03:44: Test person: "Ja altså det som forskellen på den [appen], det her projekt, hvis jeg må sige det, og det andet projekt [Christians og Rasmus' projekt] det er, at det andet projekt kan det at det henter EQ ned på som skærm og så har du altså en EQ som er lige så bred som den her [EQ på computeren] ikke. Den er faktisk oven i købet bredere end skærmen og så kan du sidde med din fingere og rører en lille bitte smule. Det er jo det der skal til. Ikke den der den fandens masse der i virkeligheden bliver puttet på når det er. Der er relativt meget [få muligheder] som treble eller hvad ved jeg og så har du kun de tre frekvensbånd at gøre godt med. Det der så igen er forskellen på deres det er at der har du altså hele frekvensbåndet, så kan du sidde i de minimale detaljer, som er det som VI gerne skulle lave og ikke kun sidde og arbejde med kun 3 bånd."

Recording at 04:32: Test facilitator: "Det var også, altså man kan sige, det er et eksempel på, altså med mulighed for, altså så skal det muligvis udvides, men så idéen er så bare at, jamen i stedet for at arbejde med arbejde med båndet på den her måde [på computeren] så have det på, igennem touch, sådan igennem, med, med, ved at åbne det op på et track som den der [track på iPad'en]."

Recording at 04:55: Test person: "Mmm ja, men altså idéen er jo god, det er jo ikke det, men det er bare ikke... Det er bare for overordnet, for simpelt. Det er nok ordene."

Recording at 05:15: Test facilitator: "Det var så, kan man sige, nogle af ulemperne altså f.eks. bare ved den her... Men så, fordelene som du så, så det, var mere... Det var så surround delen. Kan du se umiddelbart flere fordele i den [appen] som den er nu?"

Recording at 05:34: Test person: Det giver en helt anden form for overblik end normalt fordi at som sagt så bruger jeg meget den her [computeren] til at lave overblik over hvor jeg er henne, men den her [appen] den skaber et endnu større overblik fordi at den ser ud som den gør. Altså metaforen er jo en helt anden, hvor du rent faktisk ser et menneske ovenfra og så fortæller den dig, det er her, lige præcis her, lyden er og altså både visuelt også i øret ikke? Hvad hedder det? Så på den måde så giver den lige pludselig en helt anden og meget mere realistisk metafor i forhold til, hvor guitaren f.eks. ligger herovre [skråt foran til venstre] men han ligger ikke HELT derover han ligger sådan HER [indikerer et specifikt område foran ham] altså du ved, i mixet altså, på den måde er den meget bedre end normalt, så det er en klar forbedring.

Recording at 06:33: Test facilitator: "Kan du forklare lidt om hvordan produktionsprocessen i den her test afviger fra din normale komponeringsproces? Altså udover at du selvfølgelig har mixerpulten i stedet for computeren?"

Recording at 06:46: Test person: "Jamen hvis vi nu skulle antage at jeg ikke havde den, øhhmmm... Hvordan det er anderledes?"

Recording at 06:52: Test facilitator: "Gav iPad'en her anledning til nogle nye, andre måder du vil gøre tingene på end du normalt gør?"

Recording at 07:02: Test person: "Jamen helt sikkert. I forhold til hvis jeg skulle sidde og mixe i, lad os sige 5.1, eller nej det er jo så bare 5 nej 4 det her jo så, 4.0 hedder det vel, hehe. Der er fordelen jo at det går noget hurtigere nu med iPad'en, fordi placeret der hvor man gerne vil have instrumentet placeret rent panoreringsmæssigt. Og så er det også hurtigere at kunne spotte det instrument jeg gerne vil mute, som sagt, med overblikket, så nu vil jeg gerne lige slippe for Sting et øjeblik eller hvem det nu lige end er der synger på den her optagelse. Så kan jeg bare trykke på ham og så er han væk bare lige for en stund, i stedet for at jeg sådan skal ind og lede i de der [track listen på computeren], eller det ved jeg ikke om det bliver svært hvis der er 52 spor på den der, om den overhovedet kan trække det. Hvad hedder det? Men det kunne jo så være en af farerne hvis den ikke kan trække 52 spor, som der typisk ligger sådan et rigtig band optagelse, som ikke bare er Police i slutningen af 70'erne eller hvornår det nu er fra. Men det er jo det, det som Marvin Gaye, det var det vi snakkede om med bussen, det er det Marvin Gaye f.eks. har; det er at han har sådan en blæse sektion og der har de jo siddet og indspillet blæserne sammen, men i vore dage så indspiller du dem gerne enkeltvis og så kan du skrue lige så meget op for saxofonen eller trompeten du har lyst til og det kan så være en af farerne ved at du har 52 spor i den. Ja det ved jeg så ikke. Og også om det bliver rodet på sådan en lille skærm, som vi snakkede om tidligere, at det kunne være fedt med sådan en ordentlig basse. Det er jo det de selv har testet den på dem som havde opfundet det, det var det

I sagde. Så vil du jo også umiddelbart have et større overblik, eller ku' have et større overblik over 52 instrumenter i stedet for 5."

