Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Architecture and Design
Department of Design

Armelle Grubb

Improving the user's experience post-acquisition

Master's thesis in Interaction Design
Supervisor: Mari Bjerck
Co-supervisor: Victoria Utheim
June 2021

NTNU
Kunnskap for en bedre verden

Armelle Grubb

Improving the user's experience post-acquisition

Master's thesis in Interaction Design
Supervisor: Mari Bjerck
Co-supervisor: Victoria Utheim
June 2021

Norwegian University of Science and Technology
Faculty of Architecture and Design
Department of Design

NTNU

Kunnskap for en bedre verden

ABSTRACT

Mergers and acquisitions (M&As) present businesses with a path for strategic growth, in the hopes of gaining new technology or expanding into new markets. The motivations are many and yet, their failure rate of 50-70% reveals they don't always deliver the anticipated success. One key phase is to integrate the two businesses, when synergies may not be achieved internally which impacts external stakeholders, in particular the customers. As such, investigating the user experience of customers during the integration phase of an M&A is valuable for those impacted.

This thesis examines the impact of an acquisition on the user experience through a user-centred (UCD) methodology. It then proposes a solution to improve the post-acquisition experience. This was done as a case study of Airthings acquiring Airtight through a horizontal merger, as the two companies are in the same industry. Interviews determined that Airthings users benefited from the acquisition as they had a new product to trial in their already existing relationship. Whereas Airtight customers either hadn't been informed as they had wished or weren't interested in the acquisition and didn't know what to changes to expect. The case study was during the integration process, so users reflected on their first experiences from the acquisition.

To reduce uncertainty for Airtight users, an onboarding experience prototype to the Airthings dashboard was developed and tested internally based on an ideation workshop. The prototype was well received during formative, expert testing, and a heuristic evaluation. Based on these a few changes were made to improve the three iterations. The greatest limitation was that prototypes were not tested on actual Airtight users, which is recommended as a next step. It was concluded a UCD methodology was well-suited to building empathy for the users and creating a positive user experience with business requirements in mind as well.

This thesis contributes to the user experience field by combining it with the M&A field and shows the importance of investigating customers during such an eventful period. This research also helps affirm customers as people with agency and not refer to them as "the market". The study concludes that a UCD method is suitable for building empathy for users and creating a positive user experience, while at the same time meeting business requirements.

SAMMENDRAG

Fusjoner og oppkjøp (heretter kalt M&As) gir virksomheter en vei for strategisk vekst, i håp om å få ny teknologi eller utvide seg til nye markeder. Motivasjonene er mange og likevel er det en feilrate på 50-70% som viser at de ikke alltid leverer som forventet. En nøkkelfase i M&As er integrering av virksomhetene som, om synergiene ikke oppnås internt, kan påvirke eksterne interessenter og spesielt kundene. Det er derfor viktig å undersøke brukeropplevelsen til kunder i integrasjonsfasen av en M&A for å forme denne fasen til det beste for de berørte.

Denne oppgaven undersøker innvirkningen av et bedriftsoppkjøp på brukeropplevelsen til de to involverte bedriftene, gjennom en brukersentrert (UCD) metodikk. Deretter foreslås en løsning for å forbedre opplevelsen etter anskaffelsen. Oppgaven tar for seg en casestudie av Airthings som kjøpte Airtight gjennom en horisontal fusjon, ettersom de to selskapene er i samme bransje. Intervjuene viser at Airthings-brukere hadde nytte av anskaffelsen, ettersom de hadde et nytt produkt å prøve i sitt allerede eksisterende forhold. Airtight-brukere derimot hadde enten ikke blitt informert som de ønsket eller var ikke interessert i anskaffelsen, og ikke helt visste hva de skulle forvente. Case studien ble utført før integrasjonsprosessen var avsluttet, så brukerne reflekterte primært over deres første erfaringer av anskaffelsen.

For å redusere usikkerheten for Airtight-brukere ble en prototype på «onboarding» opplevelse til Airthings dashbord utviklet og testet internt. Prototypen ble godt mottatt under formativ, eksperttesting og en heuristisk evaluering. Basert på dette ble det gjort endringer for å forbedre gjennom tre ulike iterasjoner. Den største begrensningen ved studien var at prototyper ikke ble testet på faktiske Airthings-brukere. Dette anbefales imidlertid som del av et neste trinn i utviklingsprosessen.

Oppgaven bidrar til brukeropplevelsesfeltet ved å kombinere det med M&A-feltet og fremholder viktigheten av å undersøke kunder i en bedriftintegreringsfase. Den bidrar også med å bekrefte at brukeren faktisk er personer med agens (agency) og ikke kun en del av et «marked». Studien konkluderer til sist med at en UCD-metode er velegnet til å bygge empati for brukerne og skape en positiv brukeropplevelse, samtidig som det ivaretar forretningskrav.

ACKNOWLEDGEMENTS

I'd like to thank my two supervisors, Mari Bjerck and Victoria Utheim. They guided and encouraged me through the whole process, always giving valuable feedback to push my project further. Thank you for our conversations and your reassurance, but especially for being so positive and delightful.

Everyone at Airthings, Airtight, Bjørn Saunes and Martin McGloin, for allowing me to research this acquisition freely and offering valuable resources. Thank you for answering my many questions, and your participation in the workshop and user testing.

Lastly, *merci beaucoup* to friends and family around for creating a supportive bubble within and outside working hours. And thank you to the two coolest cats Neptune and Hermes for reminding me to get off the computer.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Topic

The concept of mergers and acquisitions (M&As) often appears very positive on paper, with new additions of ideas or partnerships to help businesses expand and grow. They offer a business a new market entry point and new target audience. However, a majority of mergers and acquisitions in the past have not had the anticipated success as 50% to 70% of them failed (Koi-Akrofi, 2016). This surprisingly high failure rate has not been enough to deter organisations from seeking out the rewards. Microsoft acquired Skype back in 2011 and has been criticised over the years for not addressing technical issues with the software, but rather redesigning the program frequently to the users' dismay (Warren, 2020). Microsoft was going to possibly acquire Discord, a voice, video and text communication service best known to gamers, for $10 billion USD (Bass and Roof, 2020). Though this is didn't happen, Discord's users were uneasy with the possibility in light of Skype's downturn post-acquisition. Logistically, merging or acquiring is a challenge for both parties as they must work together to figure out what changes are necessary and how these will be enacted.

There has been much discussion and theories about the effectiveness of M&As, particularly within finance. An area of interest has been the experience for the employees, which has been coined "merger syndrome" for the generally negative reactions they feel towards these new changes. Researchers are saying that "communication is one of the most valuable HR tools in M&As" (Sarala et al., 2019: 313) as it can help the employees to feel more at ease with upcoming changes.

Another group of stakeholders who must also learn to adapt are the customers themselves. Often they are a primary reason for an M&A, as the new business is keen to gain a wider or different set of customers. The impact of M&As on users has not been sufficiently researched, particularly from the designer's perspective. Some mergers result in less efficient customer service as departments get shuffled around, and information paths are broken down. Though this is likely not the intention, it can occur and result in a loss of customers.

As such, this thesis sets out to explore the impact an M&A can have on the user experience from an interaction designer's perspective. This study is carried out through a case study of Airthings who acquired Airtight in August 2020. By talking to existing customers and stakeholders about this acquisition and its impact on their experiences, a design solution will be proposed and tested. Doing this the thesis will contribute with new knowledge of how customers are impacted post-acquisition within a few months of the announcement. It will also show how a UCD methodology helps improve the user experience of customers in this acquisition phase.

1.2 Airthings and Airtight

Airthings (rebranded from Corentium in 2016) is a company established in 2008 by three researchers from CERN (European Organization for Nuclear Research) who found a way to measure radon gas levels without having to send samples to laboratories. This reduces costs for homeowners concerned by radon around the world and allows them to monitor

levels continuously. They started investigating other dangers in the air and expanded their portfolio to indoor air quality monitoring solutions, including radon gas. In 2019 they launched Airthings for Business to offer B2B customers a way to see and understand their buildings' indoor air quality. This would help them to make better facility management decisions through a dedicated dashboard to view data from the sensors (*Airthings - About Us*, 2021).

Airtight is a proptech (property technology) start-up founded in 2016 who create smart sensors to monitor building pressure levels. Awarded the Seal of Excellence by Horizon 2020, they aim to reduce energy leaks using the building's ventilation systems (*Airtight - Our Story*, 2019).

The acquisition of Airtight was announced August 25th 2020. The aim was to offer a greater product offering to Airthings' business partners as well as help develop the Airtight technology, as expressed by the CEO Øyvind Birkenes. Both companies saw they had similar products, goals and customer base, making the acquisition an easy decision. It allows Airthings to not only monitor indoor air quality, but to deliver a fuller service of building management (Perez, 2020). At the end of October, Airthings was admitted to trading (*Airthings admitted to trading*, 2020) which may have put pressure on the acquisition to be announced earlier to present themselves as a strong company who can acquire others. This may have led to rushing parts of the deal, which could become problematic as the integration progresses. As Airthings view themselves as "customer obsessed" and want to offer usable products (*Why Airthings*, 2020), maintaining this goal throughout an eventful period like an acquisition is essential for the company. Neglecting customer needs during this time can break their trust which competitors could use to their advantage.

1.3 Justification

The business cases for why UX should be implemented are many. Selling unusable products which are hard to learn frustrate the user and decrease their productivity, leading to a poor user experience (Harston and Pyla, 2012). An M&A can also be considered a product sold to customers, though buying into is less optional. Customers of an acquired company will be ushered into the acquiring company's context with some or no guidance. This experience is one that can make them think twice about taking their business elsewhere, possibly resulting in a loss of customers post-acquisition. It's in these situations that frustrations have to be reduced as customers shouldn't be given a good reason to leave. The acquirer generally has good intentions in the process so losing more customers than necessary shouldn't be part of the process. These relationships need to be managed during eventful periods, as much with employees as with customers. As Luther et al. puts it, "it is particularly important to adopt a successful UX approach when perceptions of digital products and customer loyalty are involved" (2020: 1). This shows the intersection of business and design keeps evolving. With M&As being so frequent, the designers should be involved with such company changes from either side of the M&A. As UX designers help shape the customer experience, they can help shape the acquisition positively for customers. Researching the topic will allow other designers to consider the full journey that both acquired and existing customers are going through. They can question pitfalls or simple areas of improvement in the journey and how to respond to these, not only through sales or marketing but with products too. New customers mean new needs should be considered and met in the development.

Researching the Airthings-Airtight case study will give the opportunity for Airthings to maintain their "customer obsessed" status even during the acquisition process. Finding out how new and existing customers experienced the acquisition can help shape the next journey steps. They can also learn if the acquisition created new value to the company and its customers as they have hoped for. Other businesses can hopefully also learn from this experience, as start-ups being bought by larger firms is relatively common.

1.4 Research question

To investigate the topic presented, the following research question was identified:

To what extent is the user experience impacted post-acquisition and how can it be improved for the acquired company's customers?

The question allows for a qualitative approach to the topic, through theoretical and practical research. A general view of customers' experience post-acquisition will be gathered from existing research on the topic, then moving to interviews for primary data gathering on the Airthings-Airtight case. By responding to this question, the thesis aims to show how user-centred design (UCD) can help shape the acquired company's customer experience post-acquisition. For this, design methods will be explored and help create a proposed solution for the acquired customers. It will demonstrate how interaction design and user experience can be merged with the finance field.

1.5 Thesis structure

The thesis will be presented in six chapters:

Chapter 1 introduces the topic to be investigated and the case study of Airthings acquiring Airtight. A justification for the topic is described, followed by the thesis' research question.

Chapter 2 is background research on mergers & acquisitions, common reasons for failures and the effect on customers. User experience is then situated within the design field, and the experience part of the term is explained.

Chapter 3 covers the methods used for this thesis in the three stages of concept, ideation, and development. Study limitations are shown here to be considered prior to the results.

Chapter 4 presents the results of the research phase and the proposed solution for how to integrate Airtight customers into the Airthings experience.

Chapter 5 discusses the results, in terms of impact on the user experience and how the experience was improved using a UCD methodology. Implications for other M&As are covered as well as future work.

Chapter 6 is the thesis conclusion, with a reflection on this thesis' contribution to the respective fields.

2 Background on M&As and UX

To understand the impact of an M&A on the customer's user experience, both of these fields need to be explained within the scope of this project. As such the background research is split into two sections:

Mergers and acquisitions (M&As): defining what an M&A is and how they happen. Then the motivations and common failures for an M&A are presented to explain why they happen and why they may go wrong. Finally, the focus is on how customers are considered within an M&A, showing this area is lacking the attention it needs.

User experience (UX): defining what user experience is and why this thesis uses it to research the given topic. Then the field of UX is explained, in particular the experience part of the name. Finally, benefits of having a UX approach are presented.

2.1 Mergers and acquisitions

The terms "merger" and "acquisition" are often used interchangeably, as they generally refer to the purchasing of one business by another. Each have their own goals and uncertainties but together are commonly abbreviated to M&A. This umbrella term encompasses a wide variety of business deals, aiding to the confusion between the two terms. For clarification, the terms are defined individually.

A merger is commonly defined as the combination of two organisations or entities, where only one remains (Gaughan, 2005; Koi-Akrofi, 2016). It is seen as an equal process, where the two businesses must work together to push the remaining one forward. The decisions taken will involve both parties with the aim of achieving synergy. Gaughan (2005) writes that synergistic benefits are more achievable when the businesses are similar, as they understand each other's fields which helps in making decisions. However such equal mergers are rare.

An acquisition differs from a merger, as one organisation will have a higher power above the other. It refers to one business buying the assets and stocks of another (Koi-Akrofi, 2016), in either a hostile or agreeable context. These are more common, as they are ways to reduce the competition or acquire new technology quickly. An acquisition does not mean a business will disappear to the public; there are many situations where a business is absorbed by a larger one. In this situation new management will take over and overlapping departments will be condensed, likely resulting in job losses. The organisation name could also remain the same to customers.

This report will use the singular terms where appropriate as well as the umbrella term M&A to cover both situations.

There are many types of M&As to consider, but this thesis focuses on the one of Airthings and Airtight. It is a horizontal M&A, which occurs when the acquiring company purchases another one within the same industry (Kumar and Sharma, 2019), giving the acquirer greater market power as they have removed a competitor from the field. Competition would be reduced for the customer, something which is negatively viewed as competition is beneficial for customers. Horizontal mergers are also seen as a lower risk for the acquiring business because they know the field well which makes the integration phase relatively smooth. Resources can be more easily shared and transferred, ideally leading to lower operating costs (Rozen-Bakher, 2018).

2.1.1 Process of an M&A

An M&A will impact many areas and stakeholders while it develops, so managing this process is very important. Each merger or acquisition will happen in a particular context so the process will change accordingly. The steps presented here are a general and simplified overview of how an M&A can unfold, as summarised in Figure 1.

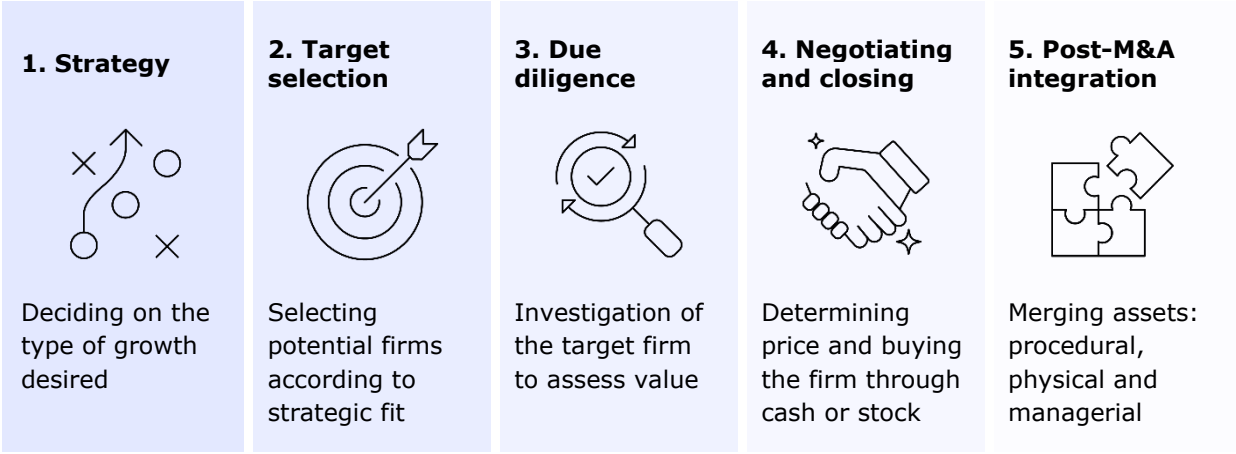


Figure 1 - M&A process

1. Strategy - This first step is about the acquirer understanding why they wish to grow their business and deciding what type of growth. One strategic choice is an M&A, a decision generally explored by management (Mucenieks, 2018). They can decide what prerequisites the other party in the M&A must fulfil, in terms of organisation and added value they will bring. They must ensure this process will be worthwhile to the company.

2. Target selection - Once the requirements for the target have been outlined, the business can begin investigating potential firms to merge with or acquire for which the approach will vary. When looking for a target, it is important to look beyond the financial data provided and see what value will be gained (Mucenieks, 2018). They must assess the fit with their own business to see what elements are in line with the strategy. It is recommended to pick a target they know well and within their industry (Vizzaccaro et al., 2018) as this will help later in ensuring a successful post-M&A integration.

3. Due diligence - Qualified as one of the most important steps of an M&A, it should begin after an early agreement is put in place with the target business. The buyer will investigate the target in depth, based on what the seller provides. It is also in the seller's interest to provide only positive information at this stage (Vizzaccaro et al., 2018), but the buyer must ensure they can get to know the target as best as possible. This means assessing the value, risks and expected synergies (Wangerin, 2019) as well as the "soft" aspects like the organisational culture (Vizzaccaro et al., 2018). This step will allow the buyer to make an informed decision on whether or not to continue with the M&A process.

4. Negotiation and deal closing - At this stage the buyer is ready to negotiate a price for the target firm. When doing this, the buyer must recognise the intangible value a business has (Anderson et al., 2001) and take it into account when pricing the M&A. The goal for the buyer is to quantify the potential synergy (Vizzaccaro et al., 2018) between the two businesses, for which the due diligence phase should have clarified this. It is helpful here to have consultants who can determine a fair price thanks to their external perspective. Closing the deal means buying the firm itself, which can be done through cash or stocks. This is up to the two parties, but both these methods present advantages

and disadvantages. Briefly, a cash purchase will leave the buyer at risk if the business fails but will also collect all the returns if the business does well. Purchasing with stocks lowers the buyer's risk, but they cannot enjoy the full rewards (Vizzaccaro et al., 2018).

5. Post-M&A integration – This stage brings the two businesses together and the goals outlined must be enacted. The integration can be broken into three categories according to Shrivastava (1986 cited in Anderson et al., 2001): procedural, physical and managerial. Procedural is the act of combining the two companies, from an organisational and strategic level. The companies become one and this intricate process should happen in a coordinated manner. Physical integration is about bringing in the tangible pieces of one business to the other such as real estate, factories and product developments. Lastly, managerial integration is more challenging as it deals with the socio-cultural aspect of the businesses. It is very important here to communicate to internal but also external stakeholders (Anderson et al., 2001). This will serve to motivate employees at all levels, align interest and foster trust (Vizzaccaro et al., 2018), ensuring a positive corporate culture. Authors have noted that businesses generally fail to plan this stage in advance whereas doing so could help reduce future costs (Mucenieks, 2018).

2.1.2 Motives for M&As

Despite the high rate of M&As that do not deliver on the outset goals, this approach is still an attractive option for businesses. The primary aim is for a business to grow, something usually done through organic growth, however this is very time-consuming (Kumar and Sharma, 2019). Inorganic growth is typically the chosen route where an M&A will provide that growth at a much faster rate instead of internally paying for research and development. It means gaining new knowledge and technologies, and hopefully the customer base as well. Opting to complete an M&A can happen for multiple reasons, a couple of which will now be presented.

The greatest hope of an M&A is for a business to achieve synergy with the other party. Two types of synergies are outlined: operational and financial (Yang, 2015). For operational synergy, the operations of the new business will have an increased income and achieve economies of scale. This is where the growth of the business will lower input costs while having a higher production level. This will lead to a more efficient business provided they have not grown beyond their capacity, at which point this efficiency will be lost. Economies of scale could also happen if the business has done a vertical acquisition, where operating costs could be decreased (Kumar and Sharma, 2019).

Financial synergy is about increasing a business's market value. It is common for competitors to be bought out such as in a horizontal merger (Kumar and Sharma, 2019), which may lead to a monopoly. A monopoly can lead to better productivity levels as well as offering superior investment opportunities. It does however place the business in an advantageous position for negotiating, as well as creating barriers to entry for other businesses. This is a motivation for businesses, but customers are notoriously wary of monopolies (CX in M&A, 2019). Another incentive to achieve financial synergy is for businesses to diversify their risks, which would be done in a conglomerate type of M&A.

One other motive may be from a single person's desire to do so. They will approach the possibility of an M&A with hubris which will distort the real goals and may mislead shareholders. This phenomenon is called managerial hubris (Gaughan, 2005) and can also be a reason for M&As to fail.

2.1.3 Common failures of M&As

Much literature has been written about potential reasons for M&A failing, as the failure rate is surprisingly high. The numbers for this are not always consistent as the definition of a successful M&A changes for each measurement. A few reasons for not achieving the goals are outlined here, though this list is not exhaustive.

2.1.3.1 Poor communication

Within M&As, communication is essential at every stage of the process and should be done so with as many stakeholders as possible from both sides of the acquisition (Kumar and Sharma, 2019). Customers are part of the external group of stakeholders, of which their role will shortly be discussed. What should be communicated to stakeholders is especially key goals and plans for the integration. With these, preparations can be put in place for the upcoming changes, especially with regard to employees. Sarala et al. writes that "communication is one of the most valuable HR tools in M&As" (2019: 313), as the HR department can internally reach all employees effectively. They can also help in managing the changes that employees will have to face in due course. Hearing from the upper management what will happen can also build up trust between employees, an essential part to a successful M&A. Effective communication can be achieved if it is frequent, consistent and honest (Sarala et al., 2019).

