HSR
HOCHSCHULE FÜR TECHNIK
RAPPERSWIL
FHO Fachhochschule Ostschweiz

Universität
Basel

Fachhochschule
Nordwestschweiz

Master of Advanced Studies in Human-Computer Interaction Design

Chasing UX Research

MASTER'S THESIS

Authors
Massimo Bartolotta, Katarzyna Kotecka-Ravasi

Coach
Christian Hauri

Client
Confidential

January 2017

Abstract

This study considers how the user experience (UX) research function can be efficiently integrated into an iterative product development process at a large technology corporation. It explores aspects of organizational structure, collaboration between different team functions and research-related communication. The hypotheses were formulated based on semi-structured interviews and verified through the observation of two teams, analysis of artifacts and validation interviews. The methodological pillars for the projects included ethnographic research, work ergonomics, grounded theory and the UX institutionalization model. This study asserts that a fully dedicated UX research function has proved to lead to the most effective outcomes, compared to a model where researchers are considered ad hoc service providers. The key success factors identified are the researchers' access to information related to product strategy, obtained through regular communication with other team functions, and participation in team meetings, especially when user-facing features are discussed. Researchers who are informed about project developments can contribute most by providing additional data points. The collaboration between all the stakeholders on defining research questions at an early stage of the project ensures stakeholder buy-in and a higher acceptance of the research results. Other factors include empowering the UX research function through a clear separation of responsibilities with user feedback collection and analysis being driven by UX researchers and finally, building credibility and respect through appropriate and impactful communication. The results of the study can be used to improve the work situation of the two selected teams, but could potentially be extrapolated to the wider organization.

Management Summary

This research paper provides an analysis and evaluation of how user experience research (UX research) can be effectively integrated into an iterative development process at a large technology company operating in the field of internet based services. UX research is a niche discipline which is maturing and becoming an established activity and the role of the UX researcher is slowly gaining status as a mainstream profession. This transition means it is no longer solely considered part of product design, without any backing in data or, in many cases, limited to ad hoc usability testing conducted by external agencies. In the near future, understanding user behavior will give companies a competitive advantage over their competitors.

The objective of the commissioned study was to identify a set of recommendations about how different product team functions (product management, software engineering and UX design) should collaborate in the product development process. These recommendations should be beneficial for teams already working with UX research as well as for new teams considering bringing the function on board.

After a period of assessment and exploration, two teams were selected for collaboration. The teams varied in size, structure and type of product developed as well as product maturity. In both teams the UX research function was integrated in the product team.

The study included three main phases: one for data collection, one for analysis and one for validation. For the data collection, nine semi-structured, individual interviews were conducted with the representatives of each team function from the selected teams. The interviews were designed to learn about the way the teams operate and to understand the challenges and the wider organizational context and culture. For the analysis, the individuals were observed in a series of team meetings and events. The analysis also examined artifacts such as research plans, user studies reports, design documents, design critiques and email discussions which were provided on request. In the last phase of the study, the validation, additional interviews were conducted with selected individuals who had been observed in specific situations. The aim of the validation phase was to get additional context on the observed events and to confirm the conclusions of the writers which would eventually lead to the final recommendations.

The theoretical framework for the study was based on four methodological pillars: ethnographic research, work ergonomics, grounded theory and the UX institutionalization model. The ethnographic research, a method which originates from the naturalistic tradition of qualitative research, was the main methodological framework and was used to gather empirical data. Work ergonomics deals with analyzing, designing and arranging work environments and processes; the processes used in this domain were partially applied throughout the project. Grounded theory, a systematic methodology, was used to analyze qualitative data, identify patterns and explore the data to formulate the hypotheses of the study. The fourth methodology to support the study was UX institutionalization model, a three-level model showing the relationships between the key elements of the successful integration of usability engineering, user experience and user-centered design in an organization. The model gave the study additional organizational context.

The analysis showed that the desired level of integration relied on a multitude of factors. These factors included access to information related to the strategy and the product roadmap gained

from frequent communication between the researchers and the other team functions especially product management, participation of the UX researchers in team meetings especially those where user-facing features are discussed, and empowering the UX research function through a clear separation of responsibilities with user feedback collection and analysis being driven by UX researchers and not by other teams.

Having a fully dedicated UX research function, bringing valuable domain expertise, has proved to lead to the most effective results, as opposed to consulting the researchers on an ad hoc basis, treating them as internal service providers. Researchers who are informed about the latest product status can step in whenever additional data points are needed and thereby provide the most value to the product development. Collaboration on defining research questions with all stakeholders at a very early stage of the research projects ensures the stakeholder buy-in and higher acceptance of the research results. And, finally, another key aspect to take into account for a successful integration, is setting a balance between stakeholder involvement in the research projects and the ownership of those projects by the qualified research staff.

In summary, the key recommendations are:

- include a dedicated UX research function in the product team
- fully integrate UX research methodology into the product development process
- make strategic information available to all team members
- collaborate closely with the stakeholders on defining research questions
- find the right balance of stakeholder involvement and research ownership

Table of contents

1 Introduction

1.1 The project

The presented Master's project addresses the question of how user experience research (hereafter referred to as "UX research") can be efficiently integrated in an iterative product development process. The basis of the project is the analysis of these processes at a large software and hardware company (hereafter referred to as "the company", "the organization" or "our client") which delivers consumer and enterprise products on a global scale; its name will remain confidential throughout this paper. This study's objective is to present a set of recommendations designed to optimize the analyzed development processes.

1.2 User experience

The user experience (UX) discipline is rooted in the fields of cognitive psychology, human factors and ergonomics and goes back to the late 1940s. It only became more prominent, however, in the early 1990s as a result of personal computers becoming commonplace at work and in the home. The development of the UX discipline has been heavily influenced by the cognitive sciences that brought the theory and practice of researching human behavior into the field of UX. This evolved into a unique discipline within the UX domain – user experience research – that can be distinguished from user interface (UI) design or interaction design. While user interface or interaction design focus on conceptual work related to the space where interactions between humans and machines occur and the behavior of the humans and machines with which they interact, UX research *"focuses on understanding user behaviors, needs, and motivations through observation techniques, task analysis, and other feedback methodologies."* These latter activities are part of the requirements engineering process whereas user interface or interaction design can be seen as either a technical implementation of the requirements identified or a discipline that designs patterns of interactions between humans and machines or systems.

UX research can be conducted in many forms and can involve a direct interaction with the users or an expert review run by usability professionals. Analysis of qualitative information or quantitative data collected through live experiments or surveys can also be part of UX research. Some examples of research methods are the following:

- *Usability Research* is an evaluation method identifying usability issues arising from a product or of an early concept of it.
- A *Contextual Inquiry* is used to observe users in their natural environment in order to understand their work processes.
- *Card Sorting* is a technique designed to optimize information architecture by asking users to group information into categories.
- In *Quantitative Research*, a large number people are surveyed to get representative statistical results.

Just as the focus of user research and UI/interaction design disciplines differs, so does the educational background of researchers and UI or interaction designers. Researchers are, by training, better equipped to observe and analyse human behavior and they may not necessarily have any grounding in the expertise needed to design interfaces. They frequently come from the

field of cognitive psychology, human computer interaction studies or anthropology. Designers, on the other hand, generally have a formal education in visual design and human computer interaction design of front-end engineering. As always, the borders are fluid and professionals in each of these disciplines may be working in either role, but the skills needed to excel in the field of research are different to those essential in the design field.

Few companies have invested into building up internal UX departments, and having a dedicated UX research function is even less common. UX research is frequently carried out as part of a design role and is often limited to ad hoc usability testing conducted by external agencies. Time and again user experience is seen as simple design activity without any quantitative basis. Our research has indicated that "user researcher" is only slowly gaining a position as an established profession.

Data from the popular job aggregator indeed.com can be used to illustrate this situation. The results for a "UX research" query in the United States give 4,577 results[1], with "UX design" query resulting in 12,015 hits[2]; the more specific query "UX researcher", results in 997 open positions[3], ; the more specific query "UX researcher" results in 997 open positions , while "UX designer" returns 6,828 openings[4]. Looking at the Swiss market, the same search respectively gives zero results for "UX research" (or "UX Forschung")[5], 36 results for "UX design"[6], two results for "UX researcher" (or "UX Forscher")[7] and 27 results for "UX designer".[8]

Country	UX research	UX researcher	UX design	UX designer
US	4,577	997	12,015	6,828
CH	0	2	36	27

Table 1: Open positions on indeed.com

Based on these numbers, UX research may appear to be a niche discipline, in particular on the Swiss market. When looking at the US market, it's clear that the discipline is maturing and is becoming an established activity. This applies not only in large companies who are able to invest time and resources into understanding user behavior, but also for start-ups looking into gaining a competitive advantage over their competitors through a better understanding of their actual and their potential users.

Markets in developed countries observe and adopt the trends of the North American technology industry, meaning that UX research will most probably establish itself as a separate discipline in Europe as well in time. Regardless if UX research will at some point become part of design activities or be run as a dedicated function within the product team, the broader question of its integration into the product development process will remain vital.

The challenge of integrating UX design or user-centered design methods into software engineering processes has already been explored in several publications and therefore we will not elaborate on

[1] https://www.indeed.com/jobs?q=UX+research&l=United+States (as of 7 January 2017)
[2] https://www.indeed.com/jobs?q=UX+design&l=United+States (as of 7 January 2017)
[3] https://www.indeed.com/jobs?q=UX+researcher&l=United+States (as of 7 January 2017)
[4] https://www.indeed.com/jobs?q=UX+designer&l=United+States (as of 7 January 2017)
[5] https://www.indeed.ch/Stellen?q=%22UX+research%22&l=Switzerland (as of 7 January 2017)
[6] https://www.indeed.ch/Stellen?q=%22UX+design%22&l=Switzerland (as of 7 January 2017)
[7] https://www.indeed.ch/Stellen?q=%22UX+researcher%22&l=Switzerland (as of 7 January 2017)
[8] https://www.indeed.ch/Stellen?q=%22UX+designer%22&l=Switzerland (as of 7 January 2017)

the topic in this paper. Our focus here is specifically on the on the integration of UX research. This topic hasn't been granted much attention yet, making this of particular interest to the project team members.

1.3 Project goal

The principal goal of this project is to identify a set of recommendations about how to bring UX research and other functions together in an efficient and effective manner, based on our analysis of the integration of the UX research in the product development process of the company.

These recommendations should be beneficial for teams already working with UX research and for new teams considering bringing the function on board. Focusing on one specific organization, the analysis and the validation have been conducted exclusively at the selected company. It is not our intention to produce universally applicable recommendations, although our hope is that they will prove to be useful for other organizations as well.

1.4 Personal motivation

As UX professionals, being able to conduct this study at a major influencer of the software industry is not only a great honor but also a great opportunity to make a real impact in the field. We would like UX research to be established as a core element in the successful delivery of usable products.

The subject is also of interest to us in our daily practice. Working in project management roles and personally introducing UX research to the product development process, we hope to apply some of our findings and influence our current roles and projects. We also regard the study as a catalyst for an opportunity for personal development and to increase our own academic knowledge in this field.

1.5 Project context

The project originated from the question of how to optimize the integration of UX research in an Agile environment. This question is relevant for every team already working with the research function or is considering doing so in the future. Two factors highlight the importance of this topic: firstly, the incredible business success of companies who have already invested extensively in product design, with Apple being the best example, and secondly on a broader scale, the omnipresence of technology in our everyday lives. This leads us to believe that better understanding users will become a critical element in the product management lifecycle of consumer-focused companies in future, and will play a significant role in the success of all companies who operate in this sector.

The organization we analyzed is a technology corporation operating in the field of internet based services. It has offices in several major cities globally, including Zurich, Switzerland. The company takes pride in its innovative and highly dynamic culture with engineering playing a major role in shaping its products. The company develops products and services for individual consumers as well as enterprises.

The company's organizational culture can be described as democratic and not overly hierarchical. Its approach is strongly data-driven and results-oriented. Innovation is at its core. Creating

innovative products in an efficient way is expected. Independent thinking is highly valued and the employees have plenty of freedom in both their working methods and working tools. Using particular methodologies or formalized processes are not the central part of their efforts. This obviously impacts the product development process, as there is not one specific methodology followed across the company. Some teams experiment with more formalized project management methodologies, but probably none of the teams follow the industry's major development practices (such as Scrum or XP) strictly by the book. As an example, it is not uncommon for teams to have daily stand-ups, a meeting format borrowed from Agile, or to work with user stories or track the development of features in a certain way, but none of these teams consider themselves as Scrum teams.

This flexibility is also reflected in the way UX research works together with the other product functions. The principle of all the functions working closely together is present across the organization, but the exact approach depends on the particular teams. The teams are linked through one common goal: create successful products people love to use.

The typical teams that work on product with user-facing features are set up as indicated below. Every product has a dedicated product team. Larger products have more than one product team, focusing on selected functionalities. Typically, a product team includes product management, software engineering and user experience (UX) experts. The UX experience research function may not be part of the team, which is especially common in case of smaller or less mature teams, but not only.

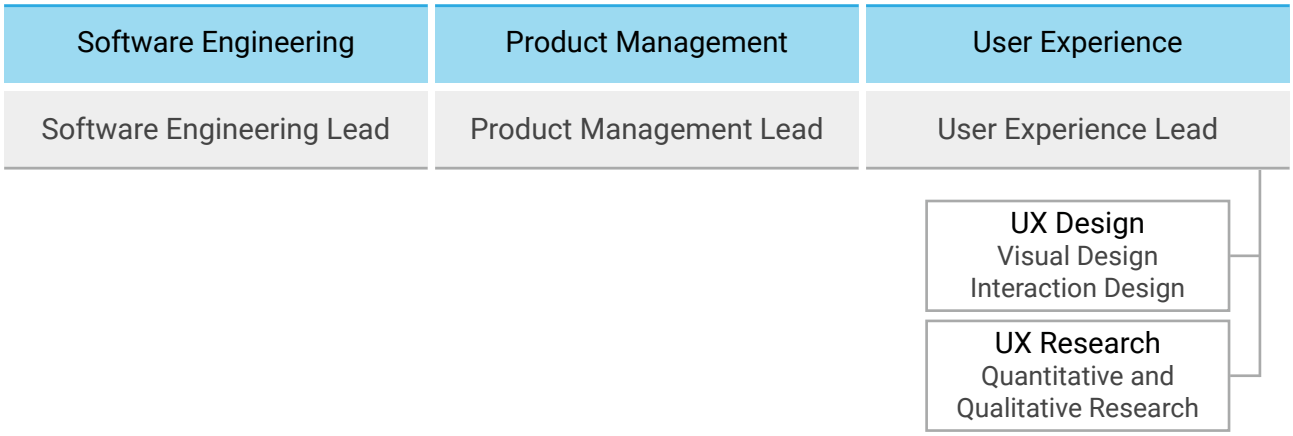

Figure 1: The organizational structure of product teams

Each of these functions are led by a so-called *lead*, a senior individual managing certain functions and giving directions. The product management lead is responsible responsible for decisions related to product features and owns the product roadmap. The software engineering lead is responsible for the technical side of the product development and the UX lead manages aspects directly linked to the user experience. For teams that do not work on user-facing features (for example those responsible for technical infrastructure or software reliability) the UX team as a whole is absent.