Recording at 09:16: Test facilitator: "Den her setup med iPad'en gav det anledning til nye idéer eller andet inspiration til at gøre tingene på en anden måde? Eller få lyden på en anden måde?"

Recording at 09:50: Test person: "Nej, det ved jeg ikke om det gjorde. Øhh nye idéer?"

Recording at 09:55: Test facilitator: "Noget som du normalt ikke ville have gjort hvis du sad med din mixerpult."

Recording at 10:03: Test person: "Ja, ja altså det. Jeg eksperimentere jo mere med panoreringsdelen fordi det er så nemt i det der i forhold til du skal sidde og så har du et spor hvor du så panorer du lidt derud [indikerer at han flytter et spor mod sin højre], og så finder du det andet spor og panorer det lidt derud [indikerer at han flytter et spor mod sin venstre]. Der er det nemmere at sådan hurtigt at kører rundt og så få dem smidt ud over det hele. Hmm jah jamen det ved jeg ikke. Man eksperimentere mere med panorering, det gjorde jeg i hvert fald sådan umiddelbart, det er det jeg tænker."

Recording at 10:53: Test facilitator: "Du kommenterede også på i løbet at der manglede nogle flere effekter, hvis den havde flere effekter så vil den også..."

Recording at 11:02: Test person: "Ja at du kunne gå ind i den og den her ting her du har overblikket her og så [laver et klik med tungen], den der [trykker på bordet for at indikere et specifikt track] vokal vil jeg gerne have en anden rumklang på f.eks. fordi her er der kun en type rumklang, og hvis jeg ikke er tilfreds med den rumklang så er et bare ærgerligt sonny, hvor det kunne være fedt hvis man lige, du ved, i det mindste kunne skifte rumklangen eller skifte effekten hvis jeg ville have en mere distorsion på altså vokalen, som vi også sad og legede med, så er det jo fint at man kan alligevel kunne gøre det derfra, med de effekter fra Abelton eller hvilket program det nu bliver kompatibelt med, at de så ligger også så du kan vælge frit hvad det er du gerne vil putte på effekten og så... Ja sådan at kunne oprette et nyt spor på den [i appen] også, det ved jeg ikke, så er det lige pludselig hernede vi er [i appen] med det hele, men det er måske også meget godt, tænker jeg. Hvis jeg kunne trykke på den her [computerskærmen] så havde jeg gjort det.

Recording at 12:06: Test facilitator: "Det at du skulle skifte mellem de to enheder, havde det nogen indvirkning på den proces du nu engang havde? Processen i sig selv."

Recording at 12:23: Test person: "Ja men altså. Ja, man tænker jo, altså lige pludselig så er det jo ikke herop [på computeren] at panorering foregår, så er det hernede [på iPad'en] og så især i starten, da jeg lige skulle lege lidt med den, så er det jo noget med at EQ'en fungere også hernede, så har sådan nogen ting du går her [på computeren] og nogen ting du gør her [på iPad'en] så selvfølgelig ændre det på processen i kraft af at du skulle forholde dig til to forskellige medier og så ja... Så forsøger hjernen vel bare på at organisere det sådan at hvis du skal pille den her [iPad'en]... Hvis du skal mute noget, der var ikke en eneste gang jeg var oppe og mute noget [på computeren] det var hernede det foregik [på iPad'en] og når jeg sådan skulle vælge spor, så var det også hernede [på iPad'en] det foregik gerne, medmindre jeg så skulle ind og putte noget på det givne... en ny effekt på det givne spor, så skulle jeg vælge den heroppe [på computeren], men ja det påvirkede det helt klart måden at gøre det på.

Recording at 13:17: Test facilitator: "Kan du forklare din forståelse af de forskellige interaktioner, du brugte på iPad'en? Bare give en hurtig opridsning af de forskellige interaktioner du brugte."

Recording at 13:35: Test person: "Altså skal jeg forklare dig hvad jeg brugte EQ'en til?"

Recording at 13:38: Test facilitator: "Nåh nej, det var mere interaktionerne som i det der med at flytte rundt på tracks og mute og... Alle de her ting som iPad'en kan give mulighed for."

Recording at 13:49: Test person: "Det skal jeg forklare? Er det det du spørger mig om?"