2.1.3.2 Poor management

Management during M&As is a very challenging task, especially in the post-merger integration phase. On the human capital side, M&As are often considered a disruptive life event to employees which is named 'merger syndrome' (Kusstatscher et al., 2011). As the name suggests, the term refers to the reactions of employees and managers to M&As. It focuses on the uncertainty they face which leads to a stressful workplace and decreased productivity as they await decisions. One suggestion for this is to have a "change agent network" who will listen to the employees so they can have an input in the upcoming changes (Sarala et al., 2019: 311). Management also refers to the goals and expectations put in place by upper management which employees may find unrealistic to achieve. This is a common failure, where companies are apathetic "to the employees' reactions and interests" (Koi-Akrofi, 2016: 152). To remedy this, Harikkala-Laihinen et al. (2018) argue for a more collaborative approach in planning M&As. They stipulate this could be done by introducing new values so both the new and old employees can embrace and appreciate them together.

2.1.3.3 Culture fit

Bringing two companies together who each have their own ways of working and habits will present challenges in creating an effective work environment post M&A. Such corporate cultures will take a while to enact themselves and see how well they work. The term cultural fit is quite vague and difficult to quantify, making it under researched in the causes for M&As failing. Because of the vagueness it has been considered a "convenient scapegoat" (Meglio and Schriber, 2020: 101) when an M&A fails. Looking at working culture is important to ensure a successful merger because it represents who the company is (Harikkala-Laihinen et al., 2018) to employees and customers. It shows to new employees how the customers are valued and should be treated, and what degree of freedom they will be permitted in their work life (Kumar and Sharma, 2019). Communicating this clearly will help manage the merger syndrome felt throughout and

for new employees to understand what is encouraged or not. Other failures have been associated with national culture clashes, as two firms from different countries will start working together and each have their own habits and expectations (Koi-Akrofi, 2016).

2.1.3.4 Managerial hubris

Explained as a motive earlier, managerial hubris is also a common failure. When occurring within M&As, economic goals are secondary to the manager, while "their own personal reasons" are their primary motive for enacting a deal (Gaughan, 2005: 75). This type of issue seems most evident in America, where CEOs are seen as overconfident and cultivate a lifestyle that encourages such behaviours (Malmendier and Tate, 2015). Identifying a failed M&A as caused by hubris can be challenging, but it is usually seen when the value of a company is incorrectly assessed and a deal's synergy is overestimated (Yang, 2015). It was also determined that the size of the premium paid was positively associated with CEO hubris (Gaughan, 2005). It can seem easy to blame a failed M&A on this, as it is a single or group of people to put at fault but researchers have found common threads to be able to label these types of failures.

2.1.3.5 Due diligence

An important step in the process as expressed earlier, due diligence has been too often seen as a reason for a failed M&A. This step determines exactly what the acquirer is buying and if it is worth the given value. They must evaluate "its risks [...] and the expected synergies of the acquisition" (Wangerin, 2019: 2345). It serves to balance out information for both parties so they know what to expect once the deal is confirmed. Because this is a very time-consuming process for both sides, it is either shortened or omitted completely, so firms commonly do not do this adequately (Daniel and Metcalf, 2001). This can lead to uninformed decisions on the acquirer's part, as any red flags are discovered later and can easily cause the M&A to fail.

2.1.4 Customers and M&As

A central point of this thesis is to look at customers within M&As from an interaction designer's perspective. The focus here is to show what literature and research explored customers within M&As, though it was found to be limited. As they are a vital stakeholder to companies, planning for them during an M&A should be prioritised. It should be important to see how they are affected and respond to the process of merging or acquiring. Literature is limited compared to the internal stakeholders and stages of M&As, most likely because the act of merging is sufficiently complex. The literature also considers the acquirer's perspective more so than any other stakeholder (Öberg, 2008). This is not a wrong approach but does show a gap on the other side of the M&A that needs to be explored.

One of the primary reasons for businesses to merge or acquire are the customers. Öberg (2008: 3) shows that they are referred to as "the market", showing a distance between the business and customers even within literature. This goes further to see customers referred to assets in a deal, ignoring that they are movable parts with their own agency. They are not readily transferable from one to another, as with employees at the concerned businesses. Growth for a business can only occur if there are customers, so being sure they will be there once the merger is complete is important.

The post-M&A integration phase is an opportunity for businesses to align themselves and work on how they will impact their customers. Kato and Schoenberg (2014) qualify this as a critical phase as internal changes will have consequences on external affairs. Employees are the point of contact for customers, so providing an efficient customer experience should be prioritised. The efforts made can hopefully mean the customer base will move with the acquired business. Unfortunately, there is no guarantee for this kind of transfer though companies have previously made this assumption (Gaughan, 2005). Purely buying up a brand does not ensure customers will choose to stay (Öberg, 2008) as customer's perception of the business will affect this. Some organisations will choose to keep two brands separate and give the impression to the general public that it is business as usual, especially if it is a conglomerate M&A where the values of two businesses are far apart (Hodgson, 2018). Whereas a rebrand or combination of the two businesses will show the customer there has been a change, at which point they can decide to continue with that business or not.

For the customers that choose to continue, their reactions will vary. Öberg (2008)'s research identified three types of reactions following an M&A announcement. They are non-reactions, incremental and radical reactions. Non-reactions are when customers choose not to make any changes in their business following the announcement. This would happen when an M&A planned to gain new customers or offer new products their customers will buy into. When customers keep their business relationship the same as before the M&A, they have a non-reaction to it. An incremental reaction is when there is a change in relationship in terms of content or frequency for example (Öberg, 2008: 106), but the relationship still remains. One factor for this could be the staff experiencing merger syndrome, as they worry about what will happen to the business and sales slow. Customers can therefore pause their purchasing while the integration is sorted and pick it up later. A radical reaction refers to relationships being made or broken down. Öberg did not identify any new relationships formed after an M&A announcement but found a few that did break down due to "an impossible relationship" (2008: 118). These are reactions to the announcement and they may change through time as the integration develops.

2.1.4.1 Customer hopes and concerns

Customers who hear about a business going through an M&A have reason to be both excited and concerned. The changes caused by a complex transition are hard to predict, especially since customers are not part of the process. The hopes that customers do have for such deals are few, but they are there. The first is to have simplified purchasing processes (Kato and Schoenberg, 2014), where the M&A will have brought about more efficient ways of working. The aim would be for the process to be as streamlined as possible. The second hope is for the product range of the business to be extended, so that in the case the customer is loyal and stays with the company, they will have more options available.

Customer concerns for M&As are not without basis. What seems to be the primary concern is an increase in price of goods offered (Kato and Schoenberg, 2014). This is a natural deterrent for customers to leave a business, particularly if the M&A leads to a monopoly. One customer said: "I just don't like when a big corporation hijacks the market" (CX in M&A, 2019: 14). This statement shows the dislike for monopolies, as customers know they are not favourable to them. The larger market share of the business means they have less incentive to keep prices low and the quality of goods and

services may decline as well. This was investigated by Geddie and Lee (2006), in an airline merger where the customer service quality declined.

Another important concern for customers is for them to feel neglected during this transitional period. They are more likely to be neglected (Kato and Schoenberg, 2012) as there will be many managerial and physical changes occurring. The employees' focus will be shifted, particularly if they are dealing with merger syndrome. It would be most ideal to reduce disruptions to the customers (CX in M&A, 2019) to ensure they are still being given the same level of service as previously. This was not well executed in several bank mergers as explored by Farah (2017), where the quality in service decreased sufficiently for customers to switch to another bank. This neglect can put into question even the most loyal customer, as the business relationship between the two will have been affected to a higher degree than usual. The PwC report (CX in M&A, 2019) and Kato and Schoenberg (2014) suggest investing time with the customers to gain their insights during the company's progression, to reduce any anxieties.

Instagram's acquisition by Facebook in 2012 also highlights these customer concerns. When the acquisition was announced, users shared their worries of Facebook dissolving Instagram, or "crowding it with features that ruined the simplicity" (Frier, 2020: 54). Customers worried new management would change the company's goals and therefore the user experience they were so enjoying. The company goals did shift, as Facebook would restrict resources to Instagram only if they aligned with their goals, which meant integrating ads rather than tackling more pressing issues like bullying. Instagram's customers weren't given the attention the founders wished they could give. As Frier's highlights: "the real cost of the acquisition will fall on Instagram's users" (2020: 280).

2.1.4.2 Factors affecting customer relationships

Many factors of M&As will affect the customer's concerns expressed above. They are for the most part out of the customer's hands which puts the responsibility for changing or managing this on the acquirer. They represent the "backstage" processes the customer will not be informed about but will affect their experience with the business.

One factor is employee turnover, an unfortunate but sometimes necessary element of an M&A. As two departments are merged, there may be overlaps in roles and the more skilled employee is likely to be kept on. Kato and Schoenberg (2012) point out that the effect this has on customers is two-fold. The employee who left may have more intimate knowledge of specific customers which means the relationships they built will end, and now have to be rebuilt with the new employee. This is a very time-consuming affair, which is not favourable during a merger and the customer could decide to walk away at this point. The second effect is when the employee who has left was a strong support for another team who works closely with the customers. That internal support was very important for the business to provide their service efficiently to customers, throwing a wrench into what was a smooth process.

Another factor is how the company will ensure the same smooth service performance as previously. It must put in the work required to keep disruptions at a minimum (CX in M&A, 2019) as expressed previously. Kato and Schoenberg (2012: 172) write that an IT system integration can be a "key predictor of how customers will perceive the level of service performance" within the logistics industry. This IT system would hopefully alleviate some mental workload. The system would still be able to run regardless of who

is operating it, which will maintain the same quality of service. As such disruptions should be minimal for the customer.

2.1.5 Moving to UX

With customers dictating businesses' needs, overlooking them during and after an M&A would be irresponsible. The literature presented shows customers should be spoken with and their concerns taken into account. From an interaction design perspective, user experience is the appropriate process to understand customer concerns and needs. It takes these inputs to create or enhance a positive user experience after the M&A. This is why it was chosen for this thesis to best explore the topic presented and will now be introduced. With Airthings' acquisition of Airtight, the M&A has already taken place so the focus will be post-M&A, when the businesses are still integrating.

2.2 User experience (UX)

This chapter will go through the discipline of UX, highlighting what is encompassed when looking at the customer's UX within M&As. Its relation to the user-centred design (UCD) process is presented, and what experience means in this context.

2.2.1 Situating UX

The field of user experience is still evolving and finding its place amongst similar disciplines within design. The origin of UX has been commonly acknowledged by academics to be human-computer interaction (HCI), which began in the early 1980s. This field of study used to be considered a speciality of computer science, where it merged cognitive science with human factors engineering. The approaches were very objective, aimed at improving the user's efficiency when using computers with a priority for safety and error reduction. Carroll (n.d.) sees UX as an export of HCI, of which methods and theories are used to teach professionals of UX, interaction designers, user interface designers, application designers, etc.

2.2.2 Defining 'user experience'

Defining UX is no easy feat as academics and industry professionals have battled with the many available definitions which each recognise different facets of the term. Macarthur and Sward (2007) believe this is due to different organisations having their own interpretation. Meanwhile Hassenzahl and Tractinsky find the term has been associated with "traditional usability, […] beauty, hedonic, affective or experiential aspects of technology use" (2006: 91) showing the wide spectrum covered. Bargas-Avila and Hornbæk (2011) find UX as a research field to be lacking distinct characteristics to be its own. It is certain that a term often interchanged with interaction design, user-centred design or such, would be lacking a proper definition. While researching this topic it was important to expand the term to more than just 'user experience'. Many researchers would be discussing UX without calling it such, instead using 'interaction design'. Despite a variety of definitions having presented themselves there are a few common denominators to UX, two of which will be explained here.

The first is that user experience should aim to remove or at least reduce frustrations for the user. Preece et al. (2019) see these frustrations as the negative aspects of the user experience, which is often a barrier to using a product. Baxter et al. specify such moments to be "when our expectations are not met, or when technology is too hard to

use" (2014: 3). We've all experienced such moments and would like them minimised. A good user experience would have as few frustrations as possible, ideally none.

The second common aspect is for user experience to look at all touchpoints of the end user's interaction as identified by several authors (Kuniavsky, 2010; Macarthur and Sward, 2007; Rosenzweig, 2015). Nielsen and Norman also identify this in their definition, as UX "encompasses all aspects of the end-user's interaction with the company, its services, and its products" (Nielsen and Norman, n.d.). This moves away from HCI during the 1980s, as UX seeks to look at the wider picture. It will examine several interactions that make up a whole experience, acknowledging the many phases a user will go through even for a single product.

In 2008, the ISO introduced their definition of user experience to be in line with the usability standards, as ISO 9241-210. ISO also wanted to standardise the definition because of its wide use across industries. In its 2019 update, ISO defined it as a "user's perceptions and that result from the use and/or anticipated use of a system, product or service" (*Part 210: Human-centred design for interactive systems*, 2019).This definition allows designers to look at several levels of an interaction, from product to service. It does not specify the frustration aspect presented earlier but this could be interpreted as being part of the person's perceptions and responses, both negative and positive.

To define user experience within the context of this thesis, the definition by Rosenzweig will be used: "UX means looking at all the touch points at which a person interacts with a product, service, or technology and building the experience around the person, helping them to solve problems and reach their potential" (2015: 8).

2.2.2.1 Addressing customer experience

The term customer experience was used in the previous section on M&As to designate the perception a customer has when dealing with a company over the length of the business relationship. Within design however, it can be seen as its own discipline, separate from UX and shortened to CX. Salazar (2019) points out they can be differentiated based on the level of focus. CX looks at the relationship level of a customer and the many departments a customer will come across. Meanwhile UX could range from a small interaction level, reaching all the way to the relationship level. Though the lines between the two are somewhat blurred, this thesis aims to contribute to the UX field through a UCD methodology. Because of this, the term "user" will be used when referring to customers in the UCD methods. The term customer will only be used when it relates to the businesses' customer groups.

2.2.3 Usability and experience

Delving into 'user experience' and its content further, the term has often been qualified as a mixture of usability and emotion. Usability has long been seen as synonymous to user experience (Hassenzahl, 2008) but really it is a component of it. Kuniavsky (2010: 14) points out that "good usability is insufficient to create a good experience" which highlights that you can have usability but adding a proper experience will bring it further. Usability itself has also been given several definitions but there is a consensus it should be about efficiency primarily, and should be "objective and product-based" (Baxter et al., 2015: 4). Preece et al. qualifies products as being usable if they are "easy to learn, effective to use, and provide an enjoyable user experience" (2019: 2). This definition

brings in the UX, noting that effectiveness and ease of learning are key parts of what make up that experience.

Adding emotion creates a more holistic approach to the field. It considers users as real people who have positive qualities and weaknesses. This means UX designers must have empathy for their users (Hamm, 2014) to create thoughtful experiences that work and satisfy the user. To Garrett (2011: 7), this means looking "beyond the functional or aesthetic" of a user experience. Emotion is intangible but that doesn't make it impossible to design for or study especially given the field of affective science focuses on this. Understanding people's emotions when encountering a product or service will help to see how this emotion can be enhanced or minimised depending on the project's goal.

To design for a product's best usability and a user's emotions when using that product, it is best to understand the intended users, and particularly their context. Baxter et al. (2014) sees this as being an integral part of the process, where users should be thought of from the beginning. Designs do not exist in bubbles where the user is left independent of distractions. For this the user experience must take into account the real world application and how the product will be used in that place and time (Preece et al., 2019), to carry out specific tasks. Focusing on these, we must see what are the user's needs (Bargas-Avila and Hornbæk, 2011; Chandler and Unger, 2012) and why they are using certain technology or not. These types of insights can only be obtained if the process gives sufficient attention to the users to build "the experience around the person" (Rosenzweig, 2015: 8).

This focus can be achieved by using design thinking, a framework and mind-set that is often applied to business and practice areas (Baxter et al., 2015). This framework encourages an iterative and experimental approach to gain a human-centred viewpoint. Baxter et al. goes on to say that "the core idea is that by deeply understanding user needs, opportunities for innovation will emerge" (2015: 11). This innovation argument is of interest to businesses, making it a useful argument for why users must be involved.

Finding out user needs and contexts is done through UX research, which in this thesis will be done through user-centred design methods. Several authors have remarked that user experience is achieved through UCD by collecting user requirements (Baxter et al., 2015; Garrett, 2011; Haklay and Nivala, 2010; Saffer, 2010). Macarthur and Sward says that "the UCD community must recognize that user experience (UX) is the embodiment of their discipline" (2007: 35). As the name suggests, UCD offers methods to gather user insights case which can be turned into design requirements for projects. Methods from UCD will as such be used for this thesis as described in the Methods chapter.

2.2.4 Experience in UX

Experience being half of the term user experience, it should be explained here. Of the literature on UX, Hassenzahl has dedicated writings about what experience means within this field. To him, experience is "an ongoing reflection on events" (2008: 11) wherein the user is considering how the events make them think and feel. Almost anything can be considered an event, but it is up to the person experiencing it to qualify one as such.

An experience doesn't happen in a vacuum, it has to be lived by someone and brought about by a set of circumstances. These can be a mixture of activities, the user's mood at that moment and personal goals they are thinking about. This culminates into a particular experience at a particular place and time (Hassenzahl, 2010). These

circumstances must be taken into account as they create the context for the user to interact with a product or service. The time frame for the context is quite flexible, as sometimes it is necessary to examine a very small experience for the user but other situations call for a much broader and extended look at the journey.

2.2.4.1 Pragmatic and hedonic

Much like UX being a mixture of usability and emotion, Hassenzahl (2008) separates experience into the two qualities of pragmatic and hedonic. These identify the two ways in which users will experience products and services, where their weightings will change through time and depending on the nature of the product (Merčun and Žumer, 2017). The pragmatic quality is about the utility and usability of the product "in relation to potential tasks" (Hassenzahl, 2008: 12). It looks at the practical aspects of the product as perceived by the users. The hedonic quality is as the name suggests, the quality of enjoying the product and connecting with it. It considers why a user will have that product and ask them to take an introspective look into their relationship with it. Hassenzahl outlines the pragmatic should not be left behind in favour of the hedonic. He does go on to identify though that hedonic qualities "are the main contributor to product's acceptance" (as cited in Merčun and Žumer, 2017).

2.2.4.2 The product experience

Though many efforts have gone into developing the ergonomics and visuals of products, Hassenzahl argues that "the product … is only interesting because it mediates a personally meaningful experience" (2010: 2). Certainly, the product design is key to the use, but the user will be interacting with it because of a need for something. The fork mediates the need for being hungry but many other tools can be used to fulfil this need.

To create that meaningful experience, several elements must be shaped in accordance. Within UX, Garrett suggested 5 elements of web design (or 5 planes model) that can be used to create a positive user experience. They are surface, skeleton, structure, scope and strategy (Garrett, 2011). These can be extrapolated to the real world to show how changing one of these elements at a time can influence the experience, as they are all linked. Kuniavsky (2010) meanwhile argues that the elements of service and shape should be included when applying this model to the real world. Service here means showing the network in which the product exists, with the many moving parts surrounding it. Shape is about the physical nature of products and how that also affects the experience. It shows that creating an experience can be done by looking at the smaller elements and user needs. Collecting information outlines the users' circumstances based on products, people and context in order to shape the right experience. Designers can only shape an experience, not guarantee it (Hassenzahl, 2010). When creating the experience, designers need to be empathetic and share an understanding of the users' needs which Saffer sums up by saying that "designers are advocates for their end users" (2010: 6).

2.2.5 Benefits of UX

Creating engaging and exciting products or services for the users can benefit everyone involved if done correctly. The advantage is to focus on the user and create something the user will be interested in but also matches the business objectives. This was another reason for using a UX approach through UCD methods for this thesis, as an M&A will

need both the user and business to benefit. The benefits to users and businesses are summarised in Table 1.

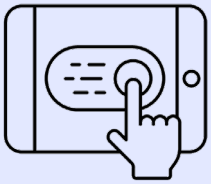
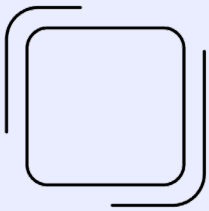
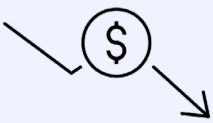
Topic	Benefits to:
Usability 	**Users** • More usable products (Allen and Chudley, 2012), which could lead to increased productivity if that is the goal. This can also lead to a wider and quicker adoption by users (Baxter et al., 2014). • Safer systems (Baxter et al., 2014), as their usability is taken into account and accidents will slow down the effectiveness of the user's experience. **Business** • Less risks presenting themselves (Allen and Chudley, 2012) as the design will be based on gathered insights and knowledge about the customer. Problems will also be revealed before launching.
Fitting to the user 	**Users** • Being heard and breaking down designers' assumptions (Preece et al., 2019) through testing the product early in the process leads to one that will fit the user's expectations. • A solution that is sensitive to cultural differences as user-testing will bring these to light if tested with the right user groups (Preece et al., 2019). **Business** • Increased sales from having verified there is a need for the product (Baxter et al., 2015). • Better reviews of products, which will help increase product sales too (Baxter et al., 2015).
Lower costs 	**Business** • Cost savings, by having rapid iterations and not spending many hours on a product that hasn't been tested by users (Baxter et al., 2014). • Decreased support costs as the designed product will have to aim of being easy to use and understand, thereby reducing the need for customer support (Baxter et al., 2015).
Competitive advantage 	**Business** • Having a competitive advantage, as the strategic objectives and user needs will be brought together thoughtfully to best compete with other businesses (Macarthur and Sward, 2007). • Increasing customer loyalty (Garrett, 2011) as "each experience moves the satisfaction dial" (Lockwood, 2010: 222).

Table 1 - UX benefits

Based on the advantages and methodology of UX, it is the optimal choice for examining customer's experience post-M&A as is the case for Airthings' acquisition of Airtight. The planned methods and process of this thesis will now be presented.

3 METHODS

To carry out this study, a UCD framework was used to address and create a positive user experience for the user post-M&A. The methods aim to understand how people interpret their experiences (Goodman et al., 2012; Merriam and Tisdell, 2016), specifically how users are affected by Airthings's acquisition of Airtight. Baxter et al. (2015)'s UCD framework was used to structure the project development. The illustration of the process is adapted to this project from Baxter et al. (2015: 10)'s and shown in Figure 2.