Looking closer at the UX function, we can distinguish activities such as visual design, interaction design or user research. For the analysis conducted for this project, we have not distinguished between the roles of the visual designer, the interaction designer or the UX designer, as the responsibilities of these three roles frequently overlap. For example, the visual designers often fully

own the user interface design. For simplification, we will treat this area as UX design.

It is important to highlight that in the analyzed organization UX design is separated from the UX research. They both belong to the UX function, as illustrated above, but it is not the responsibility of a UX designer to directly engage in user research activities. Some UX designers may validate their concepts if there isn't a UX researcher assigned to the team project, however it is not a standard approach.

It can be observed across the organization that the UX research element is only introduced once the team matures and it becomes clear that collecting user feedback on an ad hoc basis or working with the researchers assigned to other products or external UX agencies does not fully cover the team's needs. Until the team comes to this realization, user research may be conducted as a side activity of other professionals (UX designers or sometimes even product managers), or may not be part of the product development process at all. Once a dedicated UX research element is added, it is integrated in the product team and the researcher reports to the UX lead. There are various degrees of integration; this will be detailed further in later chapters.

Since structurally the UX design function in a product team is established before the UX research function, often the UX lead has a background in design. Less frequently, the UX design is led by an individual from the UX research discipline. To our knowledge, this situation is not due to a lower appreciation of UX research as a methodology within the organization, but is simply the results of a higher number of staff in UX design. Additionally, the introduction of the UX research later into the process contributes to the uneven distribution of roles.

Looking more broadly at how UX teams are set up across various organizations, the separation of UX research and UX design is not a standard approach. One could argue that integrating the activities of researching human behavior and producing prototypes or interaction concepts should be integrated into one role. In the analyzed organization however, the relative separation of these two functions (relative since they are still part of a broader UX function) is the response to the assumption that UX designers may not be fully objective when it comes to their own designs and the evaluation run by them may be biased, in favor of their own design ideas.

Further, designing interfaces requires different skillset to conducting user research. The first one requires strong skills on the conceptual and visual side, and the latter requires strong analytical and observational skills. While the two disciplines are strongly connected, at the same time they follow different educational tracks and produce a different knowledge base. While these are some good arguments supporting the creation of a dedicated user research function, this configuration brings challenges, especially in the field of communication and close cooperation between these two sub-functions. We will examine and describe in details how the analyzed teams work in later chapters of this paper.

In this context, UX research, as a specialized function, typically reports to the UX lead. In some cases, a UX researcher leads all UX activities including the design. Having a dedicated UX researcher is not always the norm. In teams without dedicated researchers, UX research may be conducted by other professionals such as UX designers or even product managers, or may not be part of the product development process at all. Typically, whenever a dedicated UX research function exists, it is integrated within the product team and researchers work alongside the other functions.

This flexibility is also present in the way UX research works together with the other product functions. The principle of all the functions working closely together is applied across the organization, but the approach depends on the particular team. In the end, what matters most is to create successful products in a timely and efficient manner.

1.6 Process and methods

In this project we are looking at how user research can be efficiently integrated in the product development process. As the research topic indicates, we are interested in investigating the UX research; we have however excluded UX design from our analysis. At an early stage of our examination, we decided to identify teams already collaborating with UX research and work with them to firstly understand the current practices and secondly to identify potential process improvements.

2 The Process

2.1 The starting point

Our first steps were to identify the teams for collaboration and narrow down the project scope.

Given that learning how the teams work was one of the core elements of the project plan, running some form of ethnographic research seemed the most appropriate approach. One of the writers of this paper started conversations with various teams in the organization who already have a UX research function in place. The main goal of this engagement was to assess the teams' interest in participating in the project. The second goal was to better understand the structure of the teams and to identify how a typical team functions. This was a crucial commitment allowing us to draw conclusions applying to as many teams as possible and thus maximizing the relevance of our work for the client.

2.2 Selecting the teams

Eventually two teams were selected for our collaboration. In both the teams, UX research function is integrated in the product team and research projects are run exclusively for the assigned team. This means that the UX researchers in both teams are invited to participate in all the important team meetings, have access to all relevant communications and are regarded as part of the specific product team, as opposed to being a service or consulting function working with various products.

Both selected teams are geographically spread throughout two to three locations, which is a common situation within the analyzed company. The teams vary in size, structure and type of product developed as well as product maturity.

2.1.1 Team A

Team A is a well established team working on a popular product used by both enterprise customers and individual consumers. The product is relatively mature and has been evolving for nearly ten years. The team consists of large group of software engineers, several product managers, who are responsible for selected features and parts of the product (we will call it product streams), as well as several UX designers and the UX researchers.

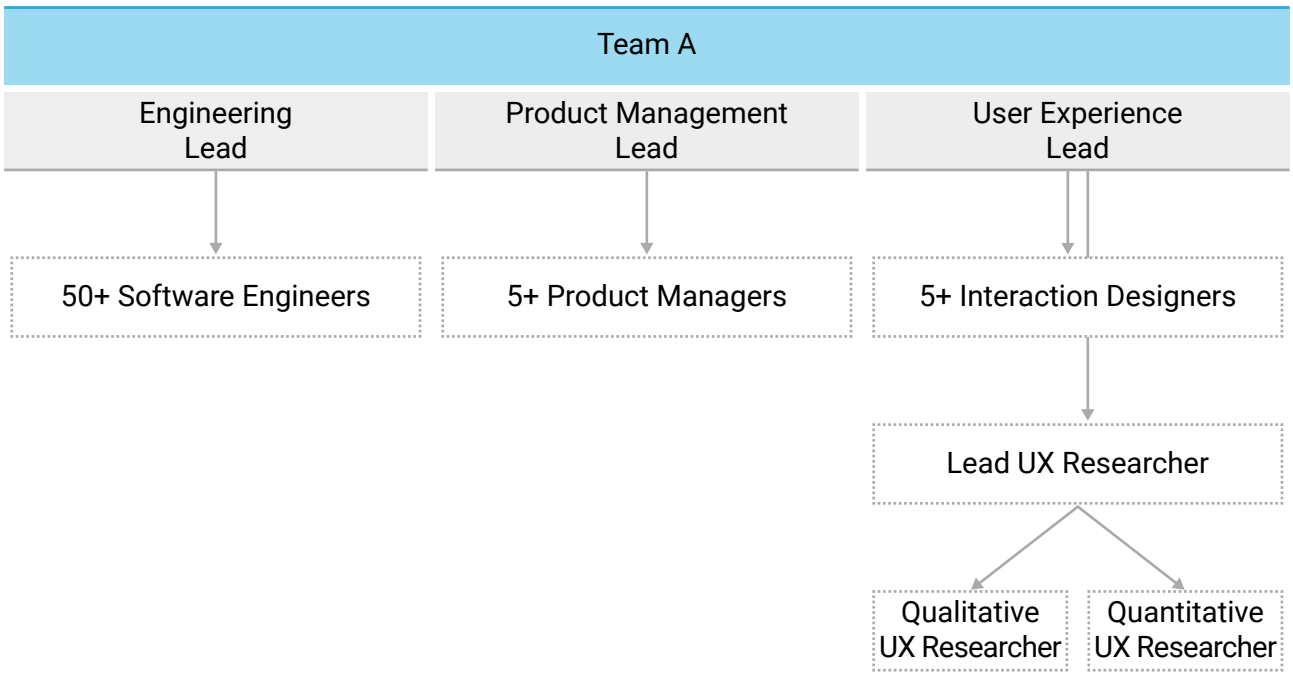

Figure 2: The organizational structure of team A

Geographically, the members of the engineering team are mostly based in Zurich, with one sub-group based in London, and a few individuals based in one of the US offices. The product managers are almost entirely based in Zurich as well, only one member is located in the US. The UX team is also located in these three locations with the researchers based exclusively in London and the UX designers are split between London, Zurich and West Coast of the US.

The team has worked with a dedicated UX researcher for about five years. The first researcher worked with this team for about four years and in early 2016 that person was replaced by the senior researcher. A few months later, the team eventually grew to three UX researchers. One of the newly hired researchers is responsible for the qualitative research methods and another one focuses exclusively on the quantitative ones.

A further expansion of the team is planned. It is important to note that the hired qualitative UX researcher is a temporary contractor. All the other individuals are hired by the company with permanent work contracts. Further on we will learn about the impact this has on the way the team functions.

At our client ranks are called levels. In the organizational hierarchy the UX lead is few levels, lower than the engineering and product management leads. However, when looking at all the functions in team A, namely product management, software engineering, UX design and UX research, this inequality is not necessarily reflected in product team structure. The structure being rather diverse, all levels of seniority are represented in the product management and the software engineering functions. Therefore we can not conclude that employees of UX teams have lower levels as a general rule.

2.1.2 Team B

Team B is a relatively new team that was established approximately three years ago, when the product development started. The product is a consumer application launched in the second half of 2016. The team consists of several software engineers, one product manager and small UX

team consisting of one UX designer and one UX researcher. The UX lead is not dedicated only to team B, but is also leading UX activities for two other products related to some extent to the product developed by team B.

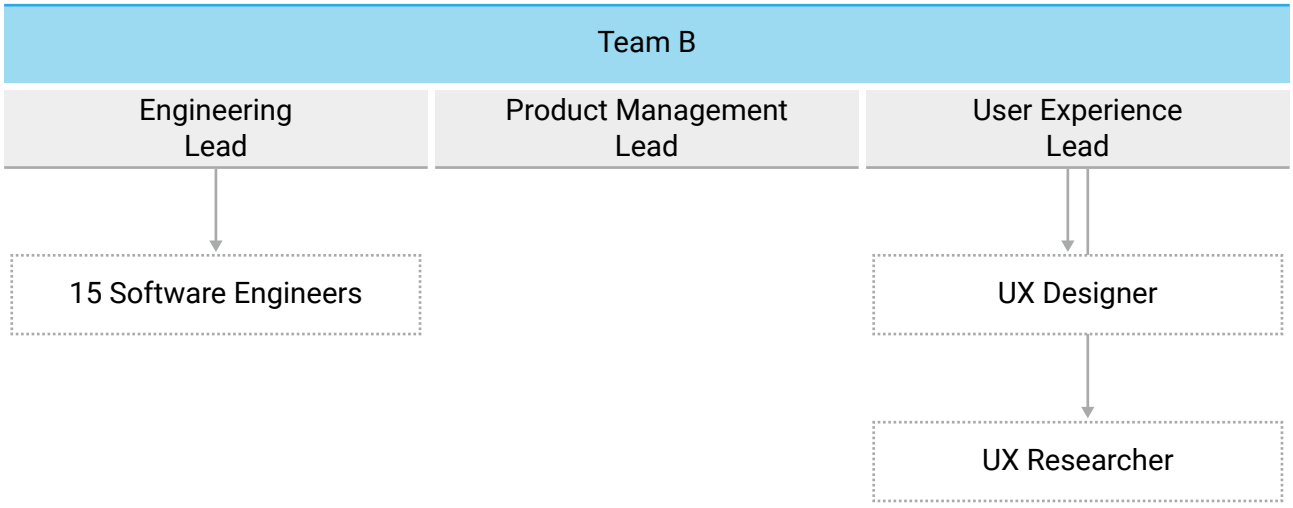

Figure 3: The organizational structure of team B

The team is mostly based in Zurich. The product manager and the UX researcher are based in various parts of the United States across time zones.

The UX function has been gradually developed and a dedicated UX researcher joined the team two years after the team was established. Previously, the team collaborated with the researchers responsible for other products on an ad hoc basis. At times they would use existing research findings related to the products or they were specifically commissioning user research services from the researchers working for other teams.

Hierarchically, the UX lead is on a similar level as the individuals responsible for the other product functions. The researcher's level is still low, since she transitioned to the UX research position from another role within the organization when joining the team B.

2.2 Project phases

Our project can be divided into three main phases: one for data collection, one for analysis and one for validation.

2.2.1 Data collection

In a first phase, keeping the main question in mind, *"how to efficiently integrate UX research into the product development process"*, we narrowed down the project scope by selecting two to three research questions. To determine the areas with the most impact for the product teams, we decided to conduct interviews with the stakeholders from the selected teams. We started with a stakeholder analysis identifying the individuals on the frontline of the product development process and therefore able to give us most information on the current process.

Looking at the collaboration between the UX research and the other product functions, we wanted to make sure that the perspectives of all the parties involved would be considered. Our assumption was that although all main functions (product management, engineering and UX) work together to

produce successful products, they may have different ways to achieve their common goal. At times, what may seem useful from an engineering perspective, may not easily receive the desired acceptance by the other functions. On top of that, a certain degree of flexibility is necessary to balance the team's needs and the wider business goals.

To understand these sometimes different perspectives, we conducted semi-structured, individual interviews with the leads of all the functions from both selected teams. The interviews were designed to help us learn more about the way the teams operate and to understand the current challenges, as well as understand the wider organizational context and culture. Based on the interviews, we hoped to determine the factors impacting the cooperation between the product functions to the greatest extent and use those factors to formulate the hypotheses for our further research.

2.2.2 Analysis

The hypotheses formulated at the end of the first phase served as a basis and a starting point for the observation. For the second phase of the project, we chose to both observe the teams directly during various meetings and key events, and to analyze selected artifacts we received from the teams. These documents included user studies, design critiques and email discussions. The observed events and the examined artifacts covered the direct involvement of UX researchers. After the observation we interacted with the team members to collect additional information and to better understand the observed phenomenons.

2.2.3 Validation

For the third and final phase of the project, we decided to run the validation of our conclusions. Initially, our intention was to validate the proposed process design with the wider organization, presenting it in form of an online questionnaire to teams which had not collaborated with us on the project. However, during the observation stage, we came to the realization that we were missing additional context of the events observed and that our interpretation of the observed events had not always been correct. So we opted for additional interviews with selected individuals directly involved in the observed situations. We hoped to verify our observations directly with them.

Since part of our project goal was to also provide process recommendations, confirming the degree to which our interpretations are correct was a further opportunity to ensure we had accurate conclusions and were making appropriate recommendations to the client.

Our three phase approach will be discussed in greater detail later on in this paper.

2.3 Selecting the literature and the methodologies

To provide a theoretical framework for this interdisciplinary project which is more than a purely UX work, but also touches questions of organizational analysis, we did not limit our methods to the UX discipline. We used approaches found in user experience, sociology, work ergonomics, ethnography and project management.

2.3.1 Ethnographic research

Our main methodological approach was the ethnographic research. Ethnography is a research method which originates from the naturalistic tradition of qualitative research. The base assumption of this approach is that the social reality, being external to the researcher, can be observed and described (Babbie, 2013, p. 329). Ethnography relies on the systematic study of people in their environment. Empirical data are collected through face to face interviews with the members of the studied group, through direct observation and analysis of artifacts.

One of the core elements of our project was to analyze the current processes. In order to do that, the direct data collection through these research techniques we found the most fitting approach. Throughout our project work we had the chance to use all these research techniques: first we ran interviews with the members of the analyzed teams, then we observed the teams directly and towards the end we studied relevant artifacts.