Recording at 13:52: Test facilitator: "Det er mere din egen forståelse, en ting er jo hvordan vi ser det [noget andet er hvordan han oplever det]."

Recording at 13:59: Test person: "Jeg forstod det sådan så at du tager den her lille prik og gør større eller mindre efter kompressor funktionen, øøhh ekspander, gør den større putter mere kompressor på I guess. Og så kunne du så panorer ved og rykke rundt på altså skøjte rundt med fingeren. Det syntes jeg det var fanme smart altså. Så var der selvfølgelig de der klik funktioner hvor du havde forskellige valg, dobbelt klikker så sker der noget, og hold den inde længe så sker der noget øhhh, jeg kan ikke huske det, jeg lige har lavet."

Recording at 14:38: TH: "Var det intuitivt nok at finde rundt i?"

Recording at 14:43: Test person: "Noget af det var. Noget af det var intuitivt nok at finde rundt i. Det der med om jeg skulle holde den inde længe for at mute den, det kunne man nok godt sige sig selv, men det kunne jeg så bare ikke lige fat lige til at starte med, øøhh men jo i virkeligheden var det meget intuitivt altså, at den lægger jo op til at hvis du tager den [et track] og lægger den her ud så sker der noget. Breder fingrene fra hinanden fra center af så bliver det større og sådan nogle ting så jo det var da meget intuitivt. Øhhh og hvad ku den mere? Jo så sker der det når du opretter et nyt spor så kommer der en ny ring eller en ny bolle med fyld eller hvad det var, som desværre ikke havde samme farve som det spor du lige havde lavet. Men det ER jo en prototype. Er det så beta nu? Hvor det er pillet ved? Når der er nogen der har lavet det så er det alpha, når der er nogen der har pillet ved det så er det beta?

Recording at 15:50: Test facilitator: "Nah altså alpha'en kan man også godt have nogle andre til at pille ved. Beta det er mere når du siger nu har vi produkt vi er tæt på lige at kunne smide ud. Det skal lige have de sidste ting ind. Vores produkt er stadigvæk i alpha vil jeg mene."

Recording at 16:16: Test facilitator: "Nu skal jeg lige hører, nu havde du også en anden af de her interaktioner, det med ringene her."

Recording at 16:22: Test person: "Dem fattede jeg ikke en dart af man. Det må jeg sku nok sige. Altså jeg forstod så meget at det var high-cut og low-cut."

Recording at 16:36: Test facilitator: "Ja altså du havde sådan set high-cuttet på den her [yderste ring] og volumen på den her [inderste ring]."

Recording at 16:45: Test person: ”Det nåede jeg aldrig at fat, hvordan det hang sammen, fordi jeg nok i virkeligheden endte med at få ret meget af det til at ligge herinde [lige omkring stageperson].”

Recording at 16:52: Test facilitator: ”Ja jeg kunne nemlig også se at du hurtigt gjorde at volumen blev meget lille, så det var måske fordi du så den som et low-cut i stedet for?”

Recording at 17:00: Test person: ”Jamen nej, jeg sad egentlig mest og forholdte mig til afstande mellem de to øhhh... Så ja selvom du nok sagde det, så opfangede jeg det nok ikke at det her faktisk var en, åhhh Jonas, en måde at vise hvor høj den generelle volumen eller hvad det nu måtte være... var. Fordi lige så snart du kom ind i den her cirkel så spillede den jo bare så højt den kunne er vi ikke enige om det?”

Recording at 17:27: Test facilitator: ”Altså når den er oven på ham [stageperson] så spiller den så højt så muligt, når du begynder at trække den væk, så begynder den lige så stille at trække ned i lyd.”

Recording at 17:34: Test person: ”Ah! Ja ok, jamen det fangede jeg slet, slet ikke. Jamen i så fald så er det smart, det er sku smart, jeg sad hele tiden som sagt og vurderede afstande mellem de to ringe hvor meget plads jeg havde i forhold til det der skide high-cut filter.”

Recording at 17:58: Test facilitator: ”Nu har vi allerede været lidt inden på det nu her men det lydbillede der afspejlede sig på iPad’en til forhold af det lydbillede du hørte, hvordan passede de sådan sammen?”

Recording at 18:10: Test person: ”Altså hvordan det visuelle med det auditive?”

Recording at 18:14: Test facilitator: ”Ja, altså om de lyde som du forventede det der blev afspillet her eller afbilledet her [vist på iPad’en].”