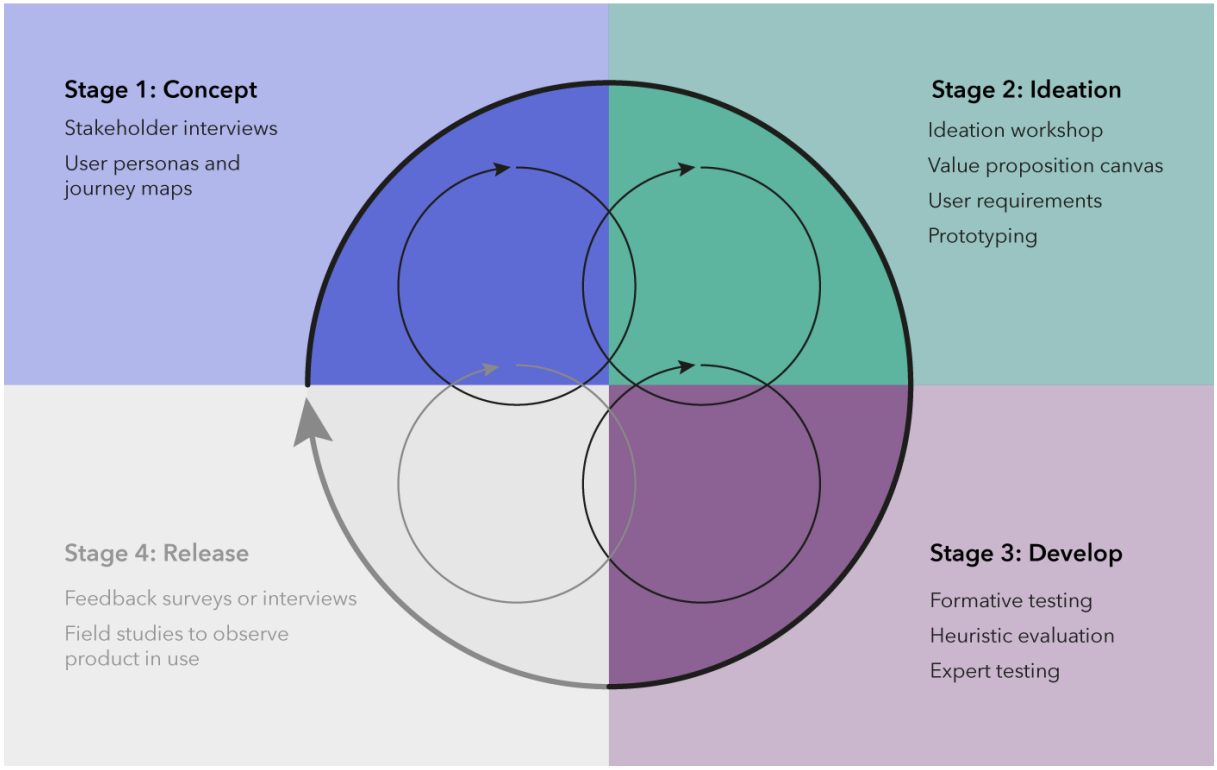


Figure 2 - Process of thesis

The process shown here is an iterative process, where each stage informs the next, but it may be necessary to return to a previous stage to gather more information. Stage 2's name in the process was changed from "design" to "ideation", as the whole process itself is a user centred design process and needed redefining. This stage focuses on developing ideas and refining them, before being able to test them in the develop stage. Stage 4 has been greyed out as this project doesn't plan on releasing the product developed but is included here to show what the next stage would be. The process is also based on Gould and Lewis (1985) principles for designing for usability, which is to have an early focus on users, use empirical measurement and iterative design. The study uses qualitative research to best identify the type of experiences customers had and what concept to develop from them.

3.1 Stage 1: Concept

3.1.1 Exploratory interviews

To start defining the project's concept, data from users and leaders of Airthings and Airtight was collected through stakeholder interviews. The aim was to gather the different

perspectives of the acquisition, internally and externally. A semi-structured interview format was chosen to allow the interviewee to delve into topics they felt more strongly about. To best analyse the data during the next stage, the interview objectives were outlined for each type (Benoit et al., 2010; Harding, 2013). The full interview guides for users and leaders along with their objectives are available in Appendix A – Interview Guides. The topics discussed with users were their role, any previous M&As they had experienced, and then narrowing into the Airtight/Airthings acquisition. Leaders spoke about how the acquisition itself came to be and what the goals for it were, focusing in on the impact they see it could have for users and customers. A pilot interview was carried out with a friend of the researcher to uncover any irrelevant questions and test for interview flow (Merriam and Tisdell, 2016).

The interviews were carried out online due to COVID and practical concerns related to the geographical location of participants. A total of six users were interviewed, three from each of the two companies. Users were between 30-60 years old and in the facility management business with different seniority levels as this is who Airthings for Business is aimed at. They were located in Norway and the UK, and interviews were held between January and March, a few months after the acquisition announcement in August.

Reaching out to these users was challenging and took longer than expected, partly because introductions had to be made through the correct sales representatives to best manage the customer relationship. Not all users were available for interviews, and some that were only wished for the interview to be held in Norwegian. This was a limiting factor for the author, but a helpful colleague carried out those interviews and gave a thorough summary of each. Interviews with leaders of Airthings and Airtight were easier to arrange as the researcher had direct access to these stakeholders and could hold the interviews in English. The CEO of Airthings and one of the founders of Airtight were interviewed, as well as other staff of Airthings who had an influence on the acquisition. They provided a greater insight into this acquisition's context.

The interviews were transcribed continuously and then placed in Nvivo, a software tool for qualitative data used to organise data and code interviews. Roulston (2014)'s approach of interview analysis was used which has three phases: data reduction, data reorganisation and data representation. The first phase was started by iteratively developing codes in the transcripts by rereading several times and merging these into overarching themes. Reflection was necessary to assess how the codes helped understand the impact of the acquisition on users' experiences. In the second phase, key concepts were defined which were the perception of the acquisition from all stakeholders, the expected impact and any practical benefits, to name a few. Roulston specifies that "qualitative analysis emphasizes the importance of remaining open to what is in the data" (2014: 305). This meant not limiting codes to just what answered the research question but being open to discovering new concepts. One such was how previous M&As didn't seem to impact any users when it came to this thesis' acquisition. For the third phase, the concepts and their matching quotes were transferred into Miro, an online whiteboard tool (Figure 3). Here, affinity mapping was carried out to better visualise the relationships between themes. This helped in assessing what where the most important themes to users and leaders and making the findings tangible.

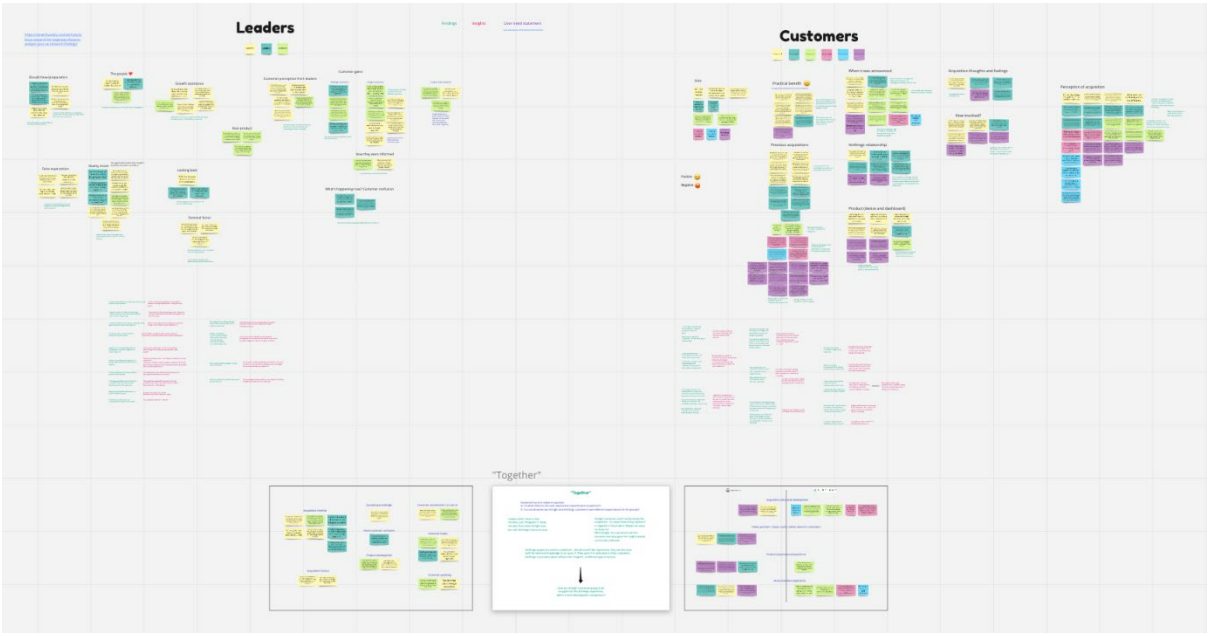


Figure 3 - Interview analysis and insight gathering

3.1.2 Personas and user journey maps

Personas represent a group of users (Buley, 2013) with a few characteristics outlined, such as behaviour patterns, needs and emotions (Szabo, 2017). They aim to build empathy for those who will be using the designed solution and serves to align the team on the shared goals (Hormess et al., 2018). This tool helped in summarising the interviews effectively and identifying the goals and frustrations for each type of user. The personas were structured using some of Tomlin (2018: 56)'s common attributes of personas, such as scenario, background, picture and domain expertise. After the interviews, four personas were developed to represent two different Airtight users, one of Airthings and one for the leadership perspective. These initially helped to get an understanding of the different type of stakeholders in the acquisition. The goals of the four personas altogether were not relevant to improving the user experience post-acquisition, so the personas were narrowed down to the two user segments of Airthings and Airtight. They better reflected Airthings users needing to monitor indoor air quality and grow their business relationship, whereas the Airtight users want to focus on growing the Airtight product in their buildings.

The two personas were then used to create user journey maps to reveal all the key steps experienced by users (Hormess et al., 2018). The format shared by Gibbons (2018) was used to outline the scenario, phases, actions, emotions, thoughts, and opportunities. The aim is to identify gaps in the experiences and help create a common understanding of the user experience. The journey map stages were pre-acquisition, acquisition announcement and post-acquisition. The emotions and thoughts were taken from the interviews and visualised the emotional journey of the user. The opportunities were a way of starting ideation to identify areas where a solution would bring most value to a user. It became clear at this stage the Airtight user had more valuable opportunities to improve their user experience. As such they became the focus from this point on.

3.2 Stage 2: Ideation

3.2.1 Ideation workshop

As part of the design thinking mind-set, participatory design is used to hear from stakeholders who will be involved with the solution created (Bjögvinsson et al., 2012). This was done through an ideation workshop with internal stakeholders about Airtight users. The aim of the workshop was to work collaboratively on finding solutions for the presented problem. It was also to align the team on findings so far and hear each other's perspectives. The aim of the workshop was presented as a user need statement generated from the previous methods, which served to keep the user in focus and summarise their needs post-acquisition.

Staff from Airthings were recruited as they would likely be involved with the solution proposed, but also to act as representatives for Airtight users in this co-production setting. Two of the participants were not considered representatives as they had never worked with Airtight users, but their jobs focus on the user experience at Airthings so would bring valuable perspectives. The remaining five participants had varying degrees of knowledge of these users. Two were founders of Airtight so knew the customers best and the last three were sales representatives from Airthings who had recently started working with Airtight users. These five participants were considered most suitable for being the Airtight users' voices, which was an important assessment to make when the actual users are not involved as shown by Røhnebæk and Bjerck (2021). Actual users were not invited to the workshop so as to protect the delicate customer relationships with sales representatives and not overwhelm them with participation requests.

Before the workshop itself, insights from the interviews were shared along with a small exercise to help participants familiarise themselves with the Miro tool. The workshop's outline and aim were presented.

This ideation workshop lasted two hours and was split into four sections. The first was to map out the Airtight and Airthings user journeys and then compare them to identify differences in experiences along their journeys. Based on the differences, participants were split into two groups and asked to generate a minimum of five "how might we" questions. These would be to see how the Airtight experience can be merged into the Airthings experience. They were told the questions could be as general or specific as they wanted, as the aim was to turn user problems into potential solutions. The groups then came back to find common themes from the questions generated and talked through them. The ideation exercise of "ten plus ten" was used to begin idea generation but for time purposes it was planned to be "five plus five". This was also to put less pressure on the participants, so as not to force them into coming up with ten ideas considering this type of activity was new to them. The activity was done with everyone together, letting them write as many ideas down in five minutes. It was planned to be carried out in separate groups, but with the workshop time running out it was quicker to keep everyone together. The lack of time also meant only one round could be carried out, though the intention was to have two rounds to build upon the first ideas generated. The workshop ended with a prioritisation matrix. The participants agreed on using a matrix with "value for customers" from low to high on the y-axis, and "effort" from high effort to low effort on the x-axis. Ideas from "five plus five" were then placed according to these metrics, and briefly discussed together.

3.2.2 Ideation and user onboarding

From the workshop, solutions were proposed and then reviewed by the author. The solutions were assessed according to how much they could improve the Airtight user experience post-acquisition and create new value. They also had to be feasibly developed in the three weeks given for prototyping and Stage 3 of the process. Lastly, the solution had to respond best to this thesis which meant looking at how it met user needs and expectations defined from the personas. It also meant considering how pragmatic and hedonic the solution would be for the user to best create a positive user experience. One solution fit these criteria and it was to propose a user onboarding experience for Airtight users to the dashboard.

User onboarding is the process of guiding users to help them experience "successful moments" (Traynor, 2019: 13) for a product. Creating an onboarding experience requires understanding at what point in the user's journey the onboarding will occur and what the must-haves of the product are (Hulick, 2019). This should lead them to their "aha moment", where the product benefits become "excitingly clear" (Hulick, 2014: 31). Colman (2019) also outlines six key elements of an effective user onboarding flow, shown in Figure 4.

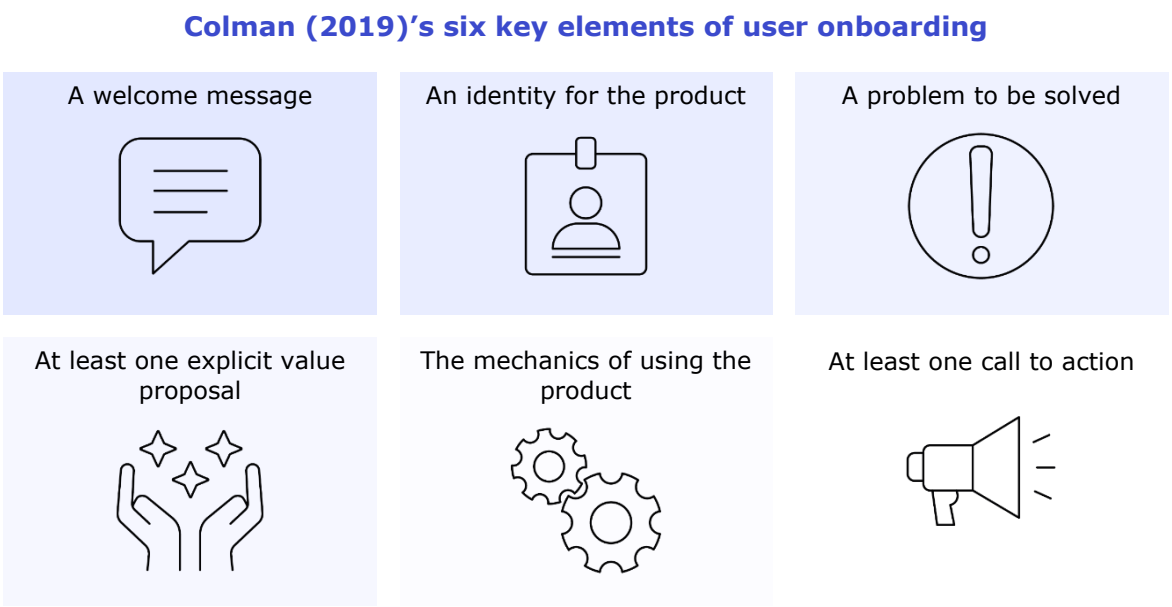


Figure 4 - Six elements of effective user onboarding

From a practical standpoint, the onboarding experience should be tailored to each user segment as their use cases will vary (Allan, 2019). The solution's focus was therefore tailored towards Airtight users of the dashboard. The aim was to best show the value of the dashboard for when they view Airtight data.

3.2.3 Value proposition canvas

To assess how appropriately the solution responded to user needs post-acquisition, a value proposition canvas was developed. It takes two elements from the Business Model Canvas, those of user segments and value proposition to focus on creating value for customers (Osterwalder et al., 2014), illustrated in Figure 5. The aim is to achieve a fit between the two sections by identifying pains and gains of users and how the service or

product meets those needs. For the user profile, jobs, gains and pains are identified and each prioritised. This is to step into the user's shoes and best see what their end goals are, rather than how they are achieved. In the value map, products and services are listed and then pain relievers and gain creators. These are also prioritised in a list to point out which are most essential to the value proposition and how they best address the user's own gains and pains. This tool is relatively simple but efficient at narrowing down the important aspects of the proposed solution. The Airtight user profile was created and the value proposition of the user onboarding product were put together to assess fit. Doing this before prototyping of any kind helps to "manage the testing, measuring and learning process" (Osterwalder, 2012) to define the goals of testing.

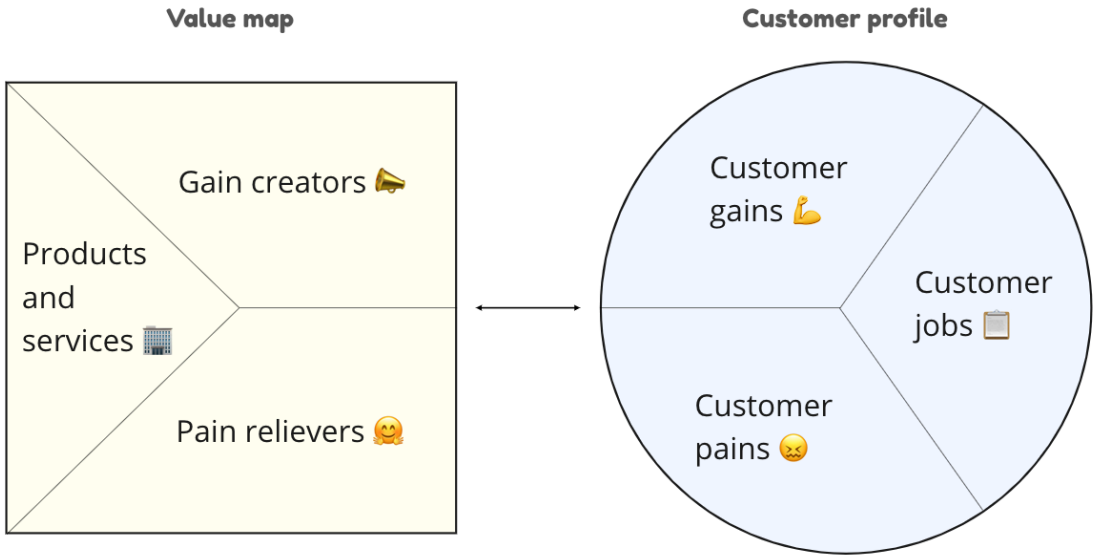


Figure 5 - Osterwalder's value proposition canvas

3.2.4 User requirements

To develop the solution's content, user requirements were collected from the previous methods. These help to outline how the product should perform (Baxter et al., 2015) and create first design prototypes. These can then be used in user testing to assess if the requirements have been met or if they need adjusting (Haklay and Nivala, 2010). The six common types of user requirements from Preece et al. (2019) were used: functional, data, environmental, user characteristics, UX and usability. Some of these could not be specified in much detail as there was insufficient data. They could be narrowed down through user testing, particularly with internal staff to help build business requirements.

3.2.5 Prototyping

Prototypes are essential to the design process, as they bring abstract ideas to life, communicate them with others and can be tested for various purposes. A prototype must essentially be "less than the real system" (Harston and Pyla, 2012: 393). There are different degrees of how much less, ranging from low-fidelity to high-fidelity prototypes. As testing is carried out, the degree of fidelity increases.

For the first prototype developed, low-fidelity was chosen to explore the concept of user onboarding in response to Airtight users' experience post-acquisition. Typically, low-fidelity prototypes can be paper or wireframes. The process began with paper prototypes

but these were then translated into digital wireframes as user testing would have to be done online. The advantage of low-fidelity prototypes is that they are simple, cheap to produce and quick to change (Preece et al., 2019). They are iterative by nature as they can quickly be presented to users as concept exploration and then changed based on the feedback (Chandler and Unger, 2012). The point of them is to emphasise one set of characteristics versus others and allows the users to focus on the content rather than visuals of a design.

The next iteration used mid-fidelity prototyping. This is to increase the fidelity of a few elements, but not building a full high-fidelity prototype before testing new elements. For this project it meant making certain elements more realistic in regards to the end product while keeping the same interactive elements as in the low-fidelity prototype. It was a small stepping stone between the other two prototypes to show participants that parts could still be changed before creating the high-fidelity prototype.

The third prototype was developed as a high-fidelity prototype. These include detailed visual and interactive elements closer to the real product, to show users how it will most realistically look and behave. High-fidelity prototypes are often used for product demos and deemed polished enough to share externally with end users. However, the level of details also means users will see it as the final product whereas some changes may still be needed (Harston and Pyla, 2012). Explaining that this third prototype is still a work in progress and not the final product is therefore important when being shared for user testing. In this thesis, the high-fidelity prototype was used for the heuristic evaluation and expert testing, at which point the evaluators were well informed about the purpose of such a type of prototype.

3.3 Stage 3: Develop

3.3.1 Formative testing

Using the prototypes developed, usability tests were carried out to determine improvements for the next iteration. These have the goal of improving the quality of an interface and identifying problems with the solution by presenting it to potential users. Being early in the development process, this is called formative testing which is an exploratory concept testing (Lazar et al., 2017). Usability tests like these are typically more informal and use a think-aloud process to best understand what users are thinking and reveal what they like or not about it (Barnum, 2010). The goal of these tests was to assess the suitability of the onboarding experience and if it brought the right kind of value to users and their needs. As such, the user testing was aimed at Airtight users. A selected eight users were contacted by email and those who had available numbers were called, but ultimately none responded or were able to participate. As expressed previously, it was important to protect the delicate customer relationship, so different users from the interviews were contacted to not overwhelm the first set. This meant new rapport would have had to be built between user and researcher. As none were available, testing was carried out with internal participants from Airthings who knew Airtight users. Other participants were chosen from the customer success team as they were planning to create an onboarding experience and would have helpful input in determining business requirements. Though this isn't ideal for getting direct user insights as per a UCD methodology would like, these proxy users were chosen as the best viable option given Airtight users' unavailability. Especially for customer success participants, they would be

directly involved in creating and upkeeping the onboarding experience, so their involvement was valuable.