2.3.2 Work ergonomics

In addition to the ethnographic research approach, we were also inspired by the French school of work ergonomics (Guérin, Laville, Daniellou, Duraffourg, Kerguelen, 2007). *"The word 'ergonomics' is used to describe the science of work. More precisely, the aim of ergonomics is to define the rules of work."* (Guérin et al., p. 24). Although we did not run a full ergonomic intervention as described by Guérin (Guérin et al., p. 126-129), we implemented most of the steps in the process defined in the mentioned book. *"An ergonomics intervention can be considered as a construction that starts with a request, is then planned, and finally takes on form during the intervention itself."* (Guérin et al., p. 126) Generally, an intervention is requested by a client in need for a solution to one or more issues of a work situation. Based on the initial request, the ergonomist identifies the major issues in *"a formal proposal for an intervention"* (Guérin et al., p. 126). The proposal includes the necessary resources, the timescale and the expected results. Once the proposed approach and the formalities are agreed by all parties involved, the ergonomist starts his analysis which includes open and systematic observations leading to a diagnosis, or ergonomics assessment, of the work situation. *"From this diagnosis or assessment, the ergonomist will then suggest possible directions for producing solutions"* (Guérin et al., p. 128).

First we analyzed and reformulated the initial request. Afterwards, through interactions with several stakeholders, we gathered information that helped us understand how the organization operates, identify existing constraints and establish relationships between them and the activities of team members. At that stage, we established how the existing work situation impacted the way various product functions collaborate. The information gathered allowed us to formulate a pre-diagnosis and the hypotheses based on which we selected work situations that would be suitable for further analysis. During the systematic observation, we validated the hypotheses and prepared a local diagnosis, which is an actionable assessment of the current situation with the challenges identified as well as the factors that could be changed in order to impact the work situation. Based on the diagnosis we could formulate recommendations that could potentially be extrapolated in the wider organizational context, outside of the concrete teams we worked with.

2.3.3 Grounded theory

Approaching this project we did not have any ready hypotheses we wanted to test. Our hope was that during the early research we would be able to identify some patterns and discover the data enabling us to formulate our hypotheses. While looking for research paradigms, we realized that our initial approach fitted well with the grounded theory. Our investigations into this particular approach provided further inspiration. Grounded theory is essentially an attempt to derive a theory from analyzing patterns, themes and common categories revealed from observed data (Babbie, 2013, p. 332). In this project, we are obviously not trying to create any theory, but the adoption of the grounded theory approach to data analysis proved to be extremely useful, especially during the first phase of our project. The qualitative, semi-structured interviews provided us with the large amount of data that could be systematically organized through iterative reading of data, their coding, labeling and categorization (Borgatti, 2016[9]).

2.3.4 Institutionalization

The project addresses the question on how to integrate UX research in the product development process. In doing so, it enters the field of organizational analysis. Hauri and Rosati identified key elements of a successful implementation of usability engineering, user experience and user-centered design in an organization and built a model showing the relationships between these factors (Hauri, Rosati, 2011):

Model for anchoring user experience in an organization
The three levels must be considered simultaneously.

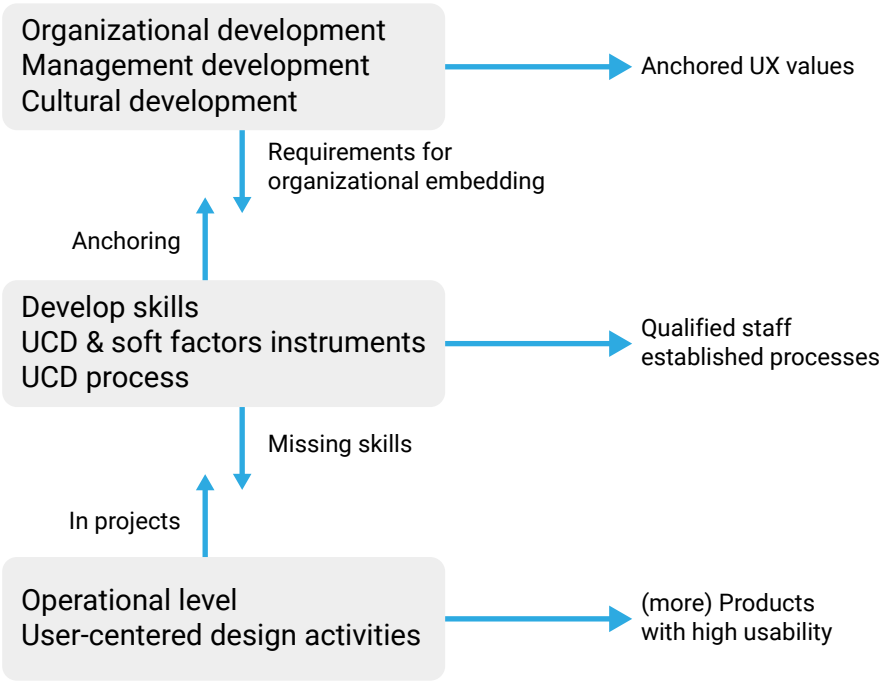

Figure 4: Model for anchoring user experience in an organization

[9] http://www.analytictech.com/mb870/introtogt.htm (as of 7 January 2017)

According to this model, user experience can gain a foothold in an organization only if the integration is taking place at the three levels described further on. It is important to emphasize that all three levels are interconnected and depend on each other.

1) *Operative level*
   At this level it is necessary to recognize that good usability is part of a successful product and user-centered methods need to be part of a standard project approach. Short iterations allowing immediate testing with the real users are a core element of this approach.

2) *Institutional level*
   Development and standardization of processes and the relevant skills are at the heart of this level. In order to efficiently implement user experience at the operative level, it is necessary to introduce certain tools, such as design styleguides, pattern libraries, prototyping tools and so on, as well as develop competences among the team members, for example, in the field of interaction design and evaluation methods. The user-centered methods need to be widely accepted and become self-evident in the projects.

3) *Level of organizational culture and values*
   For the sustainable integration of user experience in an organization it is necessary to make UX part of the organizational culture and also recognize its value in the highest levels in the company. This ensures that if team members are replaced by the new staff, user-centered methods will be still part of the product development process. Successful projects in which UX teams provided a real value and helped the organization achieve its goals (measured long term thanks to selected metrics), can demonstrate that investing in UX is the right approach. The user-centered methods need to be integrated in the work processes and user experience needs to be part of the decision making processes at the top level.

2.3.5 Four pillar model

In summary, the approach for our research study could be described as a four pillar model. Each technique used in our work had its purpose and covered a specific area of the study. The ethnographic research provided us with important demographics, the work ergonomics taught us about human aspects, the grounded theory helped us analyzing the gathered data and formulate the hypotheses and finally the institutionalization model gave us organizational context.

With these four pillars, we found a set of research instruments which proved to be useful throughout all project phases. These instruments served as reference but also as starting points for our thinking when newly found data needed interpretation.

Our project			
Etnographic research	Work ergonomics	Grounded theory	Institutionalization

Figure 5: The four pillar model

3 Iterative product development

In software development, “iteration” is the term used to describe “the act or repeating a process, either to generate an unbounded sequence of outcomes, or with the aim of approaching a desired goal, target or result. Each repetition of the process is called an iteration, and the results of one iteration are used as the starting point for the next iteration” , it is usually an executable code. By delivering software early, and often, the development team can collaborate with the stakeholders to ultimately produce the best version of a product.

“Each iteration starts with iteration planning and ends with customer acceptance. (...) Every user story accepted for implementation during an iteration must be entirely completed within that iteration, including passing all unit and customer acceptance tests.” (Beyer, 2010, p. 7) Acceptance tests are automated test cases run by the stakeholders to ensure that the deliverables meet the acceptance criteria they have defined. A successful acceptance test is the prerequisite for the deployment to production.

Building software iteratively is not only more flexible than developing in a non-iterative sequence, as practiced in the Waterfall approach, the design process that preceded Agile, but has also the advantage of an early-stage identification of potential risks and blockers. As a result, cost and time can be saved, and even project failure can be avoided. If tests unveil major defects or incorrect implementation of the clients’ requirements, changing the direction of the project is significantly easier in the iterative approach than it is in the sequential development.

3.1 Agile

Given the widespread shift toward Agile and our client’s position as one of the world’s most innovative software and hardware companies, we made the initial assumption that our client had adopted Agile in all of its design processes during the preparation of our research study. This assumption proved not to be correct.

Our interview partners denied following a formal design process such as Agile. They did confirm, however, that software is developed in phases which, at first, can be as long as half a year but over time become shorter and more structured once the product reaches a certain level of maturity. When the team finds the product mature enough to be presented to a small internal audience, it is being released to a so-called fishfood channel. Fishfood describes the early stage of the development and the software released to the fishfood channel is not finished. The aim of the fishfood release is to get early feedback from the development team or wider group of internal employees. The term originates from a previous product codenamed *Emerald Sea*. The product wasn’t finished enough to be considered dogfood, the channel for near to public go-live products, so it was called fishfood. Dogfood, on the other hand, originates from a dog food company[10] in the 1970s and is often used by corporations to describe the phase in which products are made available to a broader audience of internal users. The products in question are usually close to being usable for external users.

[10] https://en.wikipedia.org/wiki/Eating_your_own_dog_food (as of 7 January 2017)

The teams we have worked with are in the comfortable position of being dependent on external parties only to a limited extent and therefore they frequently work with flexible deadlines for product launches. The teams do set a launch date they work towards, but since there are no physical products manufactured by third parties or market pressure caused by the time of the year when products should be ready for commercial sale (for example Christmas), there is a relative dose of freedom when setting the target date for launches. There are company-wide goals which are communicated periodically, but the product teams are relatively free to execute their work and set their priorities in any way they want. The delivery of products is not continuous. The development can be postponed or stopped any time if there is a sudden shift of focus or if the resulting product no longer meets the requirements.

The company's immense success is, amongst other factors, based on its results-oriented culture allowing individuals to explore ideas which might or might not result in useful deliverables. For example, a product management lead would encourage a team member to freely work for five or six weeks on a piece of software code believed to have potential without assigning additional tasks to the employee. This is both a demonstration of trust towards the team member and a great motivator from leadership.

In summary, our client's approach can be labelled as *"loose agile"*. It contains *"waterfall-esque"* aspects in the beginning of the development process but becomes more iterative the more it advances.

3.2 The benefits of UX research in iterative product development

3.2.1 The user's advocate

Adding UX research to the iterative product development has several beneficial aspects. One of these aspects is the close collaboration of the research team with the other functions, continually providing them with information from internal and external studies, established methods or from personal experience. Working closely with the team also ensures that the UX researcher can act as the user's advocate throughout the development process so the user's needs are taken into account.

3.2.2 Informed decisions

From a communication perspective, it is valuable to involve the UX research in all the steps of the development. While it is not necessary for the researchers to get involved in the discussions related to backend efforts or software reliability, the UX researchers need to be informed about the capabilities of the technology used in order to properly advise on the feasibility of functionalities. Having the whole set of available information leads to a better understanding of the product, to a more accurate contribution and a better final outcome. Informed decisions also help avoid reengineering right from the start. UX research is in the best position to answer the critical questions, *"Are we doing the right things?"* and *"Are we doing them in the right way?"*.

3.2.3 To build or not to build

Another advantage of having the researchers as part of the product team rather than involving them as ad-hoc service providers is the quick and easy access to them when there is a need for new features or changes in existing products are required. The researchers can provide important

data points from previous studies or early validation through a new specific user study before the development begins. Knowing if a planned feature is of interest to the target audience or not, is crucial information influencing future decisions at every level of the product's evolution.

3.2.4 The product's evolution

UX researchers have the means and the expertise to track the impact of the product after its launch. They are able to determine if a particular feature was well received by users or if adaptations are needed in future releases. As researchers are trained to be objective, to ignore their personal preferences, when assisting product development, their unbiased perspective can be beneficial for all post-launch activities. Those activities can include testing with users and measuring the performance through analytics. Based on the lessons learned during the project, they can give impartial and data supported advice on further steps to take in the product lifecycle. UX researchers can act as the bridge to the next version and shape the future experiences.

3.2.5 Building the ideal setup

The organizational culture of a company is always reflected in the quality of its products. Establishing UX research as a permanent function, along with the product management, the engineering and the UX design teams, definitely strengthens the product team. Having easy access to relevant expertise in the field of user-centered design, studies data and other powerful research tools is beneficial to all individuals, helping them to deliver the best possible solution for the end user.

By treating the UX researchers as equal partners and not just service providers, and by appreciating their contributions, a work environment can be created in which individuals feel respected and valued and the best ideas can arise from diverse perspectives. The UX research function can act as a constant companion throughout the product development, proposing solutions and providing evidence from research at all stages of the development.

3.3 The limitations of UX research in iterative product development

3.3.1 Time

Integrating UX research into the repeated cycle model of iterative product development can be challenging. Iterative cycles usually last two to three weeks. Preparing and conducting the research is time consuming and it does not produce results at the same pace as the defined tasks of the model. Time boxing[11] research would deliver inaccurate research results potentially leading to the implementation of undesired features.

3.3.2 Late involvement

In some cases, when UX research is not fully integrated into the product team, researchers are only brought in when the development team is running into problems they are unable to solve themselves as they lack the appropriate domain expertise. At this stage, it's usually too late for researchers to make a difference and they are expected to solve the problems without making any substantial changes to the product. Often this is an impossible task because the encountered

[11] https://en.wikipedia.org/wiki/Timeboxing (as of 7 January 2017)

issues indicate major flaws which cannot be addressed with quick cosmetic fixes, or a 'lipstick approach', as one the UX designers phrased it.

3.3.3 Don't ask the users

"Users are not good at articulating what they do. This is the problem of tacit knowledge : users have internalized the details of how they work. When asked questions about what they do, what problems they have, and what they need, the details of their own work are hard for them to recall. So the requirements they give are inaccurate and incomplete." (Beyer, 2010, p. 18). What this means is that conducting interviews with real users is certainly helpful in order to collect high-level information about the problem which needs to be solved. However, it can't be expected to gather precise system requirements solely by asking the users, as they are not good at telling you what they need from a system or what it should do. Thus, solid user research needs to rely on established methods such as observation, contextual inquiry or testing actual products. In order to get the full picture, research projects must be executed professionally. Only professional findings can provide reliable and credible information about system requirements.

For disruptive innovation, on the other hand, asking the users is probably not the best approach. Users like what they already know. If they are presented with things they have never been confronted with or which might not be intuitive at first sight, they will have a negative attitude towards them and maybe even reject them completely. If Apple had asked users, *"Would you like to write your emails on glass with one or two fingers, without physical keyboard and haptic feedback?"* the iPhone would probably have never seen the light of day.

3.4 Removing Agile from the context

The original title of our study was *"Chasing Agile"*. Initially, we made the assumption that our client, a highly innovative company, had adopted Agile in all of its design processes. However, our findings of the first phase, the qualitative interviews, suggested that Agile as a methodology had an low relevance for the analyzed teams and consequently for our research. Realizing it would not add any value to our work, we decided not to explore the topic any further. We stayed in the iterative context, but we eliminated Agile as a source of inspiration.