Recording at 18:19: Test person: ”Fuldstændig, uden tvivl. Hvis Sting [vocalen] han var dernede [peger bag over skulderen] så var han også hernede [på iPad’en] og hvis der billedet var rigtig meget rumklang, så var der også rigtig meget rumklang på, altså den der, måler der går ud, så var der også automatisk meget, så det passede fuldstændig overens, altså. Der var ikke noget at rafle om, altså jo mere skraveret feltet var jo mere var der af effekten om det nu var treble eller hvad det var, man nu lige havde valgt, ja der var klart sammenhæng her. Og så kunne jeg jo godt se at det her [lytteren] jo var lille mig, med store fede ører, der mangler måske lige en næse ikke for at vise hvilken vej jeg peger? Eller dig, det kunne også være dig [peger på test monitoren] eller dig [peger på test loggeren]. Du må også gerne være med her. Ja og så i øvrigt da vi lige fik leget med bus der var det også rigtig fedt at du kunne placere, fordi bussen jo netop indeholdte selve effekten, hvor du havde, hvis vi sagde at vokalen i den her bolde og så har du effekten her, så kunne du faktisk lægge vokalen, den tørre vokal herud [holder hånden ud til venstre] mens du havde den rene effekt herude [holder den anden hånd ud til højre] altså rumklang f.eks. så er genspejlet kun der over [mod højre] og det kunne man også tydeligt se, så på den måde så hænger det jo fuldstændig perfekt sammen. Det eneste der nok var et problem var nok at farverne var fucked i forhold til programmet."

Recording at 19:58: Test facilitator: ”Det er også forståeligt nok, det skaber en lille disconnection fordi det hele lige pludselig ikke passer overens.”

Recording at 20:02: Test person: "Det er jo så også igen fordi der er blevet valgt at bruge farver i både det ene og det andet, så hvis det nu bare havde været grå havde det været lige meget, men det er jo der at det... knækker."

Recording at 20:15: Test facilitator: "Så må jeg lige hører her til sidst. Hvad er din tanker om at anvende det spatiale rum i produktionen af musik, at få det præsenteret på den her måde?"

Recording at 20:25: Test person: "Det kunne være fedt men der er jo ikke nogen der køber, der er jo ikke nogen der har sådan en anlæg, medmindre de ser film på det. Folk... Det der er problemet med at mixe på den her måde det er at lige så snart du sender det til P3 så ødelægger de det og lige så snart der står en håndværker hernede som gerne sku hører dit hit på P3, så er det altså mixet til at skulle komme ud af de der to højtalere, øhh og så går det ikke at, altså du ved, man laver det bare ikke på den måde, på den her måde her, så bliver det simpelthen mixet på en hel anden måde hvor du så..."

Recording at 20:58: Test facilitator flytter rundt på stageperson for at vise stereo potentiale.

Recording at 21:03: Test person: "Så kan han godt nok bare lige lægges derned [stageperson er trukket til bunden af iPad'en], men så øde[lægger]... Ja ok på den måde, ja så er det sku fedt. Det var noget vi skulle have leget med, det der, det vidste jeg slet ikke han kunne, hvordan gjorde du... Holdte du ham bare inde?"

Recording at 21:13: Test facilitator: "Du flytter bare på ham, trykker på ham, så flytter du på ham."

Recording at 21:16: Test person:" Fuck mand. Hold da fast, ja ok det da også god mening, så... Så skulle der måske poppe en lille streg op hernede sådan så jeg kunne se hvad der rent faktisk var midten, sådan så han ikke lige pludselig, sådan du ved, sådan så at selve udgangspunktet ikke er, men at udgangspunktet er mere fast og det er de enkelte dele som røg mere rundt i rummet."

Recording at 21:37: Test facilitator: "Men ja altså så men også... Så en ting er at bruge det spatiale rum til at lave surround men en anden ting er jo også at kunne lave det til rent faktisk bruge det til stereo."

Recording at 21:50: Test person: "Ja ok, så på den her måde, det var jeg så ikke klar over at den kunne men, men ja så helt sikkert mand. Cool. Helt sikkert cool. Det kunne jeg godt finde på til sådan noget rumdesign, det er, det gør det jo lige pludselig 100 gange nemmere og så placere ham et eller andet sted øhhh... Hvad hedder det? Guitaristen han skal stå her du ved så jeg kan få den der øve lokale fornemmelse. Fedt mand. Helt sikkert."

Decleration of Concent D

Samtykkeerklæring

Jeg giver hermed samtykke til at jeg bliver optaget på video under denne test. Videoen vil kun blive brugt i forbindelse med forskning og undervisning. Resultaterne, herunder citater og observationer, fra denne videoen kan i forbindelse med forskningen blive udgivet.

Dato:_____ Underskrift:_____

Project USB E

The USB on this page contains the following:

- Recordings of the tests.
- This report in PDF format.