Two rounds of testing took place. For the first round, a wireframe prototype was used and then a mid-fidelity one was designed based on suggestions from the participants. The single task of going through the onboarding flow as an Airtight user was given, largely because this was the only possible task given the prototype. The designs were not assessed against the user requirements during the formative testing, as they are best responded by Airtight users themselves. Rather the requirements were updated based on given feedback and used to design the next iteration. From the two test rounds, a final high-fidelity prototype was generated as a hand-off for Airthings to use as a starting point for the onboarding experience and for two more types of testing presented below.

3.3.2 Expert testing

With expert testing, the design is assessed by someone either in the UX field or who has expert knowledge in the task being tested. These are often carried out in line with usability tests but are more structured compared to the formative testing used in this study. They are also said to come before the usability testing, so that basic usability issues can be uncovered and removed from user testing (Lazar et al., 2017). Typically, the functionality, usability and visuals of the design is in focus as this is what the UX expert will be able to give constructive criticism on (Rosenzweig, 2015).

In this thesis, the expert testing was chosen to happen after the formative testing, as the functionality of the design was straightforward enough to be assessed by the author themself. Expert testing can still be beneficial at any stage of the process. In this case it was to check the design against all the gathered requirements from usability testing before developing it and putting it in front of a real user. This also gives more structure to the testing phase.

3.3.3 Heuristic evaluation

A heuristic evaluation is carried out by a UX expert to assess usability issues in the design proposed through a chosen set of heuristics. The evaluator will go through a given user flow several times to inspect the interaction elements (Preece et al., 2019), and will then assess the design according to the defined heuristics. Suggestions for improvement are then offered by the evaluator.

The last prototype was used for carrying out a heuristic evaluation in this project. This was decided because this iteration was the most realistic and some heuristics took into account the prototype's visual design which hadn't been included up till then. For this thesis, Granollers (2018)'s heuristics were used. Granollers identified a new set of heuristics by combining two other sets. One is the set by Jakob Nielsen which Granoller saw as being "too generalist" leading to misunderstandings (Granollers, 2018: 401). The other set is the lesser known but more thorough approach by Tognazzi. The amalgamated heuristics were then given polar questions to make it easy to assess an interface's usability. The 15 heuristics and their corresponding questions are presented in Table 2. The prototype was gone through multiple times by the researcher and then the questions were answered systematically. Reasons were given for the responses when necessary, as some heuristics were challenging to answer given the prototype's purpose.

Heuristic	Questions
H1 - Visibility and system state	• Does the application include a visible title page, section or site? • Does the user always know where it is located? • Does the user always know what the system or application is doing? • Are the links clearly defined? • Can all actions be visualized directly? (No other actions are required)
H2 - Connection between the system and the real world, metaphor usage and human objects	• Does information appear in a logical order for the user? • Does the design of the icons correspond to everyday objects? • Does every icon do the action that you expect? • Does the system use phrases and concepts familiar to the user?
H3 - User control and freedom	• Is there a link to come back to initial state or homepage? • Are the functions "undo" and "re-do" implemented? • Is it easy to come back to an earlier state of the application?
H4 - Consistency and standards	• Do link labels have the same names as their destinations? • Do the same actions always have the same results? • Do the icons have the same meaning everywhere? • Is the information displayed consistently on every page? • Are the colours of the links standard? If not, are they suitable for its use? • Do navigation elements follow the standards? (Buttons, check box,…)
H5 - Recognition rather than memory, learning and anticipation	• Is it easy to use the system for the first time? • Is it easy to locate information that has already been searched for before? • Can you use the system at all times without remembering previous screens? • Is all content needed for navigation or task found in the "current screen"? • Is the information organized according to logic familiar to the end user?
H6 - Flexibility and efficiency of use	• Are there keyboard shortcuts for common actions? • If there are, is it clear how to use them? • Is it possible to easily perform an action done earlier? • Does the design adapt to the changes of screen resolution? • Is the use of accelerators visible to the normal user? • Does it always keep the user busy? (without unnecessary delays)
H7 - Help users recognize, diagnose and recover from errors	• Does it display a message before taking irreversible actions? • Are errors shown in real time? • Is the error message that appears easily interpretable? • Is some code also used to reference the error?
H8 - Error prevention	• Does a confirmation message appear before taking the action? • Is it clear what information needs to be entered in each box on a form? • Does the search engine tolerate typos and spelling errors?

H9 - Aesthetic and minimalist design	• Is used a design without redundancy of information? • Is the information short, concise and accurate? • Is each item of information different from the rest and not confused? • Is the text well organized, with short sentences and quick to interpret
H10 - Help and documentation	• Is there the "help" option? • If so, is it visible and easy to access? • Is the help section aimed at solving problems? • Is there a section of frequently asked questions (FAQ)? • Is the help documentation clear, with examples?
H11 - Save the state and protect the work	• Can users continue from a previous state (where they had previously been or from another device)? • Is "Autosave" implemented? • Does the system have a good response to external failures? (Power cut, internet not working,…)
H12 - Colour and readability	• Do the fonts have an adequate size? • Do the fonts use colours with sufficient contrast with the background? • Do background images or patterns allow the content to be read? • Does it consider people with reduced vision?
H13 - Autonomy	• Does it keep the user informed of system status? • Moreover, is the system status visible and updated? • Can the user take their own decisions? (Personalization)
H14 - Defaults	• Does the system or device give the option to return to factory settings? • If so, does it clearly indicate the consequences of the action? • Is the term "Default" used?
H15 - Latency reduction	• Is the execution of heavy work transparent to the user? • While running heavy tasks, is remaining time or some animation shown?

Table 2 - Granoller's 15 heuristics (Granollers, 2018)

Heuristic evaluations have been criticised for not offering a comprehensive view of the interaction as the evaluator focuses on one specific flow. They are also said to lead to false positives, as problems identified don't turn out to be important to users. This could lead to time spent fixing problems which aren't worth fixing (Harston and Pyla, 2012). To avoid these issues appearing in this thesis, the researcher was the evaluator as they have a comprehensive overview of the intended experience. It was also difficult to get more UX experts in the remaining two weeks of testing. The researcher being the evaluator also helped to minimise false positives as they had a thorough understanding of the user's needs post-acquisition.

3.4 Ethical considerations

Collecting qualitative data must be carried out as ethically as possible to ensure a valid and reliable study that can be trusted by other researchers. In the interest of data analysis, it was preferable to record and transcribe interviews. For this, approval from the Norwegian Centre for Research Data (NSD) was obtained after stating what type of information would be collected during the study and how it would be handled. Two

consent forms were created as per NSD specifications and are available in Appendix B – Consent forms. One was for leaders who consented to having their name published, as hiding their identity was not possible given their public position in Airthings and Airtight. The other consent form was for users, whose names and other personal data were not relevant to the study and therefore not recorded. Both forms contained the study's aim and that the recordings would be done using Nettskjema, a service provided by UiO and approved by NSD. During the interviews, the researcher stated they are an employee of Airthings to be fully transparent. Transparency was important here to create trust between interviewer and interviewee (Harding, 2013). Participants were offered the chance to review the transcripts after the interviews for better reliability, but none requested it.

3.5 Reflexivity, validity and reliability

As with any qualitative research project, it's important to acknowledge the role of the researcher as someone who has the power to interpret the data (Mertens, 2014). This makes the study a direct subjective interpretation by them. This must be taken into consideration when read by others and when drawing conclusions from the data.

One way to manage this is through reflexivity, where the researcher must self-reflect on their personal biases which may "affect their ability to collect and interpret data" (Leedy and Ormrod, 2015: 278). The primary bias is that the researcher is an employee of Airthings. This meant they had a comprehensive view of the Airthings user needs before the research started, and in contrast knew nothing of the Airtight users. Because of this, initial assumptions were made about the Airtight users to start the research process which were not made with Airthings users. Rapport was already built with Airthings users which meant interviews were easier to carry out. As noted already, it was a greater challenge finding Airtight users to participate in the thesis. The researcher being an employee meant they got an inside perspective of the acquisition's integration process after the announcement. This made them sympathetic to the challenges of integrating a new company into an existing one. During the interviews, the researcher's position was explained and that the interview was first and foremost for academic research and not driven by Airthings. This was done to distance the author from the company and allow the participant to express themselves freely. It was essential to reducing user bias, as responses could have been curated to what the employee wanted to hear. This would have skewed the results greatly.

A useful method for obtaining validity is triangulation (Mertens, 2014), where several forms of data are collected to answer the same question to determine whether the responses match. This was a challenge for this study as interviews were the primary data collection and observations weren't possible with home-office being the norm during COVID-19. Interviews with the leaders served to verify or disagree with what users said as a type of validity. Surveys weren't implemented here as they didn't feel fitting to uncover user pains and needs in sufficient depth to best understand the acquisition's context. As little secondary data is available on the topic it was not feasible to use this as a triangulation method.

Validity in this study was sought for through the methods presented here. They were deemed most suitable to the aims of the project and gave the necessary data to create a solution from. They were also selected based on the author's past experiences of UX projects and working in the field.

Reliability is about achieving consistent results (Leedy and Ormrod, 2015). To ensure this, methods for each tool are described and relevant material made available in the appendix for other researchers to replicate the study. Transcribing the interviews ensured the original words were recorded, instead of notes taken after the interview which would have been reliant on the interviewer's memory. One drawback is that the data was analysed only by the researcher, thereby having no interrater reliability.

3.6 Study limitations

For the interview phase of this thesis, some interviews had to be held in Norwegian as per the participant's request. This was a great limitation for the researcher as they are not fluent in this language. An effort was made to find English speaking users but finding some who were keen to participate was a challenge in itself. Consequently, the interviews had to be held by a proxy who was briefed on the interview guide and project aim to understand the purpose of the interviews. This meant control had to be handed over to someone else out of the researcher's hands and the notes that followed were trusted to be correct. The full extent of the interviews was not reached as it had been with English speaking participants, where the researcher could make use of the semi-structured format and ask relevant questions when deemed necessary. It also made reaching out to customers challenging as they were less likely to respond to English emails, even though the emails stated the interviews could be held in Norwegian. When the sales representative was involved, emails were then usually sent in Norwegian to increase the chances of response.

The interviews themselves form a limited data set, meaning the results should be treated with caution. Three users from each segment are not sufficient to make proper generalisations for each as they could be outliers compared to the rest. As well, the interviews were held relatively early in the acquisition process, as lots can still happen for both Airtight and Airthings users in the integration process. Looking at this early phase of integration revealed important findings, but it should be acknowledged that acquisitions are never complete until a few years. This will also depend on how one defines a complete acquisition and when the acquired company is fully integrated. The limited data set also means the solution presented was tailored to those who participated. It may need adjusting for the other users who had a different experience of the acquisition.

This study's greatest limitation has been the lack of user involvement in the ideation process as a UCD methodology is central to the thesis. To reach out to the users, the researcher had to go through the appropriate sales representatives first. Then either the sales rep would reach out to the user to introduce the project and the researcher, or authorisation was given for the researcher to reach out directly. The sales representatives are protective of these new relationships and naturally don't want to jeopardize them. Bringing in users at this relatively early stage of the integration can therefore be very delicate, which may be why users were not interested in participating. Testing the onboarding solution with actual users would have given valuable insights to this UCD project. However, those invited were not available in the given two weeks for testing. As such the results and discussion chapters should be read with the limitations taken into consideration.

4 RESULTS

The outcomes from the research, ideation and development phases are presented here. They cover the impact of the acquisition on the user experience as well as the companies, as identified in the first stage of concept development. Also identified at this stage were the user and company expectations of the product and service integration. The second and third stages of ideation and development are described through the proposed solution and how it evolved.

4.1 Impact of the acquisition

Interviews with users and leaders gave insights into how the acquisition impacted the user experience. First the user perspective is explained, followed by the company's high-level view on what was planned for the acquisition.

4.1.1 For the users

4.1.1.1 Airtight

Airtight users were first informed about the acquisition when they read about it in the news. Their reactions to this were mixed. One of them felt this had been poorly communicated as they weren't told about it directly from the company. Of this they said "I just wanted to feel that we were being valued and taken seriously. I wanted to be seen." This emotional reaction revealed the user's frustration, making him feel undervalued by Airtight. This frustration was heightened when the user was emailed with their new point of contact at Airthings without an introduction from Airtight. It made the user feel their business history hadn't been sufficiently shared between Airtight and Airthings, and that their relationship was easily transferable from one person to another. However, the rapport built up over time is not something so easily transferable. He then stressed how important communication is for businesses to be predictable to their customers. For the other two users, they didn't feel as negatively impacted. Having also read about the acquisition in the news, they didn't think much of it and didn't feel bothered by it. One of them did say they felt there was a pause a few months before the acquisition was announced but looking back wasn't sure if it was due to COVID or the acquisition. Reading the announcement then cleared up confusion as to why things slowed down, helping him understand the situation better.

Outside of communication issues, Airthings being the new owner of Airtight wasn't of great interest to the users. Two were ambivalent towards Airthings, showing neither positive nor negative feelings towards the company. The third was positive, seeing it as a young company who can adapt well. However, they all said they simply weren't interested in the products offered as it didn't align with their business needs. One user felt the acquisition was good but still not interested in Airthings itself. They plan to keep using Airtight to give value to their own customers through energy and costs savings.

These responses are users' first impressions of the acquisition as integration is still ongoing and they cannot reflect on it yet. As such the Airtight persona of Fredrik Thune encapsulated these fresh perspectives (Figure 6). Here, Fredrik's frustration about wanting proper communication during the acquisition is shown, as with the user who didn't appreciate being informed through the news. Proper communication in this context means making the user feel valued as a customer and told of such news directly. Fredrik

feels this is fair given they have been trialling the product in partnership with Airtight for the last three years. The primary goal for users is to find ways to optimise energy use in buildings in order to keep costs down which is what led them to Airtight. It clearly reflects why they aren't interested in Airthings products which don't offer energy savings, referring to the earlier point of users not planning to buy into Airthings products. Fredrik is focusing on his primary business need as his own customers are reliant on his expertise in reducing energy, as an energy manager. He is very cooperative in nature as he talks to his customers frequently but also upper management so they can make decisions on facility management. It's because of this that communication is so valuable for him, as he is very conscious of managing his own professional relationships. Finally, Fredrik expects to be involved in Airtight's development as he has been for the past three years. This might be subject to change as the integration progresses and Airthings becomes a greater presence in the Airtight product.

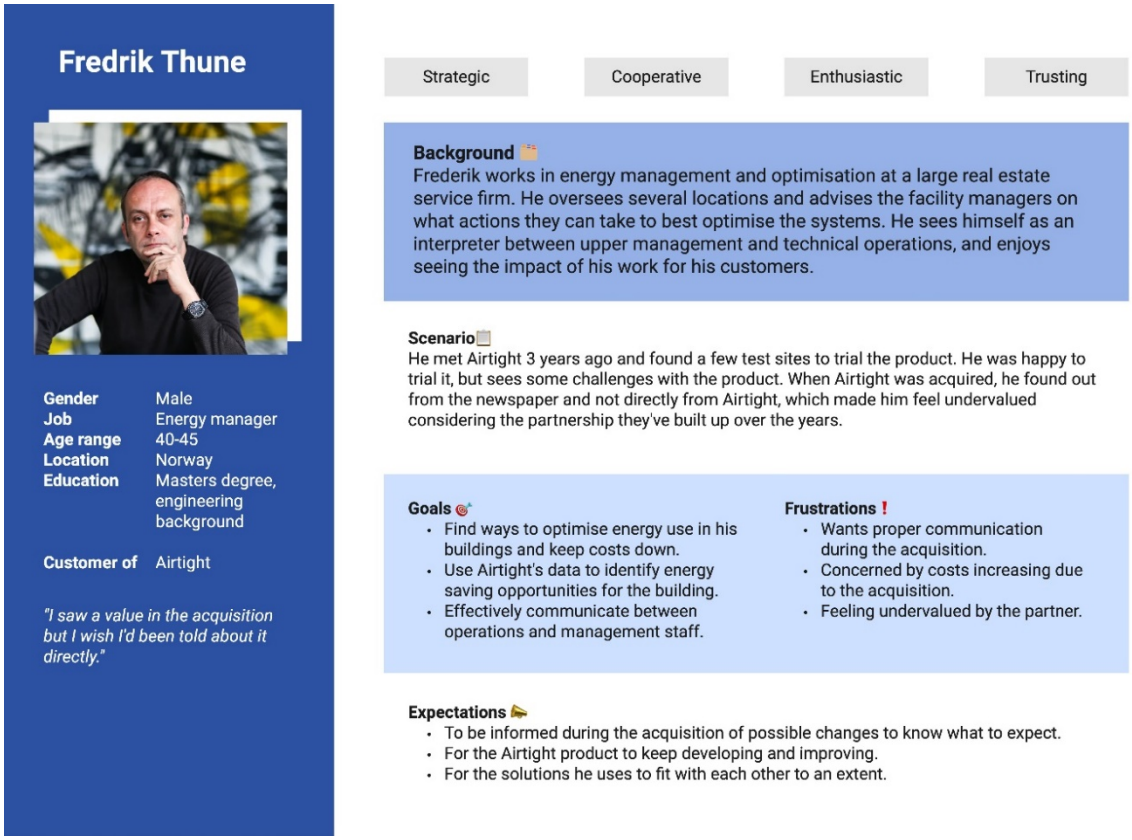


Figure 6 - Airtight persona, Fredrik Thune

4.1.1.2 Airthings

Airthings users experienced the acquisition announcement through different channels from the Airtight users. Two of them were told directly by their sales representative to see if they were interested in this new product. They felt this was an effective communication and in line with their usual Airthings relationship. The third was already interested in Airtight and landed on their website at the right time and saw they had just been acquired. He said "That was perfect! That was super! Because we have a good relationship with Airthings." He was later told by his sales rep but was happy this acquisition was happening because of his current relationship with Airthings. This user had a positive emotional reaction to the announcement, looking forward to growing their relationship with Airthings further.

The acquisition presented itself as an advantage for Airthings users. They all saw it as having less partners to work with but more options available. One said it would mean "they have cooperation internally" which they hope translates into less meetings. Limiting the number of partners needed to efficiently run and monitor buildings is important to them. It means they don't need to pay two separate consultants and hope this will reduce costs in the long run. The internal communication means the meetings can be more efficient for the user and cover a wider range of services from the same supplier. It's an advantage from an administrative perspective as the users said they don't need to get a new supplier approved from higher up or enter new details into their systems. They can keep working with the same sales representative they have already built a relationship with, so they will know their history well to help assess how the Airtight product will best suit them. It makes the entry barrier for trialling Airtight much lower as they trust Airthings to deliver and are even happy to try out a new product with them. This is also because they see the potential Airtight can bring their own customers: "Once we prove it, the value it's going to create is just tremendous added value for customers who have air handling units". They also feel this will strengthen their current relationship with Airthings by improving the products in partnership.

The Airthings persona of Michael Hanson (Figure 7) summarises these reactions into his different goals, frustrations and expectations of the acquisition. As a managing director, Michael looks at the bigger picture of his business and how his decisions will positively impact the customer by giving them the value they expect from Michael's business. His business need from Airthings is to have an objective way of measuring the indoor air quality and ensuring it is in line with the building's contract. If he finds ways of reducing energy as well it is a win-win, which is why he was so interested in trialling Airtight. This product offers direct energy and cost savings in a new way and the set-up process is easy for Michael. He can do this with his same point of contact at Airthings, with whom he already has a great relationship. As stated earlier, this is a great benefit for the users as they don't need more partners to manage a building with, which is stated as a frustration of Michael's. He also has the attribute of being value-oriented, as he is always thinking of what will create the most value for his customers and business simultaneously. He therefore hopes this acquisition will create value for all stakeholders, as is intended by Airthings and Airtight.

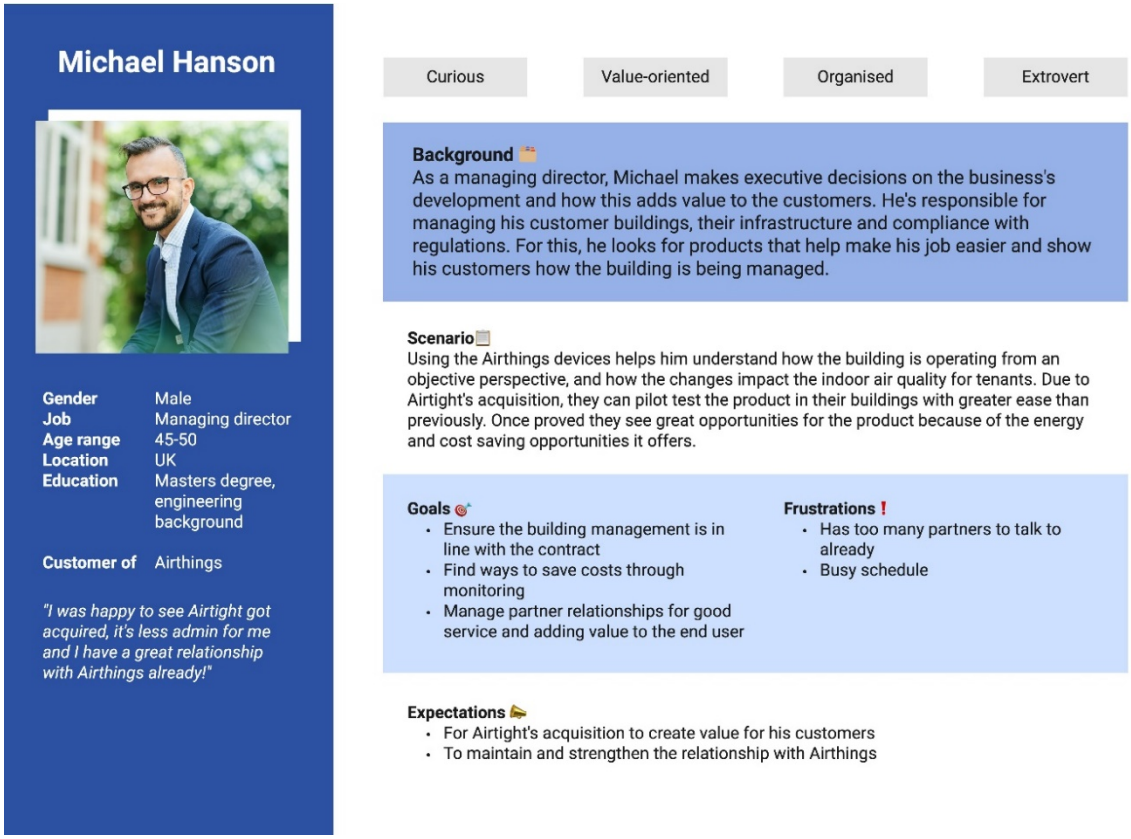


Figure 7 - Airthings persona, Michael Hanson

4.1.1.3 Shared effects

Both user segments said they didn't want to be involved in the acquisition process itself. They felt it was Airthings' business choice and being consulted on the plan wouldn't feel appropriate as they didn't know the full impact it could have. They knew it was the business' decision ultimately. One user said he didn't need to be told of the acquisition before it was announced but would have appreciated being told changes were likely to happen but can't be discussed. This would have helped ease him into the news and for any business changes to be predictable. All users said they understood the value of the acquisition, as they saw the products were complimentary. They thought it logical as both products are wireless and especially gives Airthings another leg to stand on.