4 Phase I: Qualitative interviews

4.1 Phase goals

Having selected the teams, as well as the theoretical and methodological approach, we proceeded with gathering the data that would allow us to:

1) understand how the teams operate including the current processes as well as the wider organizational context
2) understand the perspectives of all the product functions and the UX researchers
3) identify the most impactful problems
4) formulate the hypotheses that would serve as the basis for further research

4.2 Interview preparation

Our starting point during the planning session was to map the factors potentially impacting the working relationship of the different functions. In our brainstorming session we identified the following problem areas (categorized by topic) to be discussed during the interviews:

1) UX awareness
    a) What is understood by UX and its value
    b) Familiarity of working with user-centered design methods and specifically user research
    c) How to bring UX methods into the product development process

We assumed that our interviewees might understand UX in various ways and that this understanding may have an influence on how they work with the UX research on the project. We hoped that this additional context would help us to correctly interpret the data collected during the interviews.

2) Product development process
    a) iterations and cycles

3) UX research in the project teams
    a) aspects related to timing
    b) balancing the needs of users and the technical effort required to satisfy them
    c) decision making aspects related to user research
    d) stakeholder engagement in user research
    e) implementation of user research findings
    f) impact user research has on shaping the product

4) Communication aspects
    a) communication related to user research and how that communication is perceived by the product team
    b) understanding of user research methods among the product team members

Based on these problem areas, we developed an interview script which was designed for an hour-long individual interview. The script contained sections which varied slightly, depending on our interviewees. As an example, when considering user research communication, UX researchers were asked about their approach in involving stakeholders when creating research plans or about their communication methods for research findings and so on. When interviewing UX designers, software engineers and product managers, we focused on the extent of their involvement in the actual studies (in determining research questions or observing research sessions) and on their perception of the communication of the research findings. Another example of a variation, when interviewing product managers or software engineers, was to ask about previous experiences they had with working with the UX function. That specific section was omitted in the interviews with the members of the UX teams.

4.2 Conducting the interviews

In total, we have run nine individual interviews with the members of two teams. Six interviews were run in pairs, with one student interviewing and one student taking notes. Three interviews were run by one person. The role of the note taker was mainly a silent one but if he or she wished to ask a (follow-up) question he or she was free to do so.

From team A we interviewed the product management lead, a senior product manager responsible for working with other product managers within team A, the UX lead, software engineering lead and the UX research lead. The decision to include the additional product manager was dictated by the team's size and structure. The product is divided in three product streams with each of the streams being managed by a dedicated product manager. Since product management by principle should work closely with the user research function, we wanted to avoid a situation where we would miss the perspective of a product manager involved hands on in this collaboration. In case of team B we interviewed product management lead, UX lead, software engineering lead and UX researcher. Except for the interview with the UX researcher from the team B, all interviews were run in person in Zurich. The remote interview was run as a video conference. All the interviews were also recorded on a mobile devices with each interview transcribed at the later stage.

After the first interview, we slightly adjusted the interview script and removed a couple of redundant questions. We continued to adjust the interview script during the first four interviews, adding new questions and removing others that proved to be less useful. One of the newly added questions, *"If you could design the process differently, what would you do?"*, proved to be a great opportunity to identify current pain points and to dive deeper into the perspectives of our participants. During the interviews it soon appeared that following our well structured script was difficult and the interview transformed itself into a semi-structured conversation with the interviewers rather following the main themes than trying to follow exact questions in their order.

4.3 Analyzing the data

After transcribing all the interviews, we used the transcripts as the main source of data for our analysis. In two cases the low quality of the interview recording forced us to rely on the detailed notes as a primary source of data. As indicated, having a lot of qualitative data, but no initial hypothesis in place, turned us to the analytical approach of the grounded theory. The crucial part of this approach is to systematically analyze qualitative data to ensure that the emerging theory is grounded in the data. We started categorizing the data through the coding process, which is

essentially looking for categories in the data and assigning the codes, or headings, to them in order to later use them as the units of the analysis. Some consistent patterns appeared quite early in our analysis. We used the findings to create the initial list of codes which was subsequently updated while working with the interview transcripts.

To ensure consistency in our coding practice, we read one of the interviews and then created the first list of codes and their definitions together. After the exercise, we split the remaining interviews and coded them individually. The coding process was an iterative exercise with regular reviews of the codes list to make sure our understanding of the text passages as well as categories is still consistent. At the end of the process our codes list grew from the initial twelve codes to twenty-two.

Categories	**Definition**
Attitude	Information related to the person's attitude, such as degree of proactiveness, flexibility and others
Authority and structure	What is the degree of authority the team members have? Also includes the aspects of the structure in which the person works and the authority resulting from this structure (levels, hierarchy)
Benefits of UX research	What benefits can/does UX research bring?
Challenges	What is especially difficult?
Communication	Aspects connected to the communication related to the research, but also to the other aspects of the team work (priorities, strategies and others)
Credibility	Credibility of the team members and credibility of their work
Decision making process	How is it decided that a UX research is conducted? What is its subject and what methods should be applied?
Educating stakeholders	Aspects relating to educating the stakeholders (for example in terms of research methodologies, interpreting the results and others)
Engagement in UX research	How is the person engaged in the UX research? In what role do they participate when the actual research is conducted?
Experience working with UX research	What experience does the person have in working with the UX research function?
Familiarity with methodologies of UX research	How familiar is the person with UX research methodologies? What knowledge does s/he have?
Impact on product	What impact does research have on the product? Also the degree of influence it has on the product development

Implementation of research results	Degree to which the research results are actually implemented or not. What happens with the research results after the research is concluded?
Limitations of UX research	What are the limitations of UX research?
Organizational context	Relates to the corporate structures outside of the direct product team that influences how the team works; also environment and culture
Preferences	For research methods
Product development process	What is the current process of product development?
Respect, space and boundaries	What are the relationships within the team in terms of respecting each other's expertise, letting them do their job; also concerns the trust into each other's competency
Role	Refers to the role, job and scope of responsibilities
Timing	When is the right time to conduct research?
Type of UX research	UX research run, specific examples (e.g. survey, diary study), description of the method applied
View on UX	What is the person's view on UX, its role and the value it brings?

Table 2: Final list of codes

We coded the first few interviews on paper. Seeing the number of codes being created in the process, and predicting difficulties in keeping an overview of the collected material, we soon started looking for new ways to streamline the analysis process. After reviewing six different software tools for qualitative data analysis, Transana, Provalis, NVivo, Weft QDA, CAT and ATLAS.ti, we selected ATLAS.ti as our software companion. The determining factors for our choice were the price, the possibility of collaborative analysis and the visualisation capabilities. Depending on the personal preferences, we proceeded with either coding directly in ATLAS.ti or on paper and transferring the codes later into the tool. Eventually all fully coded interviews found their place into the ATLAS.ti project, and we could explore the data using the software's features such as code cruncher, code cloud, networks and code tables. Throughout the process we worked with the analytical memos, noting our interpretations of the text passages and what they could potentially mean for our future hypotheses.

Initially, we started exploring the data using ATLAS.ti's *word cruncher* feature which counts the frequency of word usage. These numbers proved not to be sufficient for our analysis as we were looking for additional information related to the codes which were the most prominent as well those codes and words connecting with each other.

Ou questions were answered through the *code cloud* and the *networks* features. We used code cloud to determine the most frequently codes (table 2).

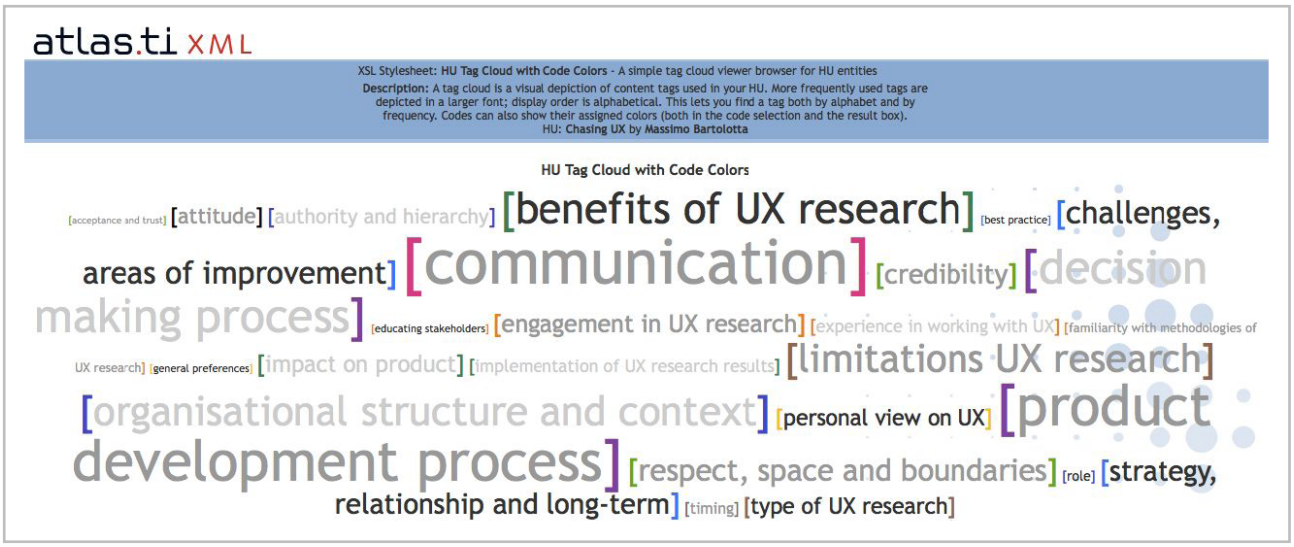

Figure 6: Code cloud in ATLAS.ti

Through *networks* we could explore how frequently certain codes connected with each other and through which quotations. During these explorations, we focused on the three codes that were the most prominent: communication, product development process and organizational structure and context. We extensively checked their relationship and connection with other codes.

The networks visualization showed the following:

1) *"Communication"* connected strongly to *"credibility"*.

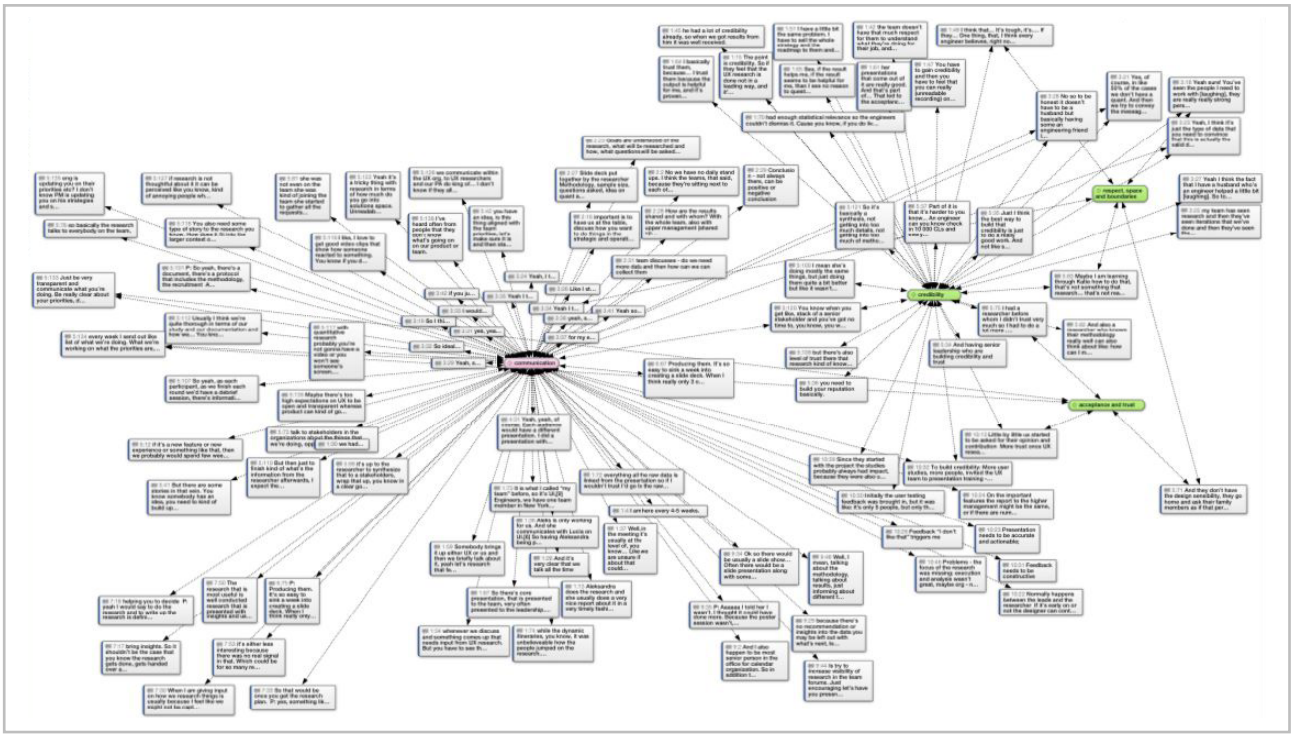

Figure 7: Network of "communication" and "credibility" in ATLAS.ti

2) *"Product development process"* connected with *"decision making process"* to the highest extent. Not surprisingly, there was also a connection between *"product development process"* and *"organizational structure and context"*. Compared to the strong connection to *"decision making process"* though, the relationship wasn't very strong.

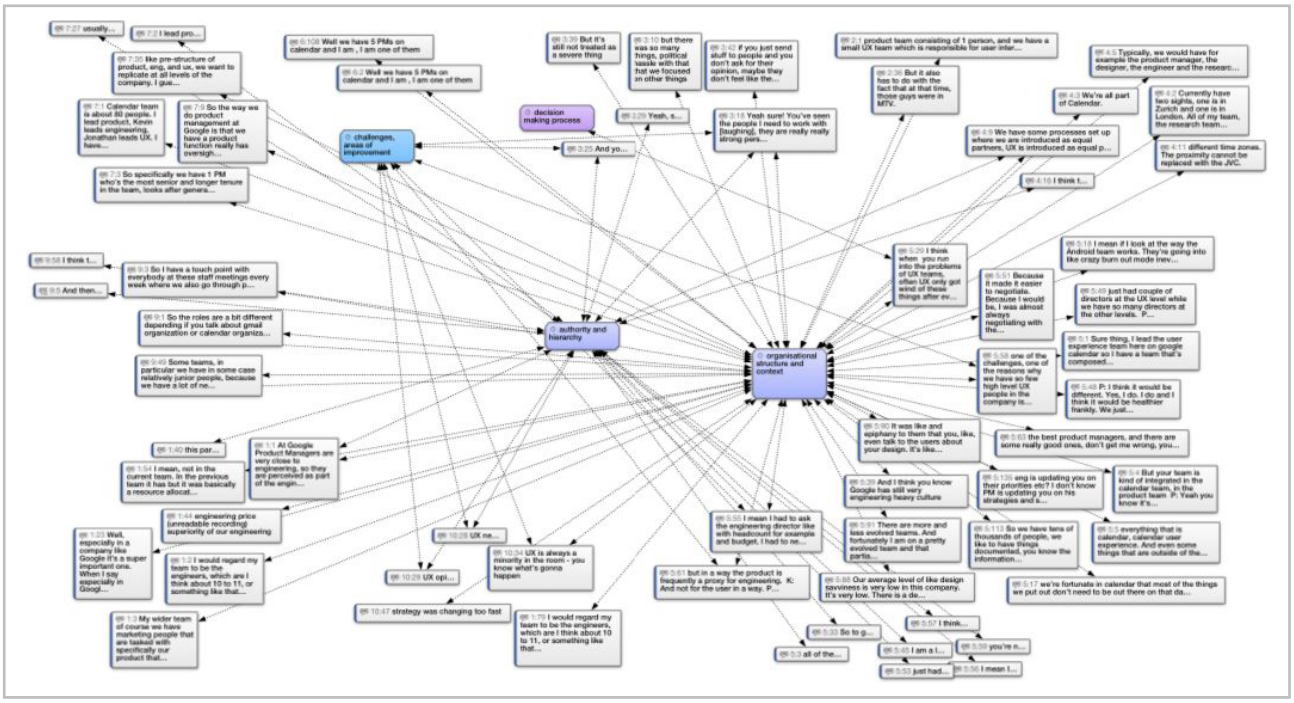

Figure 8: Network of "product development process" and "decision making process" in ATLAS.ti

3) *"Organizational structure and context"* connected strongly to *"authority and hierarchy"* which further connected to *"challenge"*.