4.1.1.4 Comparing journeys

Looking at the user journey maps for both personas (Figure 8, Figure 9) the shared and not shared effects become clearer. Prior to the announcement, both users were happy with the services Airtight and Airthings provided and the relationships they had. Just before the announcement, the journey dipped a bit but for different reasons. Michael was wondering what return on investment Airtight brought so was a little sceptical. With the acquisition announcement however, he was happy a partner he likes acquired this technology which made it easier to access the product. Meanwhile Fredrik was confused as to why communication slowed down with Airtight, as he didn't know they were about to announce the acquisition. The greatest differences in the journey become apparent at the announcement phase, with Michael excited about the acquisition and Fredrik disappointed with how it was communicated. At this point there is an opportunity for the Airtight to directly call customers to inform them and improve the user experience. Then

the journey picks up again for Fredrik, while Michael's is overall positive in the post-acquisition phase. His only downturn is when he wants to research Airtight independently to make a decision. He's interested in seeing what other customers have said, so looks for the Airtight website. Here there is an opportunity for bringing the Airtight content into the Airthings website to make the acquisition clear to all customers. Finally, both Michael and Fredrik end their journey feeling optimistic and hopeful to start or continue their journey with the Airtight product. They share the same interest in what the product can bring for them but have different views in how the acquisition will impact this experience. Michael sees it as strengthening the partner relationship he already has with Airthings, whereas Fredrik doesn't want his experience to change because of the acquisition.

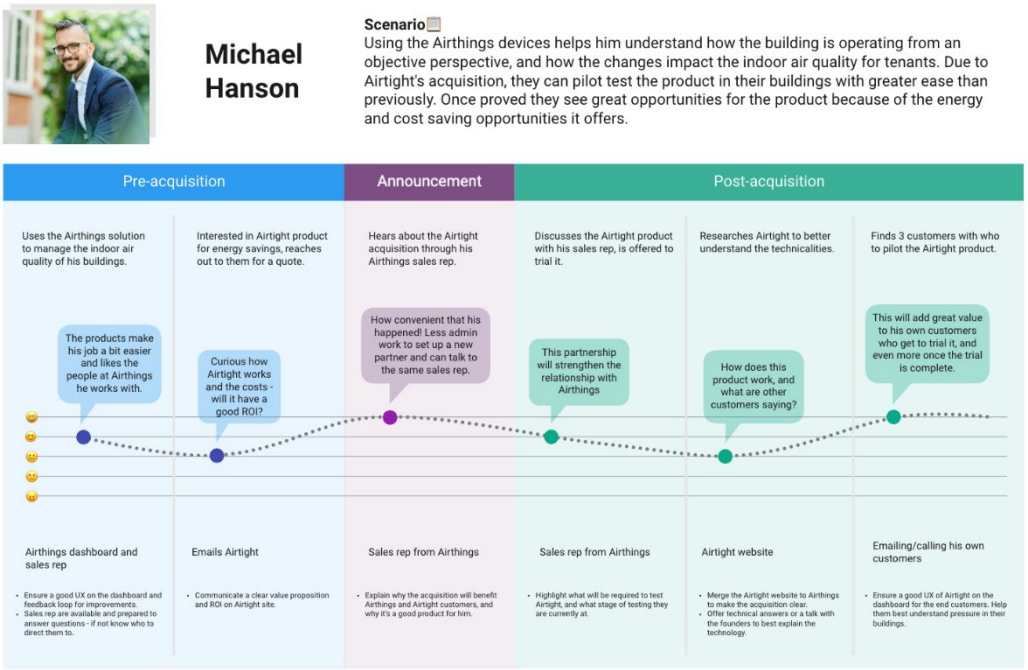


Figure 8 - Airthings user journey map, Michael Hanson

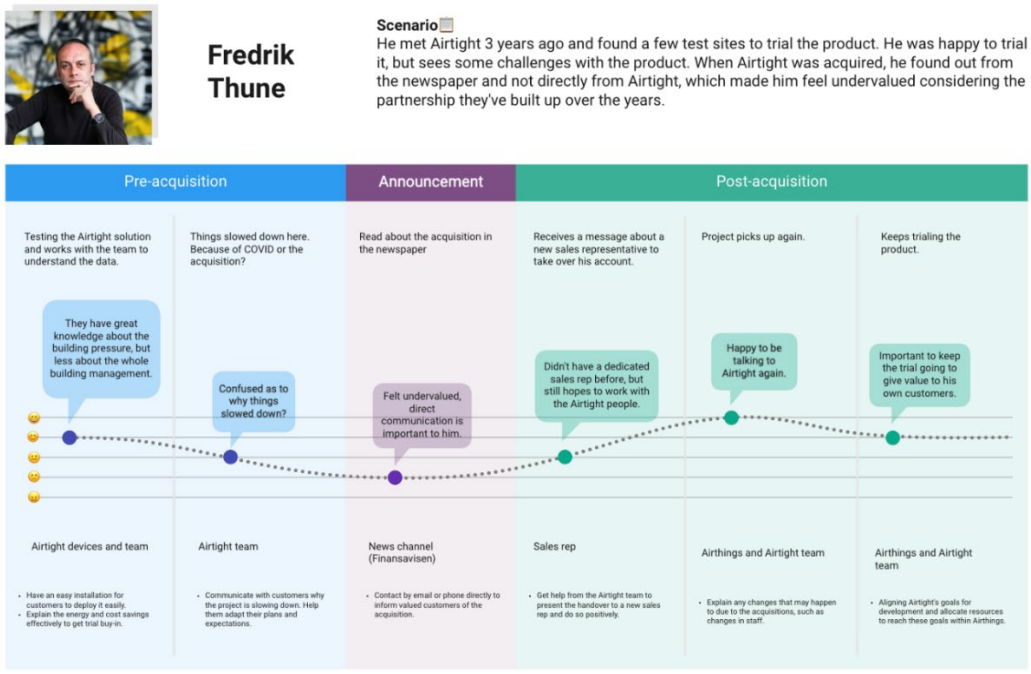


Figure 9 - Airtight user journey map, Fredrik Thune

4.1.2 For the companies

Airthings and Airtight took different approaches to informing their users of the acquisition as reflected in the user journey maps in the announcement phase (Figure 8, Figure 9). Airthings emailed their users or informed them through their sales representatives which Michael showed to be very happy about. Airtight sent out a newsletter, though users said they read it in the news first so the newsletter may not have worked as hoped. Fredrik's journey falling to the lowest point showed what a negative impact this had. The leaders themselves had felt they had communicated the news correctly to their users.

For Airtight the acquisition was seen as a great opportunity to scale up their business with more resources available. In particular, they felt the sales team would make the user experience more professional by having dedicated sales representatives. As they were only seven in the company it's understandable there wasn't a dedicated team to follow up with users. They also saw Airthings already had the front-end solution built which was on Airtight's roadmap. They understood users needed their data visualised to make better decisions and to automate report generation. Integrating into the Airthings dashboard (Figure 10) would make that process easier as the skills required to make it are available within Airthings. They also saw Airthings' size as an advantage as users would be more confident in their product by being part of a larger company.

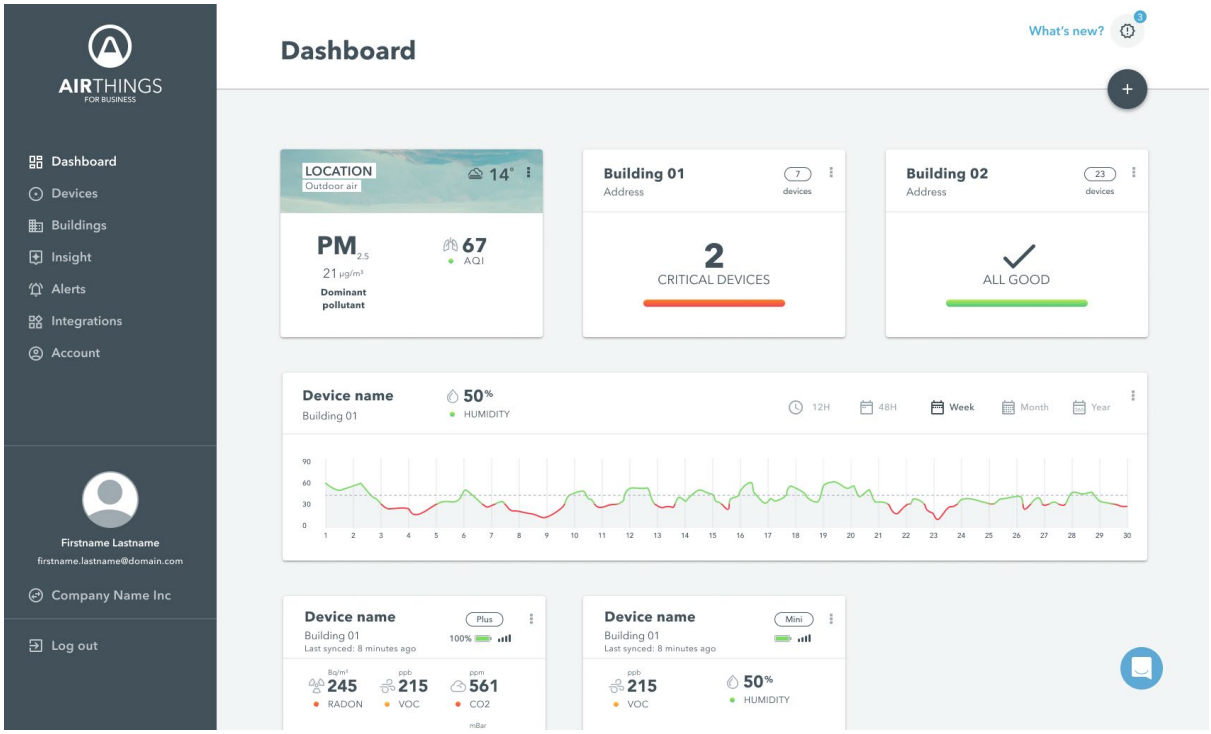


Figure 10 - Airthings dashboard

Airthings viewed the acquisition as a way to offer a more complete service for their B2B customers. As expressed by one of their users, they could not only monitor the building's indoor air quality but also control the building in terms of energy savings. It creates the next step in the B2B user journey that Airthings was interested in. Another leader at Airthings said this would be a way of reaching a whole new customer base than was previously possible.

4.2 Product and service expectations

Post-acquisition the Airtight product will be integrated into the Airthings experience. Though there are many ways of doing this, each stakeholder has different expectations of what is most important and how.

4.2.1 From users

As Airthings users have been using the dashboard for their products, they said they expect to see the Airtight product on the dashboard alongside their other devices. Generally they expect the product to fit with the service they are currently used to. One in particular said it should be a "seamless proposition", with proper integration so that the same login can be used instead of creating a new space. They also expect to keep the same sales representative they currently have.

On the other hand, Airtight users didn't voice any expectations of the product, aside from growing the trial they currently have. A front-end solution was not discussed and yet it is part of the business plan for Airtight to develop it within the Airthings dashboard. They do expect to stay in contact with those from Airtight they originally started talking to, as they know the user history best.

Ultimately both user segments expect the products and services to meet their needs. Airthings users are focused on monitoring the indoor air of buildings while Airtight ones have a greater focus on energy savings in buildings. Airthings therefore has to meet the new expectations of Airtight users.

4.2.2 Internal expectations

To integrate Airtight into Airthings, several paths were presented in the ideation workshop as expectations for changes in the user experience. The suggestions presented responded to the user need statement put forward at the beginning of the workshop:

As a customer of Airtight, I need to be thoughtfully presented and brought into the Airthings customer experience in order to keep my partnership with Airtight to give value to my end customers through cost and energy savings.

The first goal the participants mentioned is to visualise data obtained from the Airtight product to show the users what is being measured. This will provide some insight to the user as to what's happening, providing them with currently missing value. The next step should be to automate the product within their buildings to ultimately make energy savings as simple as possible.

Another change expected is for the sales process. From the workshop, the difference in how sales were managed between Airthings and Airtight became clear as Airthings has a larger team to manage users. As previously mentioned, this is understandable given Airtight is a start-up. The question is then how these existing users will be brought into the process of having a sales representative to handle their file.

One suggestion was about creating trust between sales rep and user, to make them feel special. Alongside this was to keep educating on the Airtight solution as users and professionals are always learning about it. This would then ideally be translated into case studies to showcase the user experience. It will in turn help communicate and educate the product value to potential users.

Overall, the workshop presented several expectations for how Airtight should grow within Airthings internally. A few of the ideas presented during the workshop is shown in Figure 11. Some were very product oriented considering how to make the setup process seamless, while others focused on the marketing and sales stages of the user experience.

Figure 11 - Workshop suggestions outcomes

4.3 Proposed solution and testing

4.3.1 Ideation and user requirements

With the ideas shared in the workshop, a few solutions became apparent to the researcher that responded well to the user need statement. As explained in 3.2.2 Ideation and user onboarding, the solutions were assessed according to value created for Airtight users, feasibility to develop in three weeks and responding best to this thesis. As such, ideas that required many resources like creating an insights report with Airtight data were eliminated due to time constraints. The idea of enabling users to switch on or off the VentController was also eliminated as it required knowledge outside the researcher's current expertise and would also require multiple resources.

Solutions of interest that remained were demoing the dashboard, creating case studies or testimonials, or showcasing the product experience through videos. Of these three, demoing the dashboard was the most suitable in responding to this thesis' research question. As Airtight users didn't speak of any product expectations in the interviews, they will need an introduction to the dashboard. As stated earlier, it is the business plan to integrate Airtight data into the dashboard. Developing a way to demonstrate the dashboard features to new users could improve the user experience. In Fredrik's journey map (Figure 8) the last step is for him to keep trialling the product to give value to his customers. When data will be presented in the dashboard, he will benefit from an introduction to understand why he should use the dashboard. Viewing the Airtight data will help him make knowledgeable decisions for his customers and give them a better service in turn. Introducing users to the dashboard was therefore to be done by creating an onboarding experience. It responded well to the problem statement of how to bring in Airtight users into the Airthings experience.

The first log-in experience to the dashboard was the chosen journey phase for the solution. An onboarding experience will help the users understand what features the dashboard has and the benefits of using it are. Tailoring it to Airtight users was essential to the user's experience to show what specific value this dashboard will bring them. Tailoring it also hopes to make the user feel seen as was a concern raised in the interviews. The solution was also suitable as the Airthings dashboard currently doesn't have an onboarding experience so this would be a starting point to developing one.

For the first low-fidelity prototype created, several requirements were generated to outline the objectives of the prototype. These were developed from interviews and the workshop, as well as suggestions from Preece et al. (2019), particularly for UX and usability requirements. They are fairly general as more research was needed to narrow them down and are listed in Table 3.

Type of requirement	Product requirement
Functional	• Explain how Airtight data will be presented in the dashboard • Walkthrough of most relevant parts of the dashboard
Data	• Accurate information of the dashboard • Tailored content to Airtight users
Environmental	• As part of the onboarding process for new users • Desktop dashboard • Support in the onboarding phase
User characteristics	• Airtight user who is new to the Airthings dashboard • Facility manager or energy manager • Cooperative • Practical
UX and usability	• Show how Airtight will work in the Airthings world • Reduce frustration of not knowing where Airtight will in the dashboard • Educate on Airthings and Airtight • Subjective satisfaction • Engaging content and flow • Easy to remember information • Easy to learn new content • Go through the onboarding is less than 4 minutes

Table 3 - User requirements for onboarding experience

4.3.2 Value proposition canvas

Identifying how the solution's value responds to the user's needs was important to taking this idea forward. In using the value proposition canvas (Figure 12), it became clear the greatest value the onboarding brings is to make the user feel valued. That tailored experience into the dashboard should help make them feel seen and foster the relationship which may have been damaged for some. The canvas showed how this product is one small part of the user's overall journey with Airthings to ultimately manage and control energy in buildings.

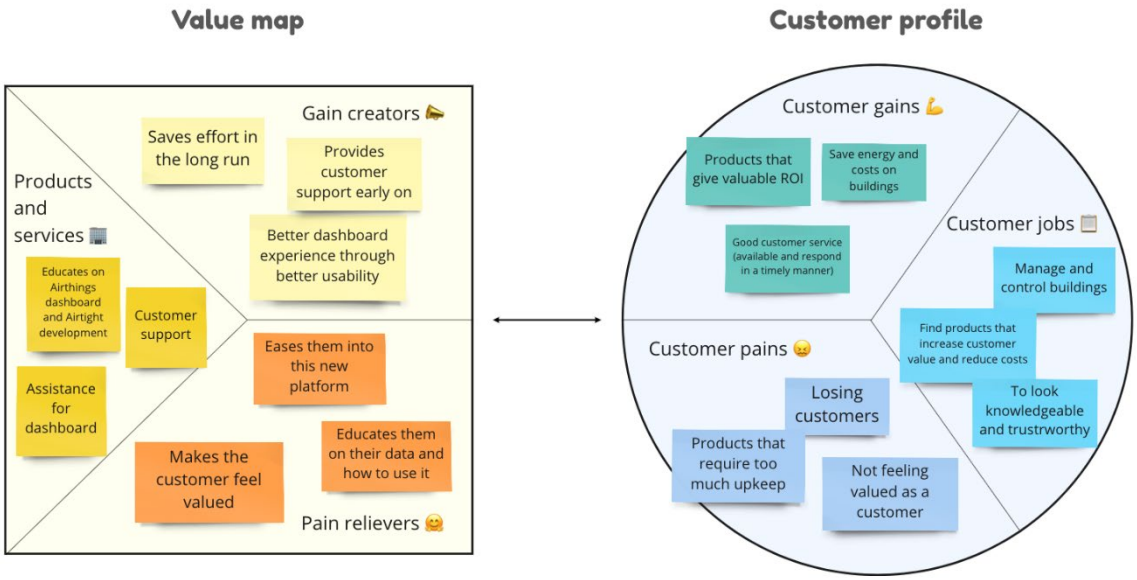


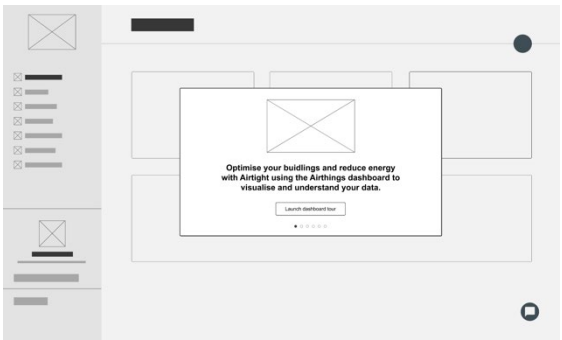
Figure 12 - Value proposition canvas result

4.3.3 Prototyping and formative testing

4.3.3.1 Iteration 1

As stated in the methods, low-fidelity prototypes began on paper but were quickly digitised as user testing was done online. These became wireframes in Figma with basic interaction to create a flow from one screen to the next to better explain and test out the concept. Though the Airthings dashboard itself is developed and existent, wireframes were made to have the user focus on the content rather than the visuals as low-fidelity prototypes require. Seven onboarding steps were chosen, so as not to overwhelm the user with information for their first product tour. The steps were chosen based on how the content related to an Airtight user, as well as the six key elements of onboarding outlined by Colman (2019). All frames from the prototype are shown in Figure 13.

Step 1 – Welcome message



Step 1.1 – Value proposal of dashboard

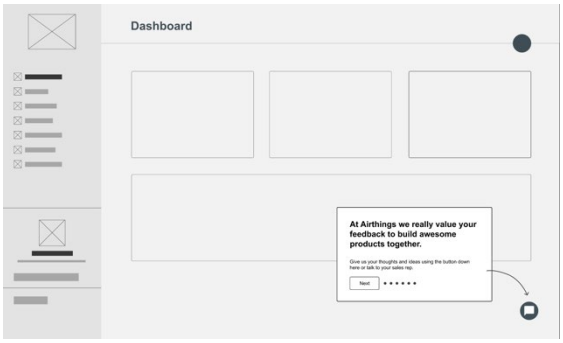
Step 2 – Device overview

Step 3 – Sensor history and functionality

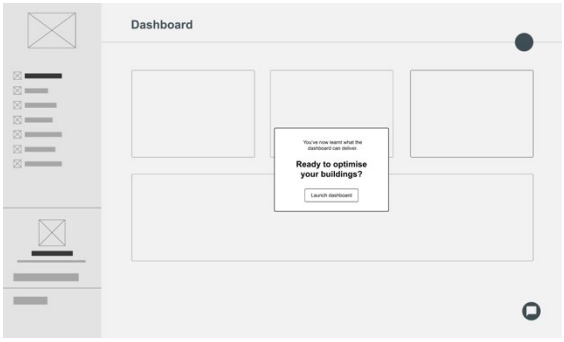
Step 4 – Insights reports explanation

Step 4.1 - Insights reports further explanation

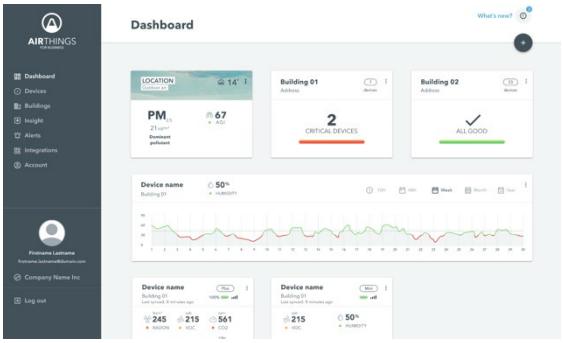
Step 5 – Integrations with their own systems



Step 6 – Intercom feedback option



Step 7 – Launch window



Step 8 – Arrival in the dashboard

Figure 13 - Iteration 1

This prototype was a static one, where the users moved from one screen to the next using arrow keys on the keyboard. The simple visuals were important to conveying to the user this was still in development and changes were encouraged. It was also assumed the user already has some devices added by the sales team in their dashboard, so the experience can be personalised to their device data.

Formative testing was carried out with four participants using the think-aloud method. Two of them are in customer success and the other two work closely with Airtight users.

It was informal conversations asking what elements are missing and how they see it bringing value to the Airtight users. The prototype was received very positively by all participants, encouraging the need for a segmented onboarding experience according to user type. Despite understanding it was a low-fidelity prototype, they were confused why the existing dashboard wasn't implemented in the design. This took them out of the intended experience, so the focus had to be brought back to the content. From the testing, two new user requirements became clear and are outlined in Table 4.

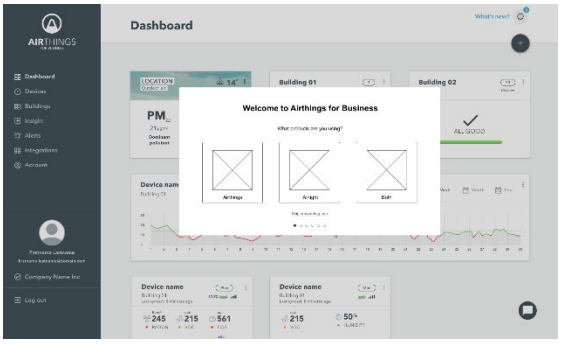
Type of requirement	Product requirement
Functional	• Ability to skip or restart the onboarding process
Environmental	• Will be implemented using Intercom Product Tours

Table 4 - New requirements from iteration 1

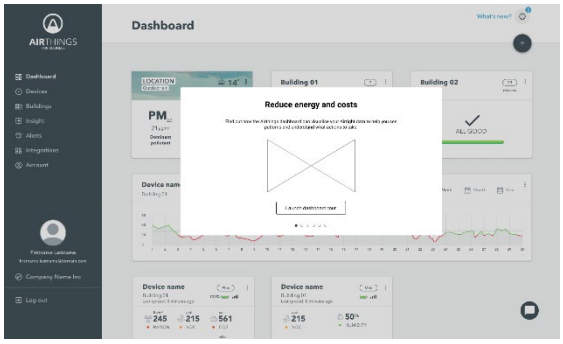
The other recommendations were to better explain values in the dashboard and clarify the purpose of the integrations page. The last point was to show that the home page of the dashboard can be customised by the user. Though these are good recommendations, the author decided not to include the last one in the next iteration in order to keep the initial onboarding phase concise and not overwhelm the user. This can be onboarded at a later stage in the user's journey as they discover more of the dashboard functionalities.

4.3.3.2 Iteration 2

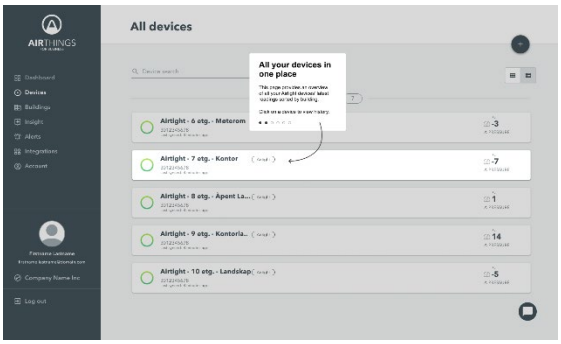
For the second iteration (Figure 14), the existing dashboard was added in to make it more realistic for testing purposes. The content was updated according to feedback from testing and the prototype was given clickable components. The overlays were given some more details and changed based on some of Intercom's overlay patterns but without realistic colours or font choices.



Step 1 – Welcome message with an option to skip and real dashboard added in background

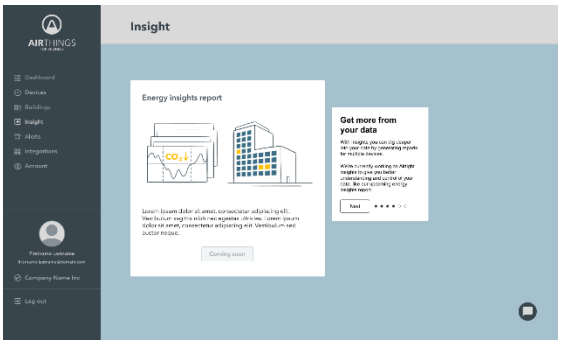


Step 1.1 – Value proposal with a new heading and body text, changed the layout

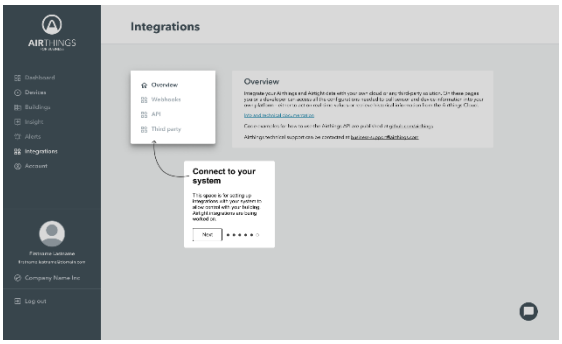


Step 2 – Devices overview with CTA with new heading

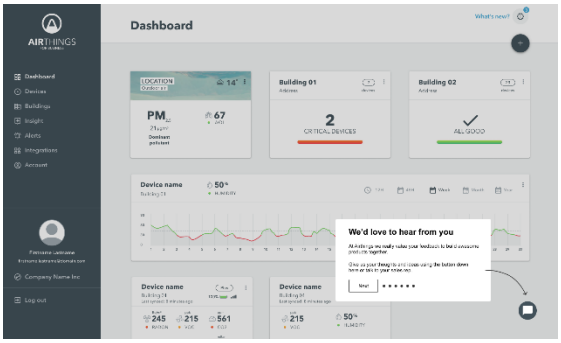
Step 3 – Device page with a specific explanation of the pressure graph



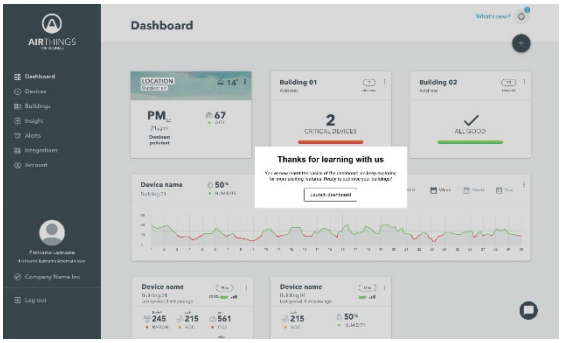
Step 4 – Insight page for Airtight users, combined into one step compared to Iteration 1



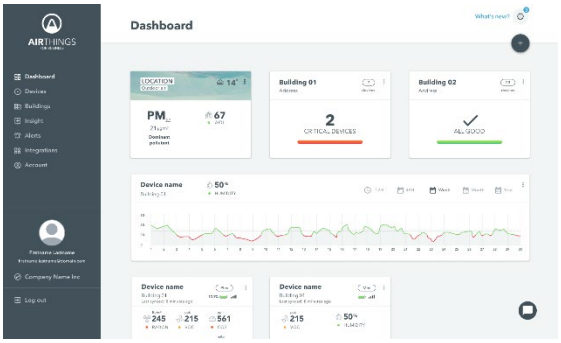
Step 5 – Integrations for APIs with new heading



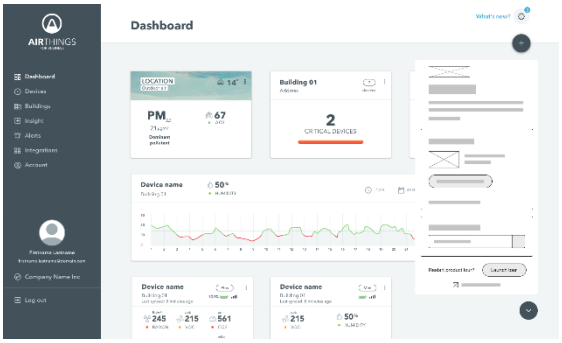
Step 6 – Feedback for Intercom with a shortened heading



Step 7 – Thank you message for participating more directed at what the user has learnt



Step 8 – Normal dashboard



Step 9 – New step included where the Intercom dialogue has an added repeat feature

Figure 14 - Iteration 2

This test round also had four participants, three of which worked closely with Airtight users. This was particularly helpful in shaping the language and aims of this specific onboarding. The fourth participant was from the customer success team, as they will be creating and managing this onboarding experience. They would thus have a perspective on the actions needed behind the scenes to create this.

All participants agreed the current experience was a good length, as it was quick and easy to follow. Two participants pointed out the move from one page in the dashboard to the next felt sudden as they didn't notice the change in the navigation bar. Instead, it would be better to point out where they are going in the dashboard. One participant pointed out the need for a "skip onboarding" function when the user has to click "launch dashboard tour" in case they don't wish to launch it. This made sense given there is currently no option beyond the first screen to exit the tour, so would be forced into the tour. Some changes to the language were suggested and included. In particular, one participant said the user would benefit from knowing that the Intercom button leads them to technical business experts, as opposed to the customer support team which are

more aimed at B2C. The user would likely want to know they can talk directly to the technical expert. Finally, the "thank you" overlay was questioned by one, as they felt it was an extra unnecessary click.

Several suggestions were given for the next steps in the onboarding journey. The author pointed out this first experience was designed to be short and should stay this way, or else the user would be overwhelmed. The suggestions were generally to develop different guides for a more in-depth look at more dashboard features, but in the meantime can be explored by the user. One said it could happen after 30 days, as a check-in.

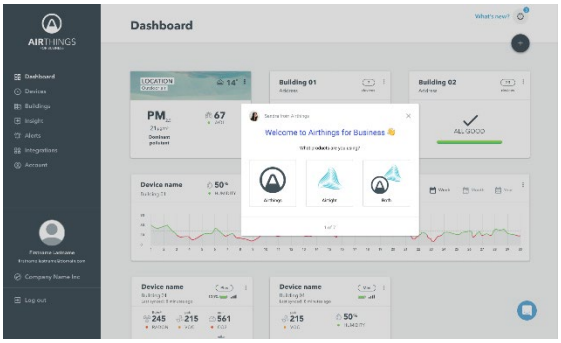
One last suggestion became a data requirement for the user requirements. For the onboarding to currently work, it requires devices to be added by Airthings before the user logs in. It's not an issue currently as this is the process for Airtight products but this has plans to change. This requirement was therefore added to the user requirements as shown in Table 5.

Type of requirement	Product requirement
Data	• Dashboard needs at least one device added pre-login

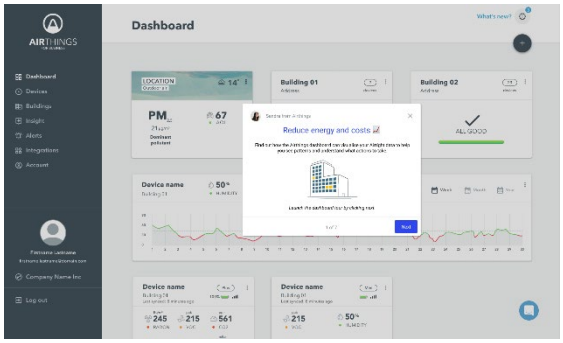
Table 5 - New requirement from iteration 2

4.3.3.3 Iteration 3

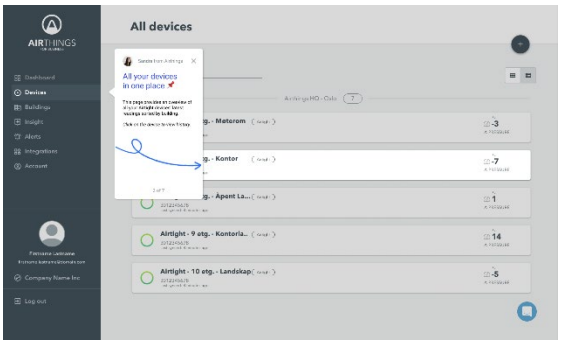
The third iteration (Figure 15) was a high-fidelity prototype. The biggest change is the fidelity of the overlays, as they were designed to resemble Intercom's Product Tours overlays. For this, matching colours and overlay formats were implemented such as having a small arrow to emphasise what the overlay is pointing to. The progress bar was changed to have "1 of 7" written and emojis were added to titles as is common with Airthings user updates. To resolve a couple of suggestions from the testing, the "thank you" overlay was expanded to include a description of more dashboard features. A false link to a more complete user guide was added here to give more information to the user, or simply let them explore it in their own time. Another change was to create a bounding box around the corresponding page in the navigation bar to better help users identify where in the dashboard they currently are.



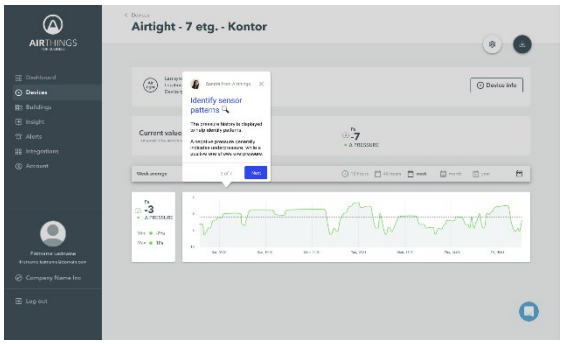
Step 1 – Welcome message with images added, steps described as "X out 7" and "Sandra from Airthings".



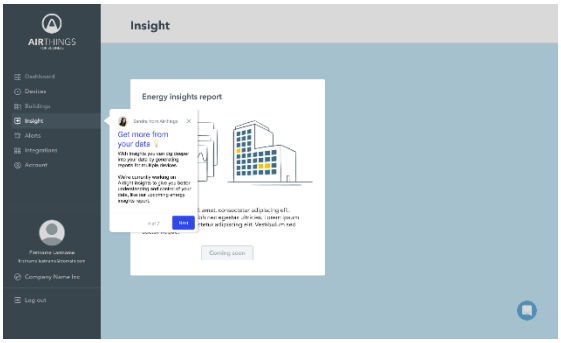
Step 1.1 – Clear value proposal, with the CTA moved to match Intercom Product Tours.



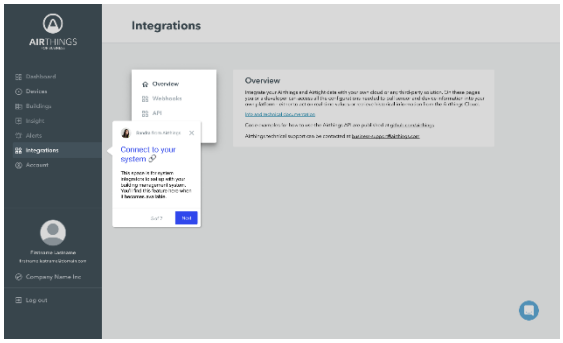
Step 2 – Devices overview with CTA move to highlight the navigation bar better



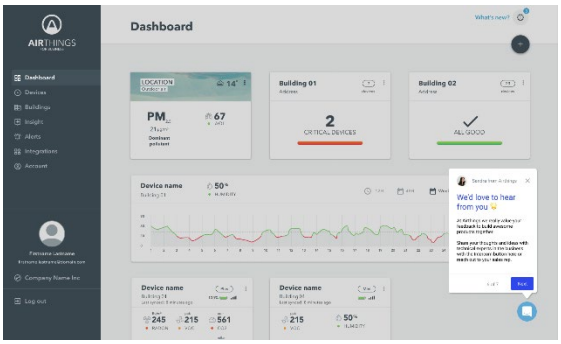
Step 3 – Device page and explanation of pressure with Intercom visuals



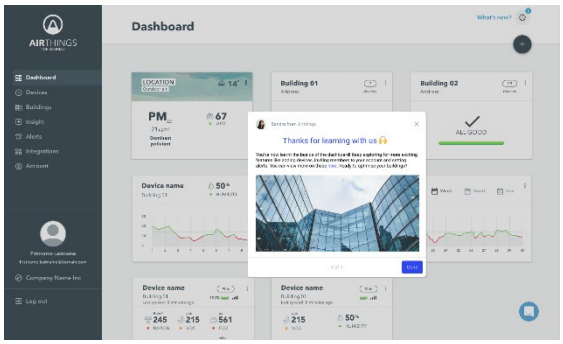
Step 4 – Insight page for Airtight users moved to also highlight the navigation bar



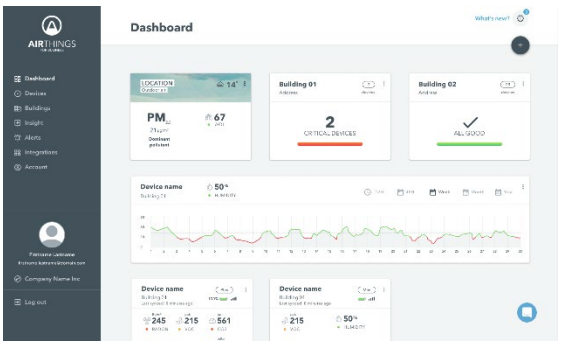
Step 5 – Integrations system set-up was also moved for the navigation bar



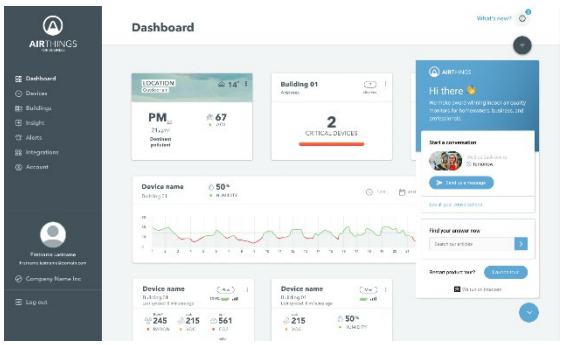
Step 6 – Feedback for Intercom, layout of the component was adjusted



Step 7 – Thank you message for participating with more features to explore and a picture added



Step 8 – Normal dashboard



Step 9 – Intercom dialogue with tour restart feature and proper visuals implemented

Figure 15 - Iteration 3

This iteration was presented to a UX professional for expert testing. The participant's professional background in UX and current position made them a suitable fit for this task. The design was received positively and seen as an easy flow through the dashboard. They saw it had good potential within Intercom especially given the service's ability to

target certain onboarding experiences based on data registered with each user. To develop this further they recommend using more visual cues to describe the steps. This is partly because users often scan content instead of reading it so reducing text will be important for a next iteration. It will also require more exploration into what the Intercom Product Tours can offer in terms of feasibility. Lastly the evaluator noticed the second screen, Step 1.1 (in Figure 15) is also labelled as "1 of 7". This was a conscious choice by the author from the start as it is seen as a sub step of the previous one. It would also help the user go through the onboarding if the total steps are kept to a low number. Interestingly no other participants picked up on this which would suggest they either didn't consider it important to the experience or simple didn't notice it. Therefore this was kept in the design.

Next a heuristic evaluation was carried out to assess the usability of this third iteration. Granollers (2018)'s set of heuristics were used as explained in section 3.3.3 Heuristic evaluation. From the evaluation, eight of the heuristics were answered with yes while the remaining seven were answered with no, as shown in Table 6.

Heuristic	Evaluation
H1 - Visibility and system state	Yes
H2 - Connection between the system and the real world, metaphor usage and human objects	Yes
H3 - User control and freedom	No
H4 - Consistency and standards	Yes
H5 - Recognition rather than memory, learning and anticipation	Yes
H6 - Flexibility and efficiency of use	No
H7 - Help users recognize, diagnose and recover from errors	No
H8 - Error prevention	No
H9 - Aesthetic and minimalist design	Yes
H10 - Help and documentation	Yes
H11 - Save the state and protect the work	No
H12 - Color and readability	Yes
H13 - Autonomy	Yes
H14 - Defaults	No
H15 - Latency reduction	No

Table 6 - Heuristic evaluation summary

Objectively this makes it seem like the prototype has poor usability, but the context of this onboarding experience has to be taken into consideration. *H3 - User control* along with *H6 - Flexibility of use* weren't met largely due to the onboarding experience itself.

The aim is to walk the user through a series of features which were chosen as being most relevant to their needs when using the dashboard. Therefore, they won't have the flexibility in deciding where this path will go as it was decided by the author based on user research. Alongside they can't recover from errors or prevent them. This is again due to the nature of onboarding in a product tour as the actions here are purely informational and no interaction will cause an irreversible action. Exiting the onboarding tour will not decrease the users' ability to use the dashboard, it just may leave them with a few questions before they familiarise themselves. The greatest pitfall is in the first screen, when the user may select the wrong segment by accident. The overlays offer no way to return to the previous steps because it is a pattern determined by the Intercom Product Tours. It is therefore important to keep the tour short to make users comfortable with repeating it. Lastly, default and latency are not met because no such inputs are part of the onboarding experience given the user doesn't have any settings or complex tasks.

The heuristics which were answered positively show what elements make the onboarding a usable design. To note, the user is always aware at what stage in the onboarding they are with the number of steps completed. This is emphasised with the menu item in the navigation bar being highlighted, stating what page they are on. Accessibility was also accounted for, as titles and text size contrast meaning the user doesn't have to rely on colour only to see what is most important. The buttons always offer the same action, which is to move onto the next step of the onboarding. This was ensured by the Intercom Product Tour overlay pattern as well. The minimalist design was achieved by keeping sentences short and having clear titles for the user to understand the value of each step. It was also important for each step to bring new, accurate knowledge.

A future state journey map was developed (Figure 16) to show how Fredrik's journey is improved post-acquisition with the onboarding implemented. The internal ownership of each step is outlined for the teams at Airthings to know where they should contribute. Extra opportunities along these steps are also identified, such as creating a general FAQ page for the dashboard.