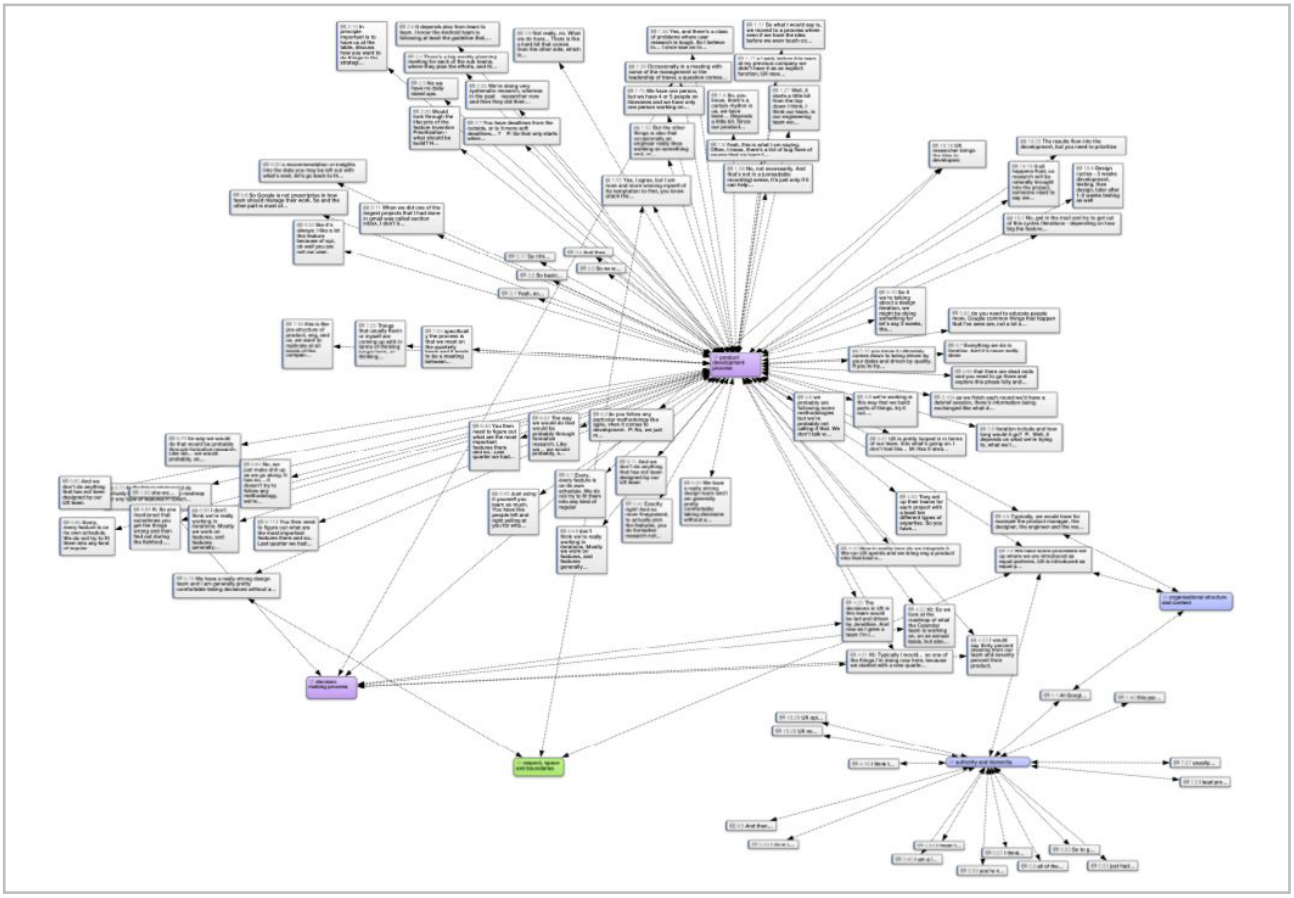

Figure 9: Network of "organizational structure and context", "authority and hierarchy" and "challenge" in ATLAS.ti

Once the main areas were clearly visible, we examined the particular text passages corresponding to each of the codes to ensure the data was not misinterpreted. In addition to the data interpretation based on ATLAS.ti analytical features, we tried find the right balance between what was shown by the software visualizations and what the quotations and our notes were telling us. This was visible in particular for two interviews which were recorded in poor quality and the full transcription was not possible. For those cases, we gave more value to our notes than to what the word crunchers or the clouds were telling us. For example, several interviews showed that the *"credibility"* of the research and of the researcher play key roles, with communication being a crucial aspect in building the credibility. Looking at the word cloud, credibility did not seem as prominent as we had expected. We were careful in accepting the tool's interpretation, especially due to the fact that one of the interviews, in which the credibility aspect was very prominent, could not be transcribed properly. As a result, we gave more value to our notes and to the networks visualization when managing the *"credibility"* code. Our intuition proved to be correct and *"credibility"* was not to be underestimated.

4.3.1. Detailed findings – text analysis

Perception of the user experience

All the interviewees have been working with UX and user research for several years, although in some cases the experience was gathered only working with their current team. This was the case

for some non-UX staff in both team A and team B. There is a widespread consensus among product managers and software engineering leads about the huge importance a good user experience has for a product to be successful.

Through the interviews we established that the product managers tend to see UX also as part of their responsibilities, which is understandable considering that they are essentially responsible for the product roadmap including the features and, indeed, the holisticly seen experience of users interacting with the product. As put by one of our interviewees, *"(...) product function really has oversight for the whole product. So ultimately product managers are overall responsible and definitely part of user experience"*. This was an important insight as the product management function overlaps with the user experience function in the analyzed organization. The collaboration between the product management and the UX function is naturally close.

Value of the user experience research

Interestingly, talking specifically about user research the interviews showed differences in how our interlocutors see its value. It is common for product managers and engineering leads to see user research as a source of data that helps understand the users and take product decisions. The data help determine the product direction at all levels: from the tactical validation of the design concept through to the strategic direction of the product. Essentially it provides a valuable input, especially when keeping in mind how data driven the analyzed company is. From a product manager's perspective, it helps determine the product roadmap instead of forcing product managers to rely on their gut feelings and intuition. The degree to which research input would be practically accepted, however, varied between the individuals. As an example, the product manager from team B told us: *"So I feel that I, personally, as a PM have moved from a person that solves many of the problems by gut feeling and only asks for data for bigger ones. I have now really accepted that taking my clues from UX research will really resolve them better."* The product manager from team A, on the other hand, would rather rely on UX research to understand the customers at a more foundational level. Through research, he would rather like to find out what the users think about the product and what is important to them. Such more formative research was described by him as essential, but when it comes to more tactical, the product manager clearly saw them as less valuable and in certain situations he would be perfectly fine with taking product decisions without relying on further research, *"If I agree with the decision that the team wants to take, no research is required. If I disagree or am highly sceptical that something is gonna work, research can be the answer"*. In his opinion, usability research mostly delivers results that were easy to predict upfront. We will examine this particular topic in more detail further on. Here it is important to state that this selective approach impacts the way user research collaborates with other product functions.

Some differences were also visible within the teams. As indicated, from team A we interviewed the product management lead and one of the senior product managers. While the product management lead was clearly expecting researchers to provide concrete recommendations based on research or an interpretation of what the research results practically specifically mean for the product, *"(...) what I am looking for a user research to do is not only do the research but also bring insights. (...) I would expect a good research team to be very much the partner of product in terms of actually coming up with the insights, that we should be doing from that data"*, the senior PM did not expect researchers to provide precise recommendations.

User experience research in the product development process

Through our interviews, we could also see significant differences between both analyzed teams in terms of the degree to which user research is involved in the product development process. Based on the interviews we established that within team B, the UX team, and specifically user research, is working very closely with the other product functions. When asked about the process of involving user research in the decisions, the product manager confirmed that the researcher is present in all the team meetings, *"usually we discuss something and we have a question and we go to her, she sits there. (...) it's the first time that we feel that UX research is really a core part of our team, and not service team."* All our interviewees from team B gave us a sense that all the three product functions (product management, software engineering and UX) work very closely together and the geographical factor of the team being based mostly in the Zurich office plays a big part in it *("UX sits in the middle of the engineers. So the little conversations which are much more important for gaining trust and all that are happening.")*. This is obviously much more favorable setup than the one in team A which is not only bigger, but also geographically spread between Zurich and London, and California. At the same time different way of involving user research cannot be attributed to the geographical distance. It is worth highlighting though that the user researcher, who was initially based in Zurich with the rest of the team, moved to the west coast of the US three months prior to our interviews. The product manager is permanently based on the east coast of the US, but he frequently travels to Zurich to work with the rest of his teams and both these individuals seem to be very well integrated in the team considering the geographical distance.

In any case, throughout our interviews we established that in case of team A, user research collaborates with other product functions to a much lower extent than it is the case in team B. This is especially accurate when it comes to the collaboration with product management and software engineering. The interviews showed that UX research can be described more as a service function, with the decisions on what to research taken mostly during the meetings between the designers and product managers. Compared to team B, where the researcher collaborates very closely with product management, this is a totally different way of integrating various product functions.

At a more strategic level, the UX research lead meets with the individuals leading other product functions on a regular basis, with more formal quarterly planning sessions taking place during which priorities are set and the decisions about where to focus research efforts would be taken. Although the UX research lead is involved in these meetings, especially in terms of the priorities and UX research resources management, the main decisions would still be taken by the product management lead and the software engineering lead.

The position of UX in the team

This touches an important area which came up over and over again throughout our interviews: the position of the UX team (including UX design and UX research) in the organization. In our analysis, we observed a theme of the UX teams not always feeling they had equal status in the product team and the constant need to build presence and authority for UX. Our interviewees referred to various strategies they apply in order to build a stronger position for the UX function. One was, for example, increasing the number of the UX team members in meetings to avoid being overpowered by non-UX staff and achieve a *"critical mass"*.

Some members of non-UX teams felt that UX, and UX research in particular, should be more visible, although no consistent strategy for increasing its visibility was taken by the leadership. At times, in some concrete projects, the UX team from team A felt that they were brought into the discussion at the very late stage of the project. The question of the UX being an equal partner is closely connected with the organizational hierarchy. Naturally, since the company culture is very engineering driven, the engineers have a superior status. And the product manager, being essentially responsible for the success of the product, has a very strong position as well. But as indicated by our interviewees, the fact that UX does not always have the same level as the partners representing other team functions, has a negative impact on the collaboration and their negotiating position.

User research projects

The interviews provided valuable insights on how user research projects are run and how the communication around these projects is set up. Our initial assumption was that aspects related to timing during the research preparation phase would play an important role for our interviewees. After all, user research projects require considerable time to even take place. The planning and the recruitment of participants usually take around two weeks. When recruiting users for niche products, even more time is required. Considering that software engineers may not always have enough time to wait for the research insights, we expected timing to be at least one of the top challenges teams meet when collaborating with the user research. Surprisingly, not many of our interviewees regarded timing as a significant challenge. Some researchers stated it was a challenge, but none of the engineering or product management leads. We were told by one lead that research was not useful if it took too long, because of fast changing product strategies, but this did not seem a common issue and the duration of research projects was not a point of critique. Some other areas proved to be more important.

Planning

The interviews gave us plenty of insights into how user research is planned, prepared and executed. We could identify significant differences between the two teams in terms of how research ideas emerge and the degree of collaboration during the planning phase. team A has a more formalized planning process. The user research is planned at the beginning of each quarter, when planning sessions between the leads of all the functions take place. In addition, the UX research lead tries meet all the product managers to gather all the requirements and possible requests of the quarter in order to prioritize depending on the available resources. Once the priorities are set they are shared with the functions leads for a final commitment. Most of the requirements (~70%) are defined by product management, the remaining are proposed directly by the UX team.

Interestingly, the product manager from team A stated in our interview that he works directly with the UX designer to decide what topics should be researched. He would decide to run UX research when he does not agree with a design solution or there is a difference of opinion between him and the other product managers. If he feels that the solution is right, he would not opt for additional research. Because the researcher does not participate in these meetings, these decisions would be taken without the researcher's involvement. It is essential to keep in mind that the process described by the product manager is not universal. Especially when moving outside the scope of simple usability studies and looking at formative studies that, for example, help define critical user journeys, the involvement of UX researchers (in this particular case mostly UX research lead) would

be much bigger and the role of UX designers smaller. Keeping this in mind though we could still see significant differences in the way these two teams operate.

Compared to team A, team B does not have a formal process in place. Research ideas most frequently emerge during the meetings when the UX researcher and all the other product functions are present. It could be regular team meetings or the meetings between the leads of all the functions and the UX researcher. According to the product manager *"(...)[UX researcher] often comes up with an idea of how to structure the UX research, when she really listens to us discussing the problem instead of us first defining the problem and coming to her. (...) Whenever somebody has the idea to do something, that could be her, could be us. We do it."*. The described process was confirmed by the UX researcher. In her own words: "*So what I am trying to do is to get involved as early as possible. So I am just sort of going to all the meetings I can, listening to what the people are saying, which is much harder now that I am working remotely. But basically when an idea sparkles somewhere, maybe there's a need for a new feature or there's a need for a change. I am trying to say that maybe we can do a user study early on, just to find out like concepts, what people are thinking before we jump, sort of, further ahead (...)*. The research can also be designer driven, although not to the same extent as observed in team A. According to the UX researcher, "*The second option would be when the designer, who in this case was also the manager for the team, and the other designer work on prototypes on new features. And they would come to me and say: hey, this is what we're thinking of, can you come up with a study plan that would validate this particular feature.*" And, finally, the researcher also tries to proactively come with research ideas when she sees that certain higher level themes are emerging from the previous user research. In those cases, she would come up with a plan and discuss it in a meeting with the leaders of potentially affected teams to brainstorm research ideas which could be useful for them.

Another interesting insight relates to the way communication about planned UX research is being shared. In both teams A and B research plans are prepared by the UX researchers and are shared with stakeholders using Google Docs. In team B, the researcher shares the documents with the leads of all the functions. The researcher would usually want the sign off from the engineering lead and product management lead before conducting a research. As a general practice for team B, research plans as well as engineering documents are are usually shared with the wider team.

The following is an example of a shared research plan and the collaborative work which followed after sharing:

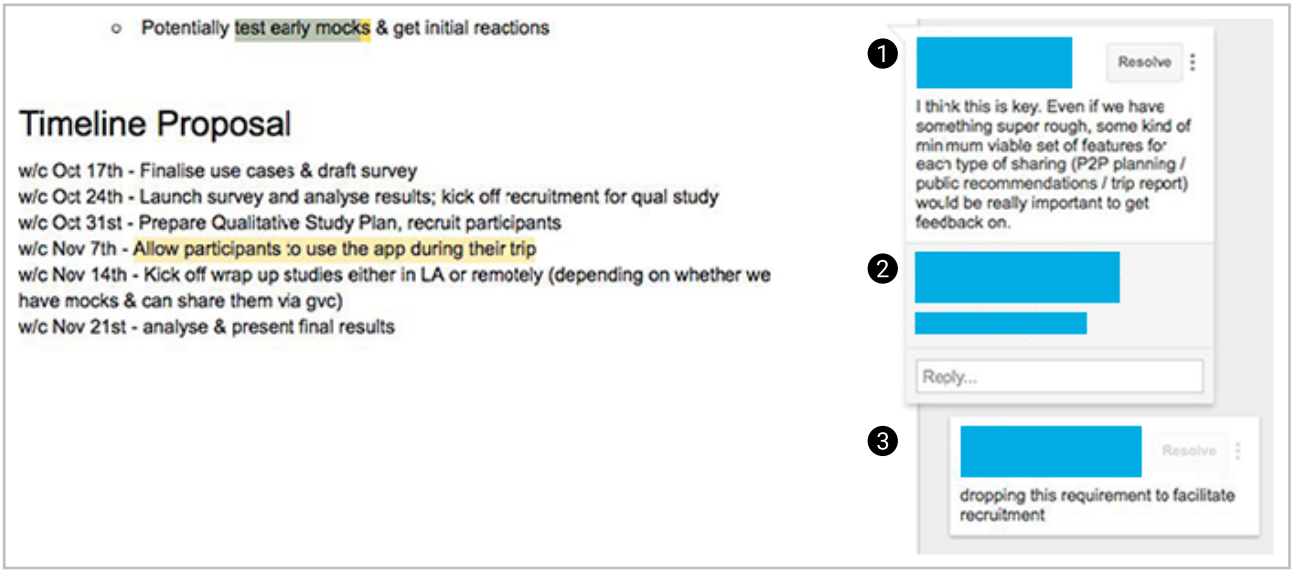

Figure 10: Example of a research plan with comments after sharing
① Software engineer commenting on the proposal
② UX researcher notifying a UX designer
③ UX Researcher commenting

In team A the communication is set up slightly differently, with research plans being shared with the designer and the product manager but not with the software engineers. The product management lead looks at the research plans for more strategic research or when a project concerns features he is especially interested in, but he would not give input to every research plan. He expects the other product managers on his team to be reviewing the vast majority or all the research plans with the UX research. According to some of our interviewees, input into the research plan is rather limited. Input from the product manager comes *"sometimes, but usually not"*. One product manager from team A explained, that he is involved to some extent in the research planning phase, but that, over time, the growing trust in the researcher's understanding of the product led to a natural reduction in his involvement. We got a sense that this involvement was more instrumental though and that the product manager would want to have a certain degree of control over what answers the research is going to produce. We will address this topic in more detail later in this paper.

Stakeholders engagement

Stakeholder engagement in ongoing research proved to be different depending on the teams. In this area, we were looking especially to identify whether designers, product managers or software engineers observed the sessions and were involved in follow-up actions, such as post-study debrief sessions, discussions about the results or similar activities. According to the interviews conducted with team A, product managers were willing to observe or even be part of the research team in case of strategic, formative studies. One of these projects was run earlier in 2016 and it was truly appreciated by the stakeholders. The software engineering leadership was also involved in that case. There is a widespread consensus among everyone we interviewed that personally attending the sessions is invaluable. As one of the engineering leads put it: *"you learn very quickly like what people's frustrations are and in a very visceral way. That's often something that you already know, you just need to be, like slapped in the face about it."* When it comes to other study types

however, such as diary studies or usability testing, the involvement is much smaller. We were told that only approximately 40 to 50% of all research would be observed by a product manager. For the product management lead, who oversees the whole product, and is focused on more strategic initiatives, the lower engagement in tactical studies is logical. However the other product manager we interviewed, does not get involved in usability testing and is not committed to observing such sessions directly, even though he is directly managing part of the product. We feel that stakeholder involvement is a fundamental aspect of the collaboration between user research and the other product functions, so we will examine the reasons of the observed low engagement in more detail.

We heard from the product managers but also from the UX design lead that, historically, usability testing was "overused" in the team and the credibility of this type of research has been undermined. The credibility suffered for several reasons. First, the stakeholders did not feel that the research provided the answers they were looking for. It is difficult for us to say if that was caused by the low quality of the research, if the reports were written in a misleading way or if this situation was caused by other factors. The result was that trust between the user research and other parts of the team eroded and user testing was no longer seen as a valuable source of information.One of our interviewees described his previous experience with user research. He felt that the results from the usability research were too easy to predict *("And it was rare that we were really surprised by what we found. Whenever a feature was sort of, whenever a particular design was sort of borderline, we knew going in that it was borderline, it essentially never worked.")* Eventually his interest in this type of research vanished. Other research studies that were run in the past by a researcher, who left the team, were not very useful, with the lack of actionable findings being the biggest issue *("(...)Few years ago like figuring out when and how people adopt [the product]. We found some stuff, nothing really actionable… "Yeah more things in [the product] are useful". Great! That doesn't tell me anything… (...) And then we've done longitudinal studies. Yeah, again… I mean. There are things like, oh interesting. So half of the people actually dropped the product. What could we do? Nothing. Ok, great, learned nothing. (...) It's just very rare that you get actually useful information out of…").*

User research methods

Another reason for product managers' low trust in usability testing was the credibility of the method itself. The senior product manager told us that he is *"somewhat sceptical about the usability testing"*. According to him the setup is artificial, *"the users are just so much more focused in the lab than they usually are. They can't really express very well what they're doing."*

In the past, the recruitment of participants was also a problem due to testers in Zurich coming mostly from the expat community or being rather highly educated English speakers, which made the findings easy to dismiss and less convincing. (English is the preferred corporate language when running tests) The problem was solved by moving the testing to London, a city offering access to a large English speaking population and the participants' quality improved. But still, the low engagement of the product management persists and the organization prefers to release an early version of the product within the company (see fishfood) and get user feedback within weeks instead of running a formal, more time-consuming usability test. It should be pointed out that testing products within the company, which hires people from all over the world and has a well educated workforce, brings some bias too, but our interviewee did not point that out.

A few interviewees felt that a greater diversity of research methods would be beneficial. According to the engineering lead of the team A there was too much focus on qualitative research, in his own words: *"you're always going to question the sample size. (...) You have a just statistically, you know,*

you don't have that much data." With the teams being strongly data driven, this could also one of the reasons for a lower engagement in user testing projects. Interestingly, when looking at team B, we did not get an indication of similar challenges and also compared to team A, the engagement of the product manager and software engineers is significantly higher. Several individuals from team B, who are mostly located in Switzerland, went to directly observe user interviews in European and even Asian countries. It is also common for them to observe user sessions in Zurich.

This leads us to the need to educate stakeholders in terms of research methodologies. Based on the interviews, this does not seem to be a serious issue and there is a relatively good dose of trust in the methodological abilities of the researchers, except for the already mentioned higher confidence in the quantitative methods shown by some of the engineering staff. Also, according to the researchers it is still worth reminding the stakeholders that qualitative research based on a small sample of participants is still a valid methodology that can generate reliable results. This is especially needed when presenting user research to the individuals or teams that are not exposed to user research on a regular basis and that tend to look for quantitative data. For those cases, special diligence and a strong focus on the diligent recruitment of research participants is crucial, because the easiest way to question research results is to challenge participant selection.

Credibility, trust, acceptance

We did not get a direct confirmation from the interviewed product manager or the engineering lead that credibility of the research methods would be questioned. We did learn that the UX team (both UX design and UX research) need to earn trust. Being seen as an expert is regarded as something that comes gradually, starting with the perception of UX professionals as people that *"draw mocks and then they talk to three people about it"*. Nevertheless, none of our interviewees thought that user research would not bring any value whatsoever to the project. One product manager explained that, regardless of how conclusive the research is, he would still see the value of it. He stated it would very unusual for him to discredit user research results and to do so he would "have to have very valid reasons which means some data elsewhere, not just gut feel."

This touches another important topic related to the acceptance of research results, which is its credibility. According to the interview data, credibility is directly linked to communication. The mentioned *sample size* is something that is relevant for both teams. But even though we didn't get direct statements from the product manager or the engineering lead from team B indicating mistrust of small sample qualitative user research, based on the interviews, we could still see the value brought by running research with large samples.

The high acceptance of past user research can be partially attributed to the fact that data was gathered from hundreds of people and several highly impactful research activities were run with a large participant sample that allowed some quantitative elements to be included. Additionally during the product launch preparation, the UX researcher from team B worked with new research formats. One of them was to offer the product to around selected 30,000 users and gather data from that group through direct feedback channels.

In team A the research methods are also becoming more diverse. In the past, usability testing was the most common type of research but gradually formative research started to be conducted more frequently and a new researcher was hired who specialized in quantitative methods. Our interviewees agreed that this will increase the credibility, trust and impact of user research.

Communication

The way research results were communicated to stakeholders proved to be another key aspect in building credibility and increasing the acceptance of research findings. We have already referenced some key statements of our interviewees that indicated that leadership in most cases appreciates when the researchers provide interpretation of the research findings and recommend potential solutions. There is a thin line between suggesting potential solutions and crossing the boundaries of researcher's role, finding a balance between providing actionable research results, proposing the direction in which the product should change and on the other hand letting designers, product managers and software engineers work on a concrete solution is possible. As summarized by team B's product management lead, the researcher *"presents the findings well and she is very close to this line where she suggests the features but she never crosses it."* As the researcher from team B put it: *"I think the most important stuff is to try to show, you know, that there are things we can do to try to fix this. Because the worst thing is to give someone a feedback and just say: it's all crap and that's it. Not even indication what we could do to make it better. So of course, in most of the cases it's up to designer on how to exactly fix certain things and how they should look like, but giving some tip or recommendation on, you know, if you give user more control in the given area it's gonna be much better."* So helping the stakeholders draw conclusions from the data is one of the crucial roles of the researcher.

The second important aspect of communicating the research results, is producing high quality reports quickly and in a digestible form. Selecting the most important, impactful issues and communicating them in an actionable way was identified as fundamental. According to one of the product managers from team A *"It's so easy to sink a week into creating a slide deck when I think really only three or five findings are really important. You just put the three findings in the document, quantify them like three out of eight, four out of eight, eight out of eight. And give specific examples, videos or transcripts of what exactly the person said, have a photo of their calendar whatever it is. Like findings without specific examples are useless. It's like people have a very difficult time understanding abstract concepts, they need specific examples. That's really the main thing I am looking for, like make sure that whatever finding you have it's explained by… two examples are fine, you don't need a lot. But without examples you can't really, you can't understand particular findings."* Providing data directly illustrating the problems, without forcing the reader to search for them through a long report, makes the report more persuasive and powerful. As one design lead phrased it, effective research needs to *"tell the story"*.

The third aspect is the physical presentation of the research findings. For all studies, in both teams, research reports are sent to the whole team with a summary of the findings including the link to the full report. In team B the research findings are also presented to the team and very often also to the leadership. Presentations are slightly adapted and tailored to the target audience.

At a team level, being critical is the norm. As regular organisers of code reviews and debugging tests, the engineering team is used to constructive criticism, which is perceived as a positive thing. The research findings presentations for the team can therefore highlight the positive findings but, more importantly, bring the identified issues to the fore. At the leadership level on the other hand, team B learned to focus on new opportunities identified through user research and devote more space to the positive findings in order to avoid creating an impression that everything in the product should be fixed. From our perspective, this seems like a reasonable approach. One design lead stated that the research may be perceived as a factor in slowing down progress, especially

when flaws are found in the product. To avoid reinforcing any negative perceptions, researchers need to be mindful and aware of this potential negative stereotype.

We also learned about alternative ways of presenting the findings being practiced by team A. For more strategic research, the team organizes a so-called *research expo session*, in which research present posters, and, at times, other research artifacts (for example video recordings, participant quotations etc). The displayed posters are meant for whoever is interested in the findings, letting them have a closer look at the areas of interest. The feedback we got on that format was mixed. One software engineering lead thought the format was not *"directive"* enough as, again, it did not give suggestions on what to do next. Also, being a self-guided tour, some participants felt that they were left with the data, with several side conversations developing as a result. A more formal presentation with a reserved time slot for discussions was seen as more productive.

Impact

The central question from the perspective of user research being involved in the product development process is to what extent user research results are considered when taking product decisions. Generally speaking, it is safe to say that to some extent in both analyzed teams the research results are taken into account when decisions need to be taken. On a strategic level, formative research results directly shape the product directly, providing information on users' mental models, critical user journeys and others. According to the product management lead from team B, certain large-scale studies containing quantitative components provided the data that was and still is used to take decisions *("These are some numbers, the numbers that came out of it, these are numbers everybody cites every day making decisions on what we do (...) We wouldn't have made the same investment if that number looked differently. You know, that number informed us that there's a market [for the product]")*.

One engineering lead found that the UX research delivered important data points and it would massively impact the engineering work: *"creating the product is a journey without the light, and the UX brings a small shimmer of light."* Furthermore, members of team A confirmed that an understanding of the users gained through the formative research was invaluable and impacted both the product features and the product roadmap.

In terms of concrete user testing our interviews with team A did not provide specific examples that confirm the direct impact of user research. Based on the information available to us, we cannot say if the research results are not implemented as a general rule, but our interlocutors did not provide us with any concrete examples.

Such an impact was clearly visible in team B, where acceptance of the research findings seems to be generally higher, even when the research results are not what the team hoped for. In those cases, they are not discarded, as the product manager confirmed. One representative example was when the solution preferred by the product manager and the engineering team did not get a good reception during usability testing. The teams accepted the findings and the majority of team's resources were shifted to work on the alternative solution which got higher user acceptance. The preferred solution was not dropped completely, as the team wanted to explore it further and see if some changes could increase the user acceptance. Nevertheless, the research findings clearly made the product team change the direction.

4.4 Formulating the hypotheses and the operationalization

In summary, the interviews run with the members of team A and team B showed significant differences in the way user research is integrated in the development process. The two main conclusions we were able to draw were the following:

- in team B, the integration of UX research is significantly deeper
- team B's contribution within the product team is much more valued by the other functions, product management and the software engineering in particular

The differences were especially visible in the structure, the way researchers collaborate with the other functions, the perception of user research and its credibility, stakeholder engagement in research projects as well as the impact user research has on product decisions.

Ultimately, the analysis of the collected data allowed us to select the three most important areas and formulate hypotheses for the following study phases.

4.4.1 Hypotheses: organizational structure and context

The first identified area for our hypotheses, the organizational structure and context, refers to the way the team is structured and the position of the UX research within the team. The interviews showed that UX research is not always perceived as an equal partner and the team's structure is an important factor in undermining equality.

There are two structural aspects. One is the formal corporate hierarchy. Practically speaking, if there is a significant difference in seniority between the leaders of the various functions, the negotiating power and the confidence of the individuals at a more junior level will be lower as a result. Supporting the equal status of all the functions is desirable, but it has its limits, in particular due to the corporate culture, which is driven more by one or the other function, and to the fact that some functions may not be as well established as the others. We found the hierarchical aspect important, but potential difficulties in integrating user research within the team cannot be extrapolated from structure alone.

The second structural aspect we found to be even more important is the way the UX research function is integrated within the team. Having UX researchers working with several different teams simultaneously is making it integration into the product team more difficult. The resulting limited capacity of user researchers forces everyone to seek compromises and impedes not only the positive contribution to the decision making process, but also makes it nearly impossible for the user research function to be an equal partner.

Based on the collected information, we formulated the following hypotheses related to the organizational structure and context:

1) For the efficient integration of UX research into the product development process, the research function should be dedicated to a concrete product and not as a function consulted by multiple teams on an ad hoc basis. The structure should facilitate UX research involvement as an equal partner.

4.4.2 Hypotheses: communication and credibility

The second area for hypotheses, communication and credibility, refers to the way research findings are communicated. We were able to determine that the expectation of user research is to interpret research results and, based on that interpretation, to deliver practical, actionable recommendations. The right communication that meets stakeholders' expectations contributes to the credibility of the user research function and fosters its integration into the product development process.

Our final hypotheses related to this area are:

1) Research results that don't include interpretation of the data aren't helpful for the product team.
2) The presented research findings need to be well-structured with a limited number of actionable main findings highlighted.
3) Research reports need to tell a story and provide a narrative, instead of being a loose collection of facts observed during the research study.

4.4.3 Hypotheses: product development process

Finally, the third identified area is the product development process, which refers to the practical function user research has when it comes to product decisions and when it is consulted in the process of creating the products. Based on the interviews, we could identify two main traits: the research team being consulted on an ad hoc basis at a request of other functions within the team, or as a second possibility, user research being integrated into product decisions at every step of the process.

The hypotheses relating to this area are:

1) If UX research is part of the product team as opposed to being a service function, it can provide most value thanks to the possibility of an active involvement in all product discussions. This means it can contribute to product development by backing up decisions with data and identifying opportunities for providing data.
2) Involving UX research in product development from the outset (sprint 0) is the most beneficial setup for both the UX research itself in terms of research being able to understand the team priorities and product roadmap, and also for other team functions in terms of supporting their product decisions.

Based on the above hypotheses, we proceeded with planning the second phase of our research: the observation. In order to narrow down the observation scope and to define what to pay attention to, we worked on operationalizing the hypotheses, which essentially means defining how certain behaviors or phenomenons may manifest themselves in real life and selecting variables.

4.4.4 Operationalizing the hypotheses

The first hypothesis related to the organizational structure and context proved to be most difficult to operationalize. Our interviews indicated the importance of the area however, artifacts related to the organizational hierarchy were not always available to us as an external observers. Also the

analyzed company prides itself in being an extremely meritocratic organization with a rather flat hierarchy. Therefore we were not expecting phenomenons related to hierarchy or inequality of various parts of the team to be easy to observe. Considering the organizational culture we expected that individual team members may not be willing or able to admit that hierarchy is present and impacts everyday's team collaboration.

In the end, we established that the organizational structure and context could be observed rather indirectly, for example, based on how active the UX researchers are in meetings or if their expertise would be actively asked for by the other product areas. Also the presence of UX research in product meetings or discussions related to the prioritization of features, to use cases or to other decisions would be an indicator of how involved the UX research is in the product development process. The variables for the first part of the hypothesis were easier to observe, as it was be relatively easy to establish how many teams researchers support.

For the second area, defined as credibility and communication, we identified several variables. We analyzed research reports and presentations with the aim of confirming what elements they consist of, if recommendations are included and how they are formulated. We brainstormed the signs of the research reports being useful or helpful for the product team and agreed on a few indicators of the reports' usefulness:

- interest of other product areas in the report that manifests itself through collaborative work (commenting, other product groups actively participating in shaping the research through collaborative documents or meetings)
- the presence of non-UX teams during the report presentations
- documentation tracking the impact of the research (bugs fixing, trackers etc.)

We also brainstormed what it meant for research findings to be actionable and decided on the presence of recommendations and insights, as well as suggestions of concrete solutions or directions the product should take to tackle identified issues or benefit from opportunities.

The second crucial part of the hypotheses, credibility, was operationalized through reactions to the methodology, participant sample and research results (signs of questioning, to what extent the other product groups are trying to influence these areas against the opinion of the researcher).

The third area, the product development process, was operationalized by the variables related to the involvement of the UX researchers in the development process. Here we wanted to focus on the actual research planning and look at how the product discussions take place, focus on what was being discussed and who was involved. Were the researchers involved in decisions on how the product should be shaped and, if so, to what extent? What happened when the researcher's feedback was not taken into consideration? What was the line of argumentation? What was considered when taking product decisions?

Another area of our interest was where the research ideas were coming from. Are these mostly generated by the researchers or by other parts of the team? Is research a service function conducting its activities only when engineering, UX design or product management explicitly requests them or is it playing a proactive role and stepping in before features are defined?

5 Phase II: Observation

5.1 Naturalistic observation

For the second phase of our research, we decided to run a naturalistic observation, meaning we were passive observers, not interacting with the team members during the observed events. Our goal was to avoid influencing outcomes. As one of our stakeholders phrased it *"be like a fly on a wall"*. The defined hypotheses and potentially observable phenomenon served as a core base for the second research phase. However, we tried to keep our minds open.

Following the approach of the *work ergonomics* (Guerin et all, p. 148) we looked for situations *"which are central to the system and whose functioning has repercussions up- and downstream"* and that would be as regular as possible, in order to observe more than just one occurrence. We were not sure which exact occurrences would take place within the teams. Apart for some idea as for what events and artifacts were being directly linked to user research, such as preparatory documents of particular studies, team meetings, research plans and reports, we did not have an exact list of events to observe.

Eventually the events were selected based on the recommendations of our contacts, the UX researchers and the designers, within the two teams. When looking for suitable meetings we highlighted the main purpose of our research, meaning that we were interested in observing how the working relationship between UX research and the other functions was characterized. Additionally, at a very high level we shared the main areas of our interest based on the three hypotheses, with the aim to see the events that were the most important to the stakeholders, based on the initial interviews. We were then invited to selected events in which the researchers were directly involved and also got access to the artifacts directly relating to the user research.

Guerin describes two approaches to the visual observation: an open observation which can be conducted during visits to a workstation, or a systematic observation focusing *"on certain categories of information with precise aims"* (Guerin et all, p. 198). Initially we were looking for a way to run a systematic observation, but since the question of which particular events would be accessible was very open and the list of events we were invited to was changing dynamically throughout the project, we decided to run an open observation without pre-defining classes of events and trying to categorize observable features into classes (Guerin et all, p.201-202). The only thing we decided up front, was to record the observation session using pen and paper and whenever possible to try observe events together. We hoped to gain a broader perspective with each individual paying attention to different things.

5.2 Running the observation

At the beginning of the observation we shared the project plan with all the individuals involved and introduced ourselves to build a level of trust. The observation sessions were run during two months between late August and the end of October 2016. On some occasions, we were present physically in the same room as the observed participants and in others events could be observed remotely through a video conference. All the observed events, except for the usability sessions run by team A, spanned locations with part of the teams joining remotely.

During our observation we came across several challenges. The first challenge was the difficulty in finding events of similar kind across the teams. We soon realized that the different organizational structure had a direct impact on the way the various parts of the teams collaborated.

As described earlier, in the case of the team A the product is divided into three so-called *"product streams"* managed by separate product managers and led by the product management lead. In the engineering area, there are several teams responsible for the product streams and they are led by different engineering leads. The UX lead oversees the work of several UX designers who are assigned to the mentioned product streams, although some designers may work on several initiatives. On the research side, UX researchers are shared between the product streams and single researchers are not assigned to any particular team or product stream. Having a larger research team means that the UX research lead is engaged in more strategic initiatives, the junior qualitative UX researcher is directly involved in research efforts of a mostly tactical nature and works with all the product streams on the quantitative research efforts.

In team B the whole product is managed by one product manager. All the engineering activities are led by one engineering lead, who is also solely responsible for the technical efforts related to one particular product. The UX researcher is dedicated to work with team B and works on all user-facing aspects of the product. The researcher is managed by the UX lead who is responsible for UX related efforts, not only of this particular product, but also for the whole product palette developed by other teams, which also have their own dedicated UX researchers.

This structural difference means in practice that the collaboration between the UX researcher and the product manager can be described as irregular and ad hoc for team A and as systematic and close in team B. For our observation the described differences meant that the events we were able to witness and the artifacts we received varied depending on the team.

For team A our observation material was the following:

Meetings

- four UX stand up team meetings
- three team meetings within UX team
- three usability sessions (these were part of the user study consisting of six sessions in total)
- one meeting between the UX designer and UX researcher in the preparation for the upcoming research activities
- one meeting between the UX lead and the program manager
- one post user study debrief

Artifacts

- twelve research reports
- six research plans
- two email threads
- one issues log document
- one quarterly goals planning document
- one feedback document
- one objectives and key results document

For team B our observation material was the following:

Meetings

- five team meetings in total (two of the wider product team and three meetings of the subteam responsible for selected projects within the product)
- one meeting between the UX designer and UX researcher in the preparation for the upcoming research activities

Artifacts

- eight research reports
- seven email threads
- three brainstorming documents (use cases brainstorming document, integration with other products, conceptual document for sharing feature)
- two research plans
- two data analysis documents: analysis of comments & feedback on feedback document
- two objectives and key results document
- one presentation from a Vice President

Looking at the events list, one can clearly see that the teams operate very differently. In team A there is a strong focus on the collaboration between the UX designers and the UX researchers. These two functions meet on a weekly basis three times in the so-called UX stand-ups and the UX critiques. In UX stand-ups team members give a brief status update on their projects. In UX critiques designers share their work and get feedback from the rest of the team.

In team B no similar meetings could be observed. As we found out, UX-only meetings take place and they involve the UX team members working on the related product palette. The researcher from team B did not find these meetings relevant for our project and we did not get to observe them. We briefly talked about these meetings directly with the UX researcher in the third phase of our project.

As stated earlier on, the UX researchers from team A are not dedicated to any particular product stream and, as we could confirm, the researchers do not participate in any cross-functional team meetings with product managers, engineers and UX designers.

In team B, the researcher is part of all those meetings and we had a chance to observe several of them. A few meetings were product-wide gatherings and a few included selected engineers working on specific user-facing features. The researcher does not participate in the meetings with heavy engineering focus where, for example, infrastructure optimization is being discussed.

Initially, identifying the differences resulting from the type of meetings we observed was challenging as we had difficulties in comparing the data collected. After some time, the comparison became easier and we started seeing patterns as we collected more data. In the end, not having observed the exact same events did not pose a significant difficulty. Eventually, this even enabled us to compare the teams at more a foundational level and not at the level of specific meetings. For the hypotheses related to communication and credibility, the similarity of the collected artifacts (research reports, presentations, research plan etc.) allowed a more direct comparison.

Running the observation during a selected, short period of time - two months - represented additional challenges. One major challenge was the limited contextual information. When talking about the missing context we are referring to events that might have taken place in the past, before the observation began, but still influenced the current situation. One representative example was when we observed one of the UX critique meetings. After the meeting, we interpreted the behavior of one of the members of the design teams from team A, as proof of the impact user research has on the product development. We noted down frequent references to user feedback visible in the design concept presentation delivered by that designer. However, after further investigation, and follow-up interviews with other members of the team, we concluded that what we thought was proof was in fact a misinterpretation. Apparently, the feedback in question was picked very selectively by the designer and the research was treated instrumentally to confirm the designer's ideas rather than to validate them.

Observation as the sole source of information proved to be insufficient to really understand the current situation, so additional interviews were necessary to gather data. Finding a suitable time for a follow up interview was not an easy task though. Employees often had back to back meetings and most of the time it was not possible to find a free time slot straight after an observation. Asking questions during the observation would on the other hand influence participant behavior. In the end, we had to postpone follow-up questions and take the risk of the team members not remembering particular events.

A second challenge was the risk of selecting a suboptimal time to run the observation. For example, our observation of team B was precisely when the product was being launched. This meant that several meetings were cancelled as most of the team members were working on last minute fixes and busy ensuring that the launch would ran smoothly. It also meant that there no user research projects were happening at the time of our observation. However, the negative impact on our work was limited and we still managed to observe several important events. In addition, we had access to a wide range of data related to how user research is being run within team B. So while our timing for the observation was unfortunate, in the end we were still able to collect valuable data.

And finally, observing events remotely makes some conversations difficult to follow. During a study debrief session run as a workshop in London, we could not get a close look at some artifacts hanging on the walls. Also we couldn't hear the multiple conversations taking place in the room due to poor audio and video quality. On the positive side, joining through a video conference meant that we were almost invisible, appearing as a small square on their video screen. The team members stopped noticing us quite quickly and they also could not see what exactly we were focusing on, reducing our influence on their behavior.

5.3 Analysis of the findings

The observation allowed us to investigate how the analyzed teams function, based on actual events and documents as opposed to descriptions from the team members. We identified significant differences in the way the teams work with the UX research. These differences manifest themselves at several levels.

5.3.1 Access to important information

Active participation in most team meetings allows the researcher from team B to be informed about the latest developments in the product team. The information flows directly from the product manager and engineering lead to the researcher instead of being passed through the UX leads, designers or other team members. The team seems to have a very open communication when it comes to the priorities, quarterly or long-term goals. All the communication for these areas is available to the UX researcher at any time.

One example: during one of the team meetings where the whole team was present (as opposed to the meetings in more limited circle of people working on certain features), the product manager shared some updates on his activities from the previous week, the external reception of the app and how the company leadership perceived the team's performance. In addition, the product manager shared a document which included a detailed analysis of the priorities for 2017. The document contained a features list with an estimated effort from everyone involved, including UX research assigned to most priority projects. The whole team was encouraged to review the plan and make suggestions, adding priorities wherever it made sense. Through those meetings the researcher could have the full overview of the product strategy and also have the chance to contribute to it.

Looking at communication in team A, we identified significant differences. As already confirmed, there are three UX researchers working for the team: the lead UX researcher who oversees the research activities, the UX researcher who focuses on quantitative research and another UX researcher responsible for the qualitative methods. The team tenure of both these juniors was just few months during the time of our observation and at the time of our research none of the researchers was attending the regular team meetings of the substreams of the product, so communication related to product roadmap and strategy was not reaching them directly. We observed that the communication related to product priorities was brought by the UX lead or, at a more tactical level, by the UX designers during various UX team meetings in which concrete design ideas were being discussed.

Another very important factor is that the qualitative researcher was hired as temporary contractor. By definition, temporary workers have limited access to strategic information, making the collaboration even more difficult.

We did not have a chance to observe any meetings with researchers and product managers or engineering staff being present. It is possible that during those meetings relevant information is made available to researchers. Those meetings do take place, but, to our knowledge, they tend to focus on concrete research projects. As those meetings are infrequent and irregular, or at least that was the case during the time of our observation, we are not convinced that there is enough time for the researcher to get a bigger picture. Also the information shared would be naturally selective; a researcher who does not attend regular team meetings does not know about newest developments and it is then up to the product manager or engineering lead to decide what information is relevant to the researcher. By doing so, fundamental details might get lost. After all, we do not know what we do not know. As a result, a researcher has a limited ability to ask the right questions. As said, the meetings with product managers are very much project-oriented and infrequent, so product managers are definitely not the main source of information for the junior researchers. Instead, the

UX designers become the main source of information, since they attend the meetings of the product substreams they work with. Additionally junior researchers get relevant information from the UX research lead who has regular meetings with the product managers.

5.3.2 UX research in projects

The events and the artifacts related to team B indicate that user research plays an important role in their project. As previously explained, user research activities were part of the planning document for 2017 and some research efforts, for example large scale satisfaction surveys, were considered one of the top priorities for the upcoming year. Also the importance of one of the features deemed critical for 2017 was directly derived from user research run throughout 2016. On multiple occasions, we could also see that both the product management lead and the engineering lead from team B were referring to UX research as a source of information supporting the decision making. This helps the researcher in building credibility and fostering his or her position in the team. As an example, the engineering lead said that the UX researcher will always be asked her opinion on the user interface. In another meeting, the product manager also referred to research results more than once when talking about selected features. And one time we observed how the product manager, being unsure what solution to choose, wanted to run an experiment to see which solution would prove the better choice. All these observations confirm how seriously user feedback is taken into account when taking product decisions.

On the researcher's side, in team B, they do not adopt a passive approach, limited to input when data is specifically requested by the other team members. On several occasions, we witnessed how the researcher gave valuable input on the product decisions and participated in the brainstorming discussions. It was interesting to see how the researcher got involved in discussions. In one meeting she did not wait to be asked for additional information, but proactively asked about certain solutions *("Have we decided on...")* and provided additional data from past research run by other researchers working with associated products. Another time the researcher offered to provide additional data on user engagement based on a past project. The engineers, with their positive immediate feedback, appreciated the offer and welcomed the additional information *("That would be super useful")*. The researcher provided concrete research findings, such as behavior patterns, and indicated which solutions should be considered and which ones hold risks.

On another occasion we observed how the researcher initiated a research project directly during the team meeting. This was triggered by a few unanswered questions about one crucial use case for which the team could not agree on the right solution. The UX designer joined the discussion and proposed an exploration of designs, consisting of a remote testing study with a crowdsourcing platform. The team quickly agreed on a provisional timeframe and the actions items for the researcher. That specific situation clearly showed the benefit of the researcher being present in the room and making user research a real source of useful information for everyone.

In addition to the interactions during team meetings, we could also confirm that the researcher made a considerable contribution to shared collaboration documents, hand in hand with engineering, commenting on certain solutions and features, linking to relevant research findings and providing recommendations. In one of the analyzed design documents, she contributed with nine comments and suggestions. The following two snapshots demonstrate how such a contribution looks like in practice:

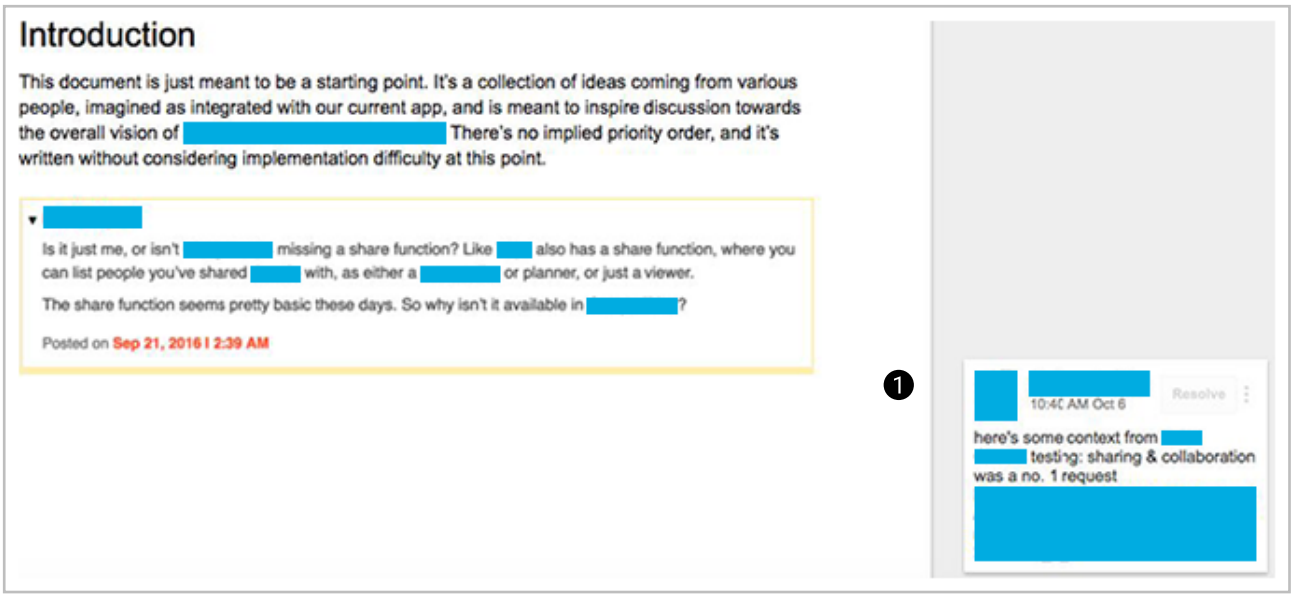

Figure 11: Snapshot of contribution
① UX researcher commenting and referencing research results

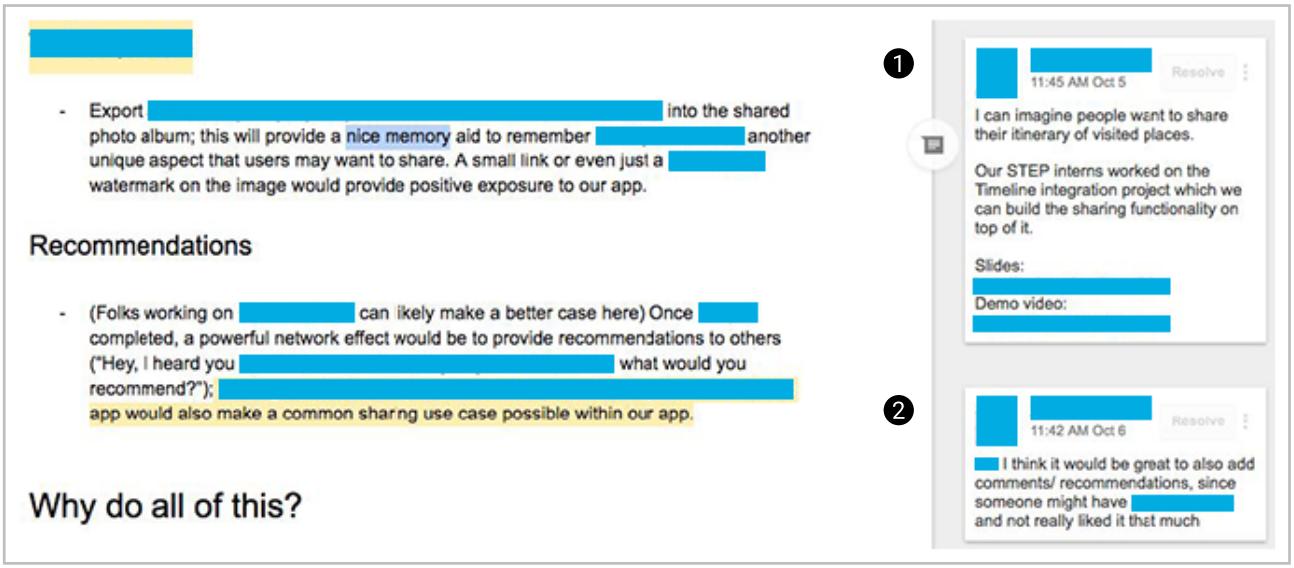

Figure 12: Snapshot of contribution
① Software engineer commenting
② UX researcher commenting

All the referenced facts allowed us to conclude that in team B the researcher drives all the research related activities and that the close collaboration between the research and the other product functions enables user research to really bring value and be an important voice in the product discussion.

Because of the structural differences between the two analyzed teams we could not gather similar data related to team A. The researchers do not participate in regular team meetings of the product substreams so we could not observe events analogue to those happening in team B. team A relies on a more formalized process of research planning which is established at the beginning of each quarter or shortly before that. The research goals are defined by the leads of each function, in collaboration with the UX research lead. Furthermore, throughout the quarter, this senior researcher meets with the product managers on a regular basis to discuss and finalize the research plans.

We neither had the chance to observe a quarterly planning meeting between the UX research lead and the representative of the other team functions nor could we observe one-to-one meetings with product managers. Therefore we are relying on the information gathered during the validation interviews, phase three of the project, combined with the interpretation of other events we could directly observe. Keeping these reservations in mind, we can still draw some meaningful conclusions.

Since user research is absent from the regular team meetings, the researcher's ability to spontaneously react to the needs of other team functions is very limited. Aside from the mentioned planning meetings and the regular discussions the UX research lead has with the product managers, all the researchers attend weekly stand-ups and design critique meetings, being the main opportunities to provide research input. During these meetings the researchers can provide related research data when the designers present their concepts. After all, the researchers have a deeper knowledge of the findings from past research run by either the team or within the wider organization. Potentially, the researchers from team A could ask additional questions and proactively provide useful research data, like the researcher from team B usually does when discussions take place on possible solutions.

We have observed seven UX team meetings and we could see how, on some occasions, the UX research lead provided suggestions on solutions. This is an important factor, when considering her involvement is leading the research, focusing rather on selected strategic initiatives, such as crucial formative research or research projects having an impact on the wider product group, than proposing solutions for specific features. As a result, this limits her ability to get involved in tactical decisions. We could observe how the research lead spontaneously gave input and provided useful data points. One example included her recommendation to look at the data of a recent hackathon which could be relevant to one of the discussions, providing additional information on selected issues with the current product design. Although her suggestion was welcomed by the design team, we don't know if, in the end, the data was used in practice. In the same meeting we observed the research lead raising her concerns with a solution presented by one of the designers. On multiple occasions we could also see the designers referring to user feedback when presenting concrete design solutions, clearly demonstrating that research data is taken into account. The other researchers were less vocal. We did not witness any situation where they would spontaneously reference particular research findings to help the UX designers take decisions and we did not see them getting involved in brainstorming on particular solutions either. This limited involvement was probably caused by the relatively short tenure in the team and possibly the lack of confidence from the two researchers. Or maybe, the quantitative researcher did not have enough relevant data as she is focusing on setting metrics and running various experiments.

Based on the seven meetings we observed, we concluded that the meetings tended to be dominated by the designers, especially when compared to the level of the researcher's involvement in team B. As said, there was some useful input provided by the researchers, but more often there were not many data points coming from the researcher helping the designers to take decisions. The decision-making discussions mostly took place without any involvement from the researchers. We also did not observe the researchers proposing to run additional research when the designers weren't able to come up with satisfactory solutions for the product. Of course, we are conscious of the workload of these individuals, and we are aware that it is not always possible to engage in new projects outside of the agreed quarterly priorities. Nonetheless, we still feel there is potential for

research to add value to product development.

In addition to the actual meetings, we also analyzed documentation and artifacts related to how the research contributes to product development. For team B we could analyze three different design documents in which the whole team, including the researcher, discussed particular features and solutions. We asked our stakeholder to provide us with email threads and other relevant artifacts, but we did not see any documents comparable to those from team B. During the third phase of our project, we asked the researchers from team A if they ever contribute to design documents, and we were told that this is not the case.

5.5.3 Credibility of the research

Based on the qualitative interviews run during the first phase of the project, the credibility of the research proved to be one of the key aspects leading to the integration user research in the product development process. Credibility can be understood as both, the level of trust in the data provided by user research, and as the credibility of a researcher as a professional.

While observing team B, we could confirm that the expertise of the researcher is valued and the contributions she makes to product development are not questioned by the other team members. For example, on one occasion an engineer talked about how he came across a company's page recommending certain products to users with a short description. The idea was to use this resource to not only promote the product but also to address certain user complaints which surfaced as feedback after the launch. The researcher promptly identified the potential risk associated with use of that product *("We need to be careful not to suggest that the UI is not understandable.")* and explained why promoting a workaround might be perceived negatively by the users. At that point, everyone agreed that there was a risk and that workaround suggestions were not the right solution. This clearly demonstrates that the researcher's expertise was accepted without further discussion. We believe it is also helpful that the language used by the researcher was rather soft and inclusive *("We need to think", "We need to be careful", "Have we decided")*.

In one meeting we could observe how one of the engineers looked at the team B researcher multiple times, non-verbally asking for her feedback, while brainstorming on solutions to reduce user fatigue. The researcher was also directly brought into some discussions with the engineering by the product manager. On few occasions, after a new topic was started and the team was not able to take a quick decision, the agreement was to continue the conversation later between the engineer, the product manager and the researcher, demonstrating that the researcher is seen as a partner, a team function bringing a valuable perspective to relevant discussions. We believe the researcher did a great job at building her credibility over time through the careful selection of research methods, providing the team with relevant information and through regular communication with the team members.

Working with team A, we could see some degree of credibility the user research function has. In particular the UX research lead seems to have a strong position, earning the other function's leads and team member's respect. We were able to confirm this multiple times during our initial interviews, during the observed design critiques or stand-ups as well as during the debrief session following usability testing, where her views were widely accepted and not questioned. With the junior qualitative researcher we did not find any signs that would indicate a low credibility of this individual as a research professional either. However this only applies to the design team where, on

a personal level, credibility does not seem to be an issue. We did not have a chance to observe meetings between the researchers and engineering or product management, therefore we cannot confirm or deny that credibility is an issue in team A. The fact that the researchers do not participate in the recurring team meetings, and that in some cases there is no established regular communication between the junior qualitative researcher and the product managers and the engineers, makes it more difficult to establish the credibility of the UX team among non-UX team members.

Looking beyond personal trust, at the level of acceptance of user research data as such, we concluded that this may still pose some challenges. The material gathered during our initial qualitative interviews clearly showed that some of the leads did not consider qualitative data coming from usability testing as something to fully rely on. This is always a potential issue in a company with a strong engineering culture where metrics are frequently seen as real and actionable, while activities that are more difficult to quantify are being ignored. In both teams we were able to observe, to varying degrees, strategies to help to overcome the issue.

In team A, a dedicated quantitative researcher has been recently hired in order to identify key metrics and run experiments that will help assess the performance of certain features. Historically, as indicated by one of our interviewees, the team overused qualitative usability tests and as a result, they were no longer seen as valuable input. Although we heard from some interviewees that qualitative data was also important in order to really understand the user, it is clear that small scale user tests do not enjoy high level of trust. At the moment the research team divided the responsibilities into:

- *strategic and formative research* mostly run by the lead UX researcher
- *tactical and small scale user testing* run by the qualitative UX researcher (a survey analysis was also prepared by this person though)
- *quantitative studies* run by