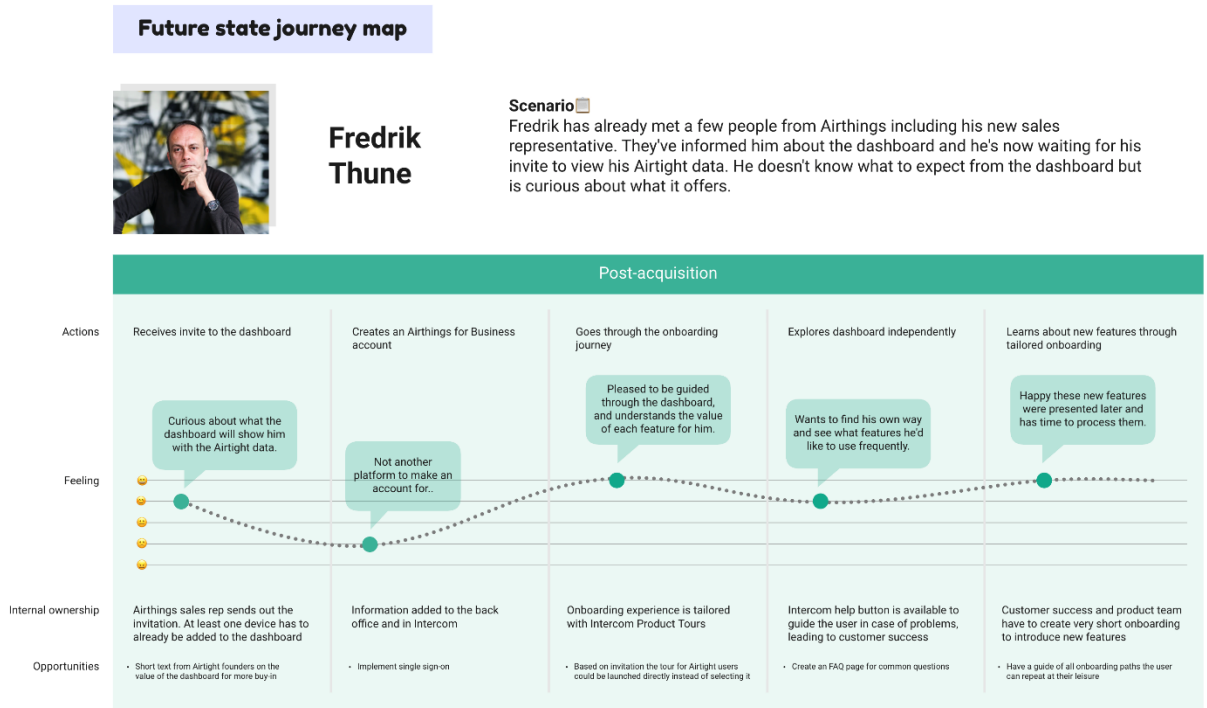


Figure 16 - Fredrik future state journey map

4.3.3.4 Suggestions for the next steps

The third iteration is considered as the hand-off proposed solution for Airthings as advice on how to start developing their onboarding experience for Airtight users. By learning about the dashboard users will get a detailed view of Airtight data easily accessible to them, which will help them optimise energy use in their buildings. As this is one of Fredrik's goals, it will be a valuable offering for them. It's also another way to keep communicating with Airtight users who should feel valued by having a tailored experience but also understand the value of the dashboard. Ideally, this onboarding flow would be developed prior to the announcement so that it can help new customers of the dashboard from day one.

Next steps for this prototype are to improve the copywriting, or create visual cues as suggested in the expert testing. Once this is determined it can be created within Intercom Product Tours by the customer success and product team. User testing with at least three Airtight participants should then be carried out to understand how well it meets their needs, and if the experience is as pragmatic and hedonic as intended. Testing can be done through a usability test, with the goal and task defined beforehand. The onboarding can then be presented to participants as they talk through their actions, and if the product matches their expectations of an onboarding experience. Then the prototype can move onto Stage 4 of the process, which is to release the design to all users. Customer success should then reach out to new users to carry out feedback interviews to iterate it on it further. Field studies would also be beneficial to seeing the onboarding being first implemented and in what contexts the dashboard is used. Alongside this, the other two paths for Airthings and combined users should be developed as they are options in Step 1.1 of the onboarding flow.

5 Discussion

The objective of this study was to look at the impact of Airthings's acquisition of Airtight on the user experience for all customers. In addition, it examined how the user's experience can be improved post-acquisition specifically for the acquired company's customers. Through this objective, it showed how UCD helped shape the improved user experience post-acquisition. The study focused on the post-acquisition integration as this is when users received the news and experienced changes. This chapter reflects on acquired Airtight users feeling more negatively impacted compared to existing Airthings users. It then shows how UCD methods offer a promising structure for creating a personal and usable experience through interviews, an ideation workshop, prototyping and testing. These methods hope to improve the user experience of the acquired customers. Implications this has for other companies going through an M&A are suggested. Finally, further work on this thesis is presented.

5.1 Impacting the user's experience of communication

The first part of the research question asked to what extent the user experience was impacted post-acquisition. The interviews best answered this, as told by the users' views on the acquisition announcement and expectations for how the integration will develop. They showed it depended on the user segments to a certain extent. The two segments of Airthings and Airtight have different business needs, which led to having different expectations of the acquisition. Airthings users want to monitor the indoor air quality, while Airtight users want to save energy through Airtight's product.

Airthings users saw themselves as being positively impacted through growing their business relationship and trialling a new product. The new product was more appealing as there was a low threshold to trying it out as the business relationship already existed. As communication was already set up and users enjoyed their business relationships with their respective sales representatives, trying out a new product felt like an easy step forward. This matched the CEO of Airthings' intention of offering a wider range of services for building management thanks to the acquisition. Users increased their business, which qualifies as an incremental reaction to the acquisition as defined by Öberg (2008)'s customer research. The sales team could grow the content side of the relationship while also strengthening it, as the team could share the new Airtight product and how to implement it in buildings. This demonstrates the users of Airthings aren't negatively affected as the acquisition was conveyed appropriately through the correct points of contact and they had no expectations of negative changes. They might be impressed by Airthings acquiring a new technology, thereby improving the brand perception for some.

However, Airtight users are less certain about how the acquisition will impact them. Not all users experienced the announcement badly, but for the one that did it showed how it changed their perspective going forward. In this user's case they were impacted more than they expected. This finding correlates well with Kato and Schoenberg (2014)'s research that communication was negatively impacted during a merger integration. The other two users didn't share this sentiment, implying they don't want to be bothered by the acquisition and simply want business to continue. All three users had a non-reaction (Öberg, 2008) as they didn't change their business as a result of the announcement, having no interest in buying Airthings products. They did nothing as they expected the same service to continue with Airtight as it currently has, simply because they weren't

told otherwise. This situation reflects how important communication and customer relations are in acquisitions, as any new changes should be introduced through the right channels.

With communication found to be a central element of both user segments, managing it appropriately should be a primary focus for companies. This matches well with Kumar and Sharma (2019)'s identifying it as a common reason for M&As failing. They emphasise communication should take place with as many stakeholders as possible, as internal communication is just as vital as it is externally. The information employees received can positively impact users, as they will be managing customer relations. For users, communication can realistically only happen at or after the announcement, but one user's experience shows how it affected their view on the acquisition going forward. This lends support to PwC's report (CX in M&A, 2019), showing the delicate nature of communication in shaping the customer's user experience. Users should therefore be kept informed of the progress through the right channels, particularly those of the acquired business. In comparison with Airtight, customers of Airthings were managed well by being told about the acquisition through their sales representatives.

Due to the author's position at Airthings, it was possible to research the acquisition case relatively soon after the announcement as the researcher saw it unfold. Other studies that examine customers in M&As explored the effects a few years after the announcements. As integration can take time for businesses, the full effects of the M&A may only become apparent a year or more later. Assessing the success of the M&A or even how impacted users are, can be difficult without sufficient time elapsing to process the impact. This may be why Kato and Schoenberg (2014) and Öberg (2008) interviewed customers a few years after the M&As took place. This gave the customers an informed perspective on how it impacted them, especially if there was a turbulent period which they had to wait out to see whether benefits become apparent or accrued. The researchers can also question if promises of the M&A have been delivered or not. Nonetheless, researching the Airthings-Airtight acquisition soon after the announcement places an emphasis on this phase and the first steps of the integration. This can be just as important as it may shape the users' view for the months and years to come. Interviewing them at this stage uncovers a raw experience of the acquisition, providing fresh knowledge to the field. Users are reporting their emotional view of the acquisition as they haven't processed the full experience yet.

The results from these interviews help widen our knowledge of the impact on the user experience post-acquisition, specifically during the announcement and expectations of the integration. It can be concluded the users of the acquired company weren't interested in the new company as they want their business to continue as it was originally set out for the moment. They perceive Airthings as an innovative company and nice to have as new owners, but not essential to their business. As such the focus of the research turned to the Airtight user segment, as the value of the acquisition had to be properly communicated. It had to show how the users will benefit from Airtight becoming part of a larger company with more resources, as the companies hope to benefit the end users.

5.2 Creating a usable and personal user experience

The second half of the research question asked how the user experience can be improved post-acquisition. It concluded that a UCD methodology helped improve the user experience by defining the user's context and empathising with them. This then helps in creating both a usable and personal experience for the acquired company's users.

The primary way UCD helps is by creating an understanding of the user segments and building empathy for them. A variety of methods helped achieve this, with interviews being the key element which drove the remaining methods. The interviews with both users and leaders focused on how the user experience compared with the businesses' expectations of benefits for users. The workshop was an occasion for the internal team to explain how they thought the user experience should be handled at Airthings for new Airtight users. They acknowledged changes that would happen to their user experience, such as new sales representatives and a new platform on which to view Airtight data. Seeing what changes are expected internally helped to empathise with users being kept out of the loop, until the business decides it is time to share the new changes. Along with personas and user journey maps, empathy was gained for the users as is necessary for UX designers (Hamm, 2014) to create thoughtful and reflective experiences.

These methods are also what define the user's needs in this context, which Chandler and Unger (2012) and Bargas-Avila and Hornbæk (2011) recognize as essential for designing for usability and emotion. Designing in the right context and having empathy for the users aims to reduce frustrations in the user experience. Baxter et al. (2014) specifies this as moments where expectations are not met, which was seen with one user who was dissatisfied with the communication and felt undervalued. They expected to be informed of upcoming changes and be told of the acquisition directly, neither of which happened. This showed a mismatch in expectations and a moment of frustration for that Airtight user. The other Airtight users didn't speak of any expectations as they hadn't been told of any upcoming changes. They couldn't prepare themselves, but they also didn't seem as frustrated as the one other user as they had no expectations of communication. This resonates well with Öberg (2008)'s study, which considers customers as people with their own agency. They won't all behave as one group, as seen with Airtight users. Through gaining empathy and understanding the users' contexts, the language used to refer to customers in M&As can be changed for the customers' best interest, instead of referring to them as "the market".

In addition to defining the user's context, UCD methods define the problem that needs solving. To define the problem in the right context, it's best to look at the larger picture. This means studying the service element of the product experience defined by Kuniavsky (2010) as looking at the network in which the product (the acquisition) exists and the moving parts around it (users and staff). To help do this, the journey maps looked at all the touch points of the acquisition from the users' perspective as per Rosenzweig (2015)'s description of user experience. This helped define one problem area of how to best bring in Airtight users to the Airthings experience. As the process went on, the problem's focus needed to be narrowed to create a solution in the remaining three weeks and provide sufficient value to the user. Having a UCD methodology meant returning to previous steps and iterating on them when new information is discovered. This occurred when the Airtight and Airthings personas had to be narrowed down. This was done to better understand the different needs they would have for an onboarding experience, and why the focus should be on Airtight users in this design. The Airtight persona helped define the user requirements for the product onboarding, as these focused on the user's needs first and foremost. It is important to acknowledge that product onboarding is one small, yet critical part of bringing in Airtight users into Airthings.

Through formative testing, the type of experience the solution offered could be determined alongside the two qualities of a user's experience presented by Hassenzahl (2008). The solution was deemed to provide a pragmatic experience, as participants

found the product onboarding quick to learn and easy to complete. The hedonic experience was certainly designed for, by keeping text short and providing a clear value proposition of the dashboard and its function. Assuring that the solution will provide a hedonic experience can only realistically be determined by the intended users. The user testing showed it was an enjoyable experience for participants, but these were all staff at Airthings. Therefore, the user's connection with the onboarding solution must still be assessed. It's important to note that an enjoyable experience for users cannot be guaranteed. The design can shape it but not assure it every time as Hassenzahl (2010) points out. It is hoped the users would have a similar experience to the staff, as participants felt it met Airtight user needs well. As such, it can only be hypothesised how much value the onboarding experience will bring. From the formative testing, participants also believed this will help users as much as the businesses post-acquisition.

To best reflect the user needs identified, a segmented approach for the onboarding solution was chosen. This tailored the onboarding to Airtight users and aimed to create a personal experience in order to show both how the dashboard would benefit them and their goals specifically and also to make them feel valued in this acquisition. This responded to Kato and Schoenberg (2014)'s determinants of service performance and customer orientation that influence customer relationship. Showing the users they have been considered in a platform that is new to them is a way of indicating the acquiring company has thought about how they will fit into the integration and what services they need. This solution is also one of the first products that can be implemented post-acquisition, so showing the customer is valued early on is important to them. It works as users didn't want to be involved pre-announcement but this still means their first steps into the Airthings experience should be managed well. It is an important moment to gaining customer buy-in, as not all who use the dashboard will receive an introduction from a sales representative. This makes the experience more personal which can reach out to more hidden groups of people but who will still use the dashboard in their work.

Lastly, the UCD methodology encourages a quick developing and testing process. This helped improve the user experience by ensuring the solution proposed was usable and reduced the risk of creating an undesirable product (Allen and Chudley, 2012). The methodology also offers advantages to the businesses, as rapid testing and iterating reduces issues at later stages as they will be discovered soon (Baxter et al., 2014). An important finding from the formative testing was that the product tour would be built using Intercom Product Tours. This was taken into the next iteration to see how the testing responded to this new layout, using the formats set out by Intercom. The methods used in this thesis also help the business stay customer centric, which is always an advantage for the users.

5.3 Further work

In line with the previous point, testing the onboarding experience with users who have been acquired should be the next step for Airthings. It should outline if it is a satisfactory solution that makes the user feel valued and gain value from the experience. It should also question if it is an enjoyable experience to ensure it is a hedonic, as well as pragmatic user experience. Another suggestion is to try a different type of onboarding, one which entail more of a welcome guide to the acquisition itself. This type of onboarding could answer general questions but also guide users to a particular person who could answer more detailed questions and manage expectations. A product onboarding is certainly helpful, but a more general welcome guide could be beneficial.

This study focused on one type of acquisition, that of a small start-up being bought up by a larger one through a horizontal acquisition. This makes the results hard to generalise for other M&As so it would be very interesting to look at customers of equal sized companies merging. Or looking at a very large company absorbing a much smaller one, much like with the Facebook-Instagram acquisition. As mentioned earlier, this study also looks at a specific moment in the acquisition's timeline. Returning to customers in a year or more would be beneficial to finding out how the acquisition developed for them and whether their experience changed significantly in positive or negative ways. Were expectations met, exceeded or disappointed?

Finally, the impact of using a UCD methodology for M&As can be investigated further by changing the type of end-user. This research looked at B2B customers, so a new study could investigate B2C customers and what solution could be proposed for them. It's currently assumed this group would find it easier to end a business relationship, as B2B customers have their own customers depending on them which B2C likely won't. Therefore an M&A will impact them at a different level.

5.4 Implications for other M&As

This thesis has shown customers' user experience should be prioritised post-announcement of the acquisition. In particular, users of the acquired company can be impacted by how the news is shared. This may affect the user's relationship before it has even begun with new owners. There will likely be several internal changes to manage affecting users, whether deliberate or not. Communication and expectation management will help controlling an eventful period for the two businesses. An onboarding experience such as the one proposed in this thesis can help businesses prepare users for upcoming changes. Establishing a platform to reach new users that explains the value of the new platform to them will be important to keeping them part of the new company experience. Some form of welcoming will be important to showing users what they can expect from the M&A, followed by the challenging but fulfilling aspect of delivering on expectations for an enjoyable user experience.

6 Conclusion

Using a UCD methodology, this thesis has investigated the impact of Airtight's acquisition by Airthings on the user experience. It subsequently researched how this user experience could be improved for the post-acquisition phase. It has shown that an onboarding product experience can help with communication and managing expectations for newly acquired users, as defined through a UCD methodology.

Users in the acquisition case study were impacted both positively and negatively. The existing users of Airthings were pleased to try a new product, while Airtight users were ambivalent about Airthings' products. Users expected their business with Airtight to continue as usual, with no expectations of possible changes such as seeing their data on a new dashboard. For this reason, an onboarding experience to the dashboard was created for Airtight users illustrating what value it could provide them with. UCD methods such as interviews, personas and journey maps help build empathy for this user segment. The onboarding problem was defined through an ideation workshop, as the focus was on creating value for the user in a product that is new to them. The aim of the product onboarding was to create a good user experience, defined as being both pragmatic and hedonic. User testing with internal staff at Airthings revealed the solution was pragmatic but assessing how its hedonism was more challenging without testing the solution with actual users. This would have showed what type of value they felt it brought and how well it matched their own needs. It has acknowledged the onboarding solution doesn't meet all user needs or problems but responds well to needs identified after the announcement. Ensuring a smooth integration process requires several steps, such as being welcomed into the Airthings sales and customer success teams, and learning about future product launches for Airtight.

The methodology in this thesis responded well to the research question through a holistic approach. Interviews with users and stakeholders created a more complete image of the acquisition for the research, as they gave insights into the business plan for users and whether this matched user expectations. The workshop was the occasion to hear ideas of what the integration roadmap could look like and showed the many moving parts it would take to fully integrated Airtight into the Airthings user experience. The study followed a UCD framework, which allowed for returning to previous steps when new information was discovered. This happened for the personas and user journey maps, which were updated later to better reflect the new focus identified from the workshop and intended solution. Finally, the prototyping aimed to show how onboarding can be a great tool for demonstrating value to the user as the most relevant features were presented in accordance with their needs. It was also a great opportunity to test product onboarding for Airthings for Business, as this is an element they don't currently have. Overall, this methodology gave useful insights into understanding the users' and the businesses context as they navigate the acquisition.

6.1 Contribution to the fields

Within design, research on M&As has typically focused on the rebranding of companies and how to merge two brand experiences. For user experience design, this topic is fairly under researched. Those who have looked into M&As have focused on how UX leaders experiencing an M&A can best manage their teams for upcoming changes (Kumar et al., 2014). However within interaction design, the end user's experience is the guiding factor of the design process. As shown with this thesis, empathising and designing for the users

of companies going through an M&A will help manage them through this period of change. Most importantly, it will show users that they are being thought of during the M&A and make them feel valued. This thesis has reinforced the benefit of researching end users and designing appropriate solutions to fit their context in a new field.

For the field of M&As, this study has shown users should be better considered and planned for during the announcement and integration phases. Users should not just be carried over into the new phase of a business relationship but welcomed into it as useful partners and in line with expectations. Even existing users will see new changes and must keep their own business needs prioritised for the sake of their own customers. Research in this paper shows that reaffirming customers as real people and not "the market" is helpful. Users are free to end their business relationship when they decide, and especially if the service no longer matches their expectations. With evermore competition, global businesses should be looking at user experience in order to maintain and attract a loyal customer base.

7 REFERENCES

Airthings - About Us [Online]. 2021. Airthings. Available: https://www.airthings.com/about-us [Accessed 17 April 2021].

Airthings admitted to trading [Online]. 2020. Euronext. Available: https://www.euronext.com/en/about/media/euronext-press-releases/airthings-admitted-trading [Accessed 17.04.2021].

Airtight - Our Story [Online]. 2019. Airtight. Available: https://www.airtight.ai/about-us/our-story/ [Accessed 17.04.2021].

Allan, R. 2019. Hook trial users from their first use. *In:* O'dwyer, D. (ed.) *Intercom on Onboarding.* Intercom.

Allen, J. & Chudley, J. 2012. *Smashing UX design : foundations for designing online user experiences = User experience design,* Chichester, West Sussex, U.K, John Wiley & Sons.

Anderson, H., Havila, V. & Salmi, A. 2001. Can You Buy a Business Relationship?: On The Importance of Customer and Supplier Relationships in Acquisitions. *Industrial marketing management,* 30**,** 575-586.

Bargas-Avila, J. A. & Hornbæk, K. 2011. Old wine in new bottles or novel challenges: a critical analysis of empirical studies of user experience. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* Vancouver, BC, Canada: Association for Computing Machinery.

Barnum, C. M. 2010. *Usability Testing Essentials: Ready, Set... Test,* San Francisco, San Francisco: Elsevier Science & Technology.

Bass, D. & Roof, K. 2020. *Microsoft in Talks to Buy Discord for More Than $10 Billion* [Online]. Bloomberg. [Accessed 27.03.2021].

Baxter, G. D., Churchill, E. F. & Ritter, F. E. 2014. Foundations for Designing User-Centered Systems : What System Designers Need to Know about People. 1st ed. 2014. ed. London: Springer London : Imprint: Springer.

Baxter, K., Caine, K. & Courage, C. 2015. Understanding your users : a practical guide to user research methods. 2nd ed. ed. Amsterdam, Netherlands: Morgan Kaufmann.

Benoit, E., Dunlap, E. & Johnson, B. D. 2010. Organizing "Mountains of Words" for Data Analysis, both Qualitative and Quantitative. *Subst Use Misuse,* 45**,** 648-670.

Bjögvinsson, E., Ehn, P. & Hillgren, P.-A. 2012. Design Things and Design Thinking: Contemporary Participatory Design Challenges. *Design Issues,* 28**,** 101-116.

Buley, L. 2013. *The user experience team of one : a research and design survival guide,* New York, Rosenfeld Media.

Carroll, J. M. n.d. *2. Human Computer Interaction - brief intro* [Online]. Interaction Design Foundation. Available: https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/human-computer-interaction-brief-intro [Accessed 07.10.2020].

Chandler, C. & Unger, R. 2012. *A project guide to UX design : for user experience designers in the field or in the making,* Berkeley, Calif, New Riders.

Colman, J. 2019. A content–first approach to product onboarding. *In:* O'dwyer, D. (ed.) *Intercom on Onboarding.* Intercom.

CX in M&A. 2019. *Consumer Intelligence Series.* PwC.

Daniel, T. A. & Metcalf, G. S. 2001. The management of people in mergers and acquisitions. Westport, Conn.: Quorum Books.

Farah, M. F. 2017. Consumers' switching motivations and intention in the case of bank mergers: a cross-cultural study. *International Journal of Bank Marketing,* 35**,** 254-274.

Frier, S. 2020. *No Filter : The Inside Story of Instagram*, Simon & Schuster.

Garrett, J. J. 2011. *The elements of user experience : user-centered design for the web and beyond,* Berkeley, Calif, New Riders.

Gaughan, P. A. 2005. Mergers : what can go wrong and how to prevent it. Hoboken, NJ: J. Wiley.

Geddie, M. W. & Lee, M. J. 2006. Impact of an Airline Merger on Customer Satisfaction: The Case of American Airlines/Trans World Airlines (TWA) Merger. *International Journal of Hospitality & Tourism Administration,* 7**,** 47-61.
Gibbons, S. 2018. *Journey Mapping 101* [Online]. Nielsen Norman Group. Available: https://www.nngroup.com/articles/journey-mapping-101/ [Accessed].
Goodman, E., Kuniavsky, M. & Moed, A. 2012. *Observing the user experience : a practitioner's guide to user research,* Amsterdam, Elsevier.
Gould, J. D. & Lewis, C. 1985. Designing for usability: key principles and what designers think. *Commun. ACM,* 28**,** 300–311.
Granollers, T. Usability Evaluation with Heuristics. New Proposal from Integrating Two Trusted Sources. 2018 Cham. Springer International Publishing, 396-405.
Haklay, M. & Nivala, A.-M. 2010. User-centred Design. *In:* Haklay, M. (ed.) *Interacting with Geospatial Technologies.* John Wiley & Sons, Incorporated.
Hamm, M. J. 2014. *Wireframing Essentials,* Birmingham, England, Packt Publishing.
Harding, J. 2013. *Qualitative data analysis from start to finish,* Los Angeles, SAGE.
Harikkala-Laihinen, R., Hassett, M. E., Nummela, N. & Raitis, J. 2018. *Socio-Cultural Integration in Mergers and Acquisitions: The Nordic Approach*, Cham: Springer International Publishing AG.
Harston, R. & Pyla, P. S. 2012. *The UX Book: Process and Guidelines for Ensuring a Quality User Experience*, Elsevier Inc.
Hassenzahl, M. 2008. User experience (UX): towards an experiential perspective on product quality. *Proceedings of the 20th Conference on l'Interaction Homme-Machine.* Metz, France: Association for Computing Machinery.
Hassenzahl, M. 2010. *Experience Design: Technology for All the Right Reasons*, Morgan & Claypool Publishers.
Hassenzahl, M. & Tractinsky, N. 2006. User experience - a research agenda. *Behaviour & Information Technology,* 25**,** 91-97.
Hodgson, S. 2018. *Together we brand: Behind every great merger, there's a great merger branding strategy* [Online]. Available: https://fabrikbrands.com/company-merger-branding-strategy/ [Accessed 07.10.2020].
Hormess, M. E., Lawrence, A., Stickdorn, M. & Schneider, J. 2018. *This is service design doing : applying service design and design thinking in the real world : a practitioners' handbook,* Sebastopol, CA, O'Reilly.
Hulick, S. 2014. *The Elements of User Onboarding*, www.useronboard.com.
Hulick, S. 2019. Killer onboarding starts with a story. *In:* O'dwyer, D. (ed.) *Intercom on Onboarding.* Intercom.
Kato, J. & Schoenberg, R. 2012. Customer and Competitor Responses to Mergers and Acquisitions: An Empirical Investigation in the Logistics Industry. Emerald Group Publishing Limited.
Kato, J. & Schoenberg, R. 2014. The impact of post-merger integration on the customer–supplier relationship. *Industrial marketing management,* 43**,** 335-345.
Koi-Akrofi, G. Y. 2016. Mergers and acquisitions failure rates and perspectives on why they fail. *International journal of innovation and applied studies,* 17**,** 150.
Kumar, J., Haine, P. & Brown, M. 2014. Design leadership for mergers and acquisitions. *interactions,* 21**,** 74–76.
Kumar, V. & Sharma, P. 2019. *An Insight into Mergers and Acquisitions: A Growth Perspective,* Singapore, Singapore: Springer Singapore Pte. Limited.
Kuniavsky, M. 2010. *Smart Things : Ubiquitous Computing User Experience Design,* Amsterdam, Morgan Kaufmann.
Kusstatscher, V., Sinkovics, R. & Zagelmeyer, S. 2011. Between merger and syndrome: The intermediary role of emotions in four cross-border M&As. *International Business Review,* 20**,** 27-47.
Lazar, J., Feng, J. H. & Hochheiser, H. 2017. Chapter 10 - Usability testing. *In:* Lazar, J., Feng, J. H. & Hochheiser, H. (eds.) *Research Methods in Human Computer Interaction (Second Edition).* Boston: Morgan Kaufmann.
Leedy, P. D. & Ormrod, J. E. 2015. *Practical research : planning and design,* Boston, Pearson.

Lockwood, T. 2010. *Design thinking : integrating innovation, customer experience, and brand value,* New York, Allworth Press.
Luther, L., Tiberius, V. & Brem, A. 2020. User Experience (UX) in Business, Management, and Psychology: A Bibliometric Mapping of the Current State of Research. *Multimodal Technologies and Interaction,* 4**,** 18.
Macarthur, G. & Sward, D. 2007. Making User Experience a Business Strategy. *Towards a UX Manifesto.* Lancaster, UK.
Malmendier, U. & Tate, G. 2015. Behavioral CEOs: The Role of Managerial Overconfidence. *The Journal of economic perspectives,* 29**,** 37-60.
Meglio, O. & Schriber, S. 2020. *Mergers and Acquisitions: Rethinking Key Umbrella Constructs,* Cham, Cham: Springer International Publishing AG.
Merčun, T. & Žumer, M. 2017. Exploring the influences on pragmatic and hedonic aspects of user experience. *Information Research: An International Electronic Journal,* 22.
Merriam, S. & Tisdell, E. 2016. *Qualitative Research : A Guide to Design and Implementation,* San Francisco, CA, Jossey-Bass.
Mertens, D. M. 2014. Chapter 35 Ethical Use of Qualitative Data and Findings. *In:* Flick, U. (ed.) *The SAGE Handbook of Qualitative Data Analysis.* London: SAGE Publications Ltd.
Mucenieks, K. 2018. Factors Affecting Mergers and Acquisitions in the European Union. *Humanities and Social Sciences Latvia,* 26**,** 102-114.
Nielsen, J. & Norman, D. n.d. *The Definition of User Experience (UX)* [Online]. Nielsen Norman Group. Available: https://www.nngroup.com/articles/definition-user-experience/ [Accessed 17.10.2020].
Öberg, C. 2008. *The Importance of Customers in Mergers and Acquisitions.* Doctoral Thesis, Linköping University.
Osterwalder, A. 2012. *Test your value proposition: supercharge Lean startup and custdev principles* [Online]. Available: http://businessmodelalchemist.com/blog/?month=september-2012&view=calendar [Accessed].
Osterwalder, A., Pigneur, Y., Bernarda, G., Smith, A., et al. 2014. Value proposition design : how to create products and services customers want : get started with. Hoboken: Wiley.
Part 210: Human-centred design for interactive system [Online]. 2019. ISO. Available: https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-2:v1:en [Accessed 17.10.2020].
Perez, N. 2020. *Welcome to the Airthings team Airtight!* [Online]. Airthings. Available: https://www.airthings.com/resources/airthings-acquires-airtight [Accessed 17.04.2021].
Preece, J., Rogers, Y. & Sharp, H. 2019. *Interaction Design : Beyond Human-Computer Interaction,* Newark, UNITED STATES, John Wiley & Sons, Incorporated.
Røhnebæk, M. & Bjerck, M. 2021. Enabling and Constraining Conditions for Co-production with Vulnerable Users: A Case Study of Refugee Services. *International Journal of Public Administration***,** 1-12.
Rosenzweig, E. 2015. *Successful User Experience: Strategies and Roadmaps,* Waltham, MA, Waltham, MA: Morgan Kaufmann.
Roulston, K. 2014. Chapter 20 Analysing Interviews. *In:* Flick, U. (ed.) *The SAGE Handbook of Qualitative Data Analysis.* London: SAGE Publications Ltd.
Rozen-Bakher, Z. 2018. Comparison of merger and acquisition (M&A) success in horizontal, vertical and conglomerate M&As: industry sector vs. services sector. *The Service Industries Journal,* 38**,** 492-518.
Saffer, D. 2010. *Designing for Interaction, Second Edition:Creating Innovative Applications and Devices,* USA, New Riders.
Salazar, K. 2019. *User Experience vs. Customer Experience: What's The Difference?* [Online]. Nielsen Norman Group. Available: https://www.nngroup.com/articles/ux-vs-cx/ [Accessed 28.11.2020].

Sarala, R. M., Vaara, E. & Junni, P. 2019. Beyond merger syndrome and cultural differences: New avenues for research on the "human side" of global mergers and acquisitions (M&As). *Journal of world business : JWB,* 54**,** 307-321.

Szabo, P. W. 2017. *User Experience Mapping,* Birmingham, Birmingham: Packt Publishing, Limited.

Tomlin, W. C. 2018. UX Optimization : Combining Behavioral UX and Usability Testing Data to Optimize Websites. 1st ed. 2018. ed. Berkeley, CA: Apress : Imprint: Apress.

Traynor, D. 2019. The low-hanging fruit of user onboarding. *In:* O'dwyer, D. (ed.) *Intercom on Onboarding.* Intercom.

Vizzaccaro, M., Venzin, M. & Rutschmann, F. 2018. *Making Mergers and Acquisitions Work: From Strategy and Target Selection to Post Merger Integration,* Bingley, Bingley: Emerald Publishing Limited.

Wangerin, D. 2019. M&A Due Diligence, Post-Acquisition Performance, and Financial Reporting for Business Combinations. *Contemporary accounting research,* 36**,** 2344-2378.

Warren, T. 2020. *Microsoft's Skype struggles have create a Zoom moment* [Online]. Available: https://www.theverge.com/2020/3/31/21200844/microsoft-skype-zoom-houseparty-coronavirus-pandemic-usage-growth-competition [Accessed 27.03.2021].

Why Airthings [Online]. 2020. Airthings.com. Available: https://www.airthings.com/business/why-airthings [Accessed 13.05.2021].

Yang, D. 2015. Mergers, CEO Hubris, and Cost Stickiness. *Emerging Markets Finance and Trade,* 51**,** S46-S63.

8 APPENDIX

Appendix A – Interview Guides

A.1 User interview guide

AIM: To learn about the impact of the acquisition on the customer's user experience

1. Introductory questions
    a. What is your role/job (ie. Building manager, administrator, janitor), how long have you been in it? What do you like about it?
    b. How long have you been a customer of Airthings/Airtight?
    c. Were you involved in the decision to choose Airthings? (What is your relationship with this person/group?) What made you choose Airthings?
2. M&As in general
    a. When talking about M&As, I like to give the examples of Microsoft buying Linkedin or Facebook buying Whatsapp to ground these events. Based on this, what mergers or acquisitions have you experienced as a customer, that marked you most?
        i. When did you first hear about the merger or acquisition, how did you perceive it? Please describe the experience.
        ii. What impact did this have on your perception/relationship of the brand and its products?
    b. What do you like/dislike about M&As? Your general impression of them?
    c. What concerns do you have with M&As? Negative consequences?
    d. How would you expect to be involved as a customer? To a great extent or not at all? How would you like to be involved?
3. Specific to Airthings's acquisition of Airtight
    a. Do you know about this acquisition?
        i. If no: "Airthings acquired the Norwegian proptech company Airtight that developed a pressure sensor to help reduce energy waste from buildings and aims to incorporate it in existing devices for a better indoor air quality service."
        ii. If yes, how did you hear about, how was it communicated to you?
    b. What was your initial reaction to this acquisition? Do you see the value as a customer of Airthings/Airtight? (How do you see the fit of these two companies?)
    c. Did you learn more about Airtight? How and why? Why not?
    d. How do you expect this acquisition has impacted/will impact Airthings?
        i. What do you hope for yourself as a customer in this acquisition?
        ii. How about from a practical standpoint?
    e. Do you wish to know more about it? Better communication on the steps and ambitions?
    f. Do you feel you should have been involved? In what way?
    g. What changes do you expect because of the acquisition as a customer?
4. Airthings product
    a. In what context do you use the devices and dashboard?
    b. How frequently do you use Airthings devices and dashboard?
    c. What features do you currently appreciate the most?

   d. Has the acquisition affected your use of the product? In what way?
   e. How do you see the dashboard changing from the acquisition?
5. Any other thoughts to share?

A.2 Leader interview guide

AIM: to learn about the leaders' consideration of customers during the acquisition

1. M&As in general
   a. Have you experienced an M&A previously? If yes, as a customer or business? Please elaborate on either.
   b. How was the customer included or viewed in these situations?
      i. And employees?
2. The acquisition
   a. How did the idea of the acquisition start, and what were the goals and expectations? Talk me through the process.
   b. What is the current degree of integration, and what is the plan moving forward?
   c. Why was Airtight chosen?/Why did you find Airthings to be a good fit?
   d. What are your learnings from this process?
3. The customers during the acquisition and post-acquisition
   a. What was the customer focus during the acquisition?
   b. Was the customer base an incentive for the acquisition/being acquired?
   c. How were they considered and at what stages of the process? How involved were customers?
   d. What changes in your customer base do you expect to see? Increase in a certain type of customer?
   e. What preparations were done to prevent negative impact on customers?
   f. To Airtight: how did you prepare/communicate with your customer base for the changeover? How was this received?
   g. Have you received any negative comments/feedback on the acquisition from customers?
4. UX
   a. What of the customer's experience were you aiming to change as a result of the acquisition?
   b. Were Airtight customers a reason for the acquisition?
   c. Were any steps taken to make customers more familiar with Airthings?
   d. How have you considered onboarding for current customers and Airtight's product?
5. Any other thoughts to share?

Appendix B – Consent forms

B.1 User consent form

Research project on M&As and the user experience

This is an inquiry about participation in a research project where the main purpose is to understand the impact of an M&A on the customer's user experience and what changes can be made to the product to ensure a positive user experience post M&A. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project
This study focuses on how end customers (end users) experience the merging or acquiring of the company they are in business with. This can impact the product they are purchasing, and the relationship with the company. Therefore the customer's perception of this event will be investigated to understand how to provide an optimal user experience for them through the product. This interview is part of the master thesis at NTNU for Interaction Design.

Who is responsible for the research project?
NTNU is the institution responsible for the project. The researcher is Armelle Grubb, 2nd year master student of the Faculty of Design. The study's supervisor is Mari Bjerck (mari.bjerk@ntnu.no), assistant professor at the Faculty of Design.

Why are you being asked to participate?
You have been selected because you are a customer of a company who recently acquired / was acquired by another.

What does participation involve for you?
If you choose to take part in this study, it will involve you being interviewed through a series of questions. They will be about your experience of the acquisition and your expectations of it as a customer. It will take approximately 45 minutes, where your answers will be recorded and then transcribed. This transcription will be sent to you for verification and highlighting any changes you wish to make.

Participation is voluntary
Participation in the project is voluntary. If you choose not to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you choose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data
No personal data will be used in the final report, only when handling it during the data processing phase. The personal data will be processed confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Any names or contact details will be removed as they are not relevant to the study. As well as myself, the study's supervisor will have access to the data collected. The data will securely be stored on Nettskejma's site, handled by UiO in agreement with NTNU.

What will happen to your personal data at the end of the research project?
The study is scheduled to end September 1st 2021. The data collected will be destroyed and deleted at the end of the study.

Your rights
So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?
We will process your personal data based on your consent.

Based on an agreement with NTNU, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:

- NTNU via myself, Armelle Grubb (armelleg@stud.ntnu.no) or the study supervisor Mari Bjerck (mari.bjerck@ntnu.no).
- Our Data Protection Officer: Thomas Helgesen (thomas.helgesen@ntnu.no)
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Mari Bjerck
Project Leader
(Supervisor)

Armelle Grubb
Student

Consent form

I have received and understood information about the project "M&AS and the user experience" and have been given the opportunity to ask questions. I give consent:

- to participate in an interview

I give consent for my personal data to be processed until the end date of the project, approx. 1st of September 2021

(Signed by participant, date)

B.2 Leader consent form

Research project on M&As and the user experience

This is an inquiry about participation in a research project where the main purpose is to understand the impact of an M&A on the customer's user experience and what changes can be made to the product to ensure a positive user experience post M&A. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project
This study focuses on how end customers (end users) experience the merging or acquiring of the company they are in business with. This can impact the product they are purchasing, and the relationship with the company. Therefore the customer's perception of this event will be investigated to understand how to provide an optimal user experience for them through the product. This interview is part of the master thesis at NTNU for Interaction Design.

Who is responsible for the research project?
NTNU is the institution responsible for the project. The researcher is Armelle Grubb, 2nd year master student of the Faculty of Design. The study's supervisor is Mari Bjerck (mari.bjerk@ntnu.no), assistant professor at the Faculty of Design.

Why are you being asked to participate?
You have been selected because you are in the leadership team for the acquiring / acquired company, meaning you were involved in the process of the M&A.

What does participation involve for you?
If you choose to take part in this study, it will involve you being interviewed through a series of questions. They will be about your experience of the acquisition, your expectations of it from a leadership perspective and the consideration of customers. It will take approximately 45 minutes, where your answers will be recorded and then transcribed. This transcription will be sent to you for verification and highlighting any changes you wish to make.

Participation is voluntary
Participation in the project is voluntary. If you choose not to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you choose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data
No personal data will be used in the final report, only when handling it during the data processing phase. The personal data will be processed confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Any names or contact details will be removed as they are not relevant to the study. As well as myself, the study's supervisor will have access to the data collected. The data will securely be stored on Nettskejma's site, handled by UiO in agreement with NTNU.

What will happen to your personal data at the end of the research project?
The study is scheduled to end September 1st 2021. The data collected will be destroyed and deleted at the end of the study.

Your rights
So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?
We will process your personal data based on your consent.

Based on an agreement with NTNU, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:

- NTNU via myself, Armelle Grubb (armelleg@stud.ntnu.no) or the study supervisor Mari Bjerck (mari.bjerck@ntnu.no).
- Our Data Protection Officer: Thomas Helgesen (thomas.helgesen@ntnu.no)
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Mari Bjerck
Project Leader
(Supervisor)

Armelle Grubb
Student

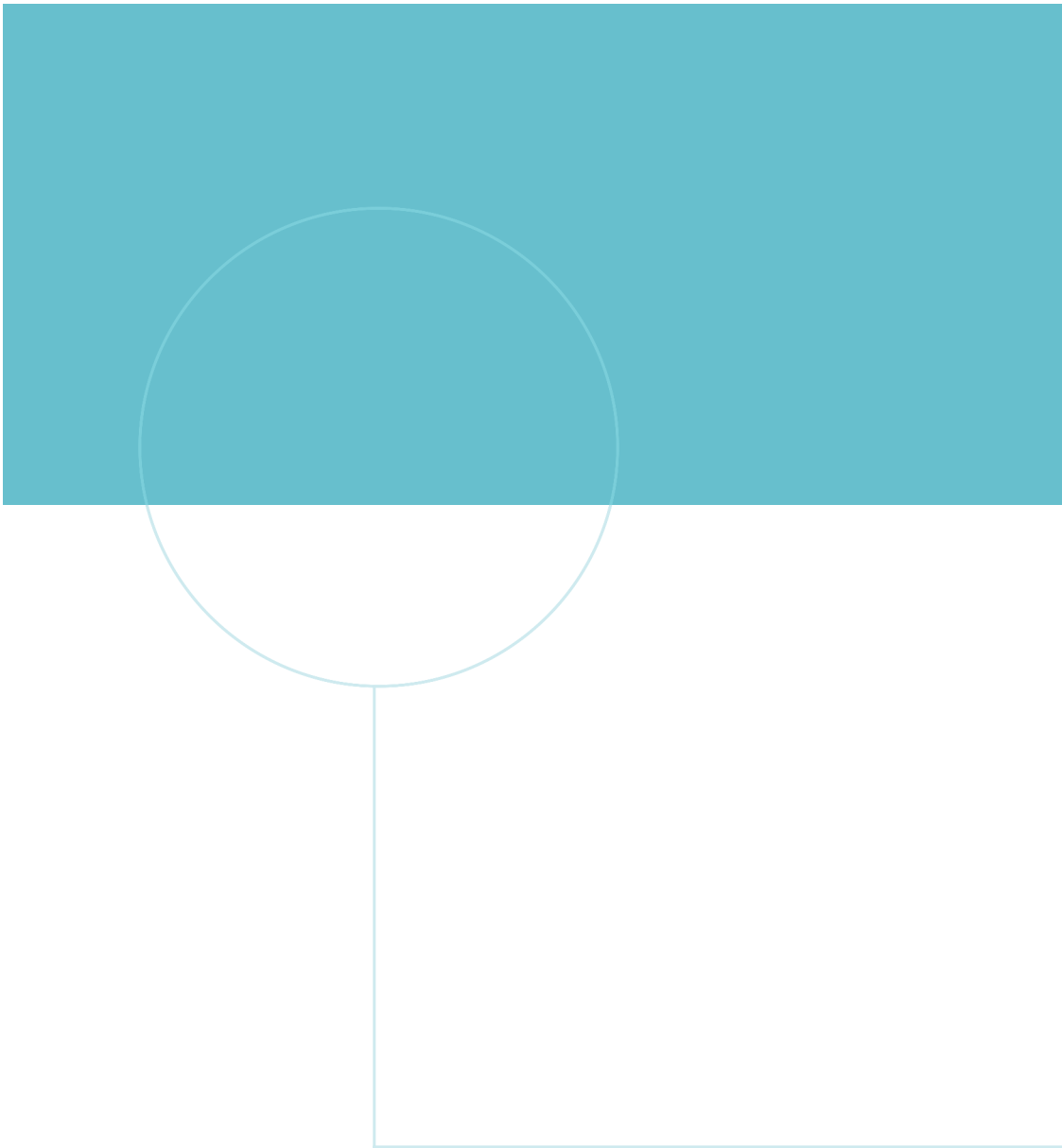
Consent form

I have received and understood information about the project "M&AS and the user experience" and have been given the opportunity to ask questions. I give consent:

- to participate in an interview
- to have my name published in relation to the interview held for this thesis

I give consent for my personal data to be processed until the end date of the project, approx. 1st of September 2021

(Signed by participant, date)



NTNU

Kunnskap for en bedre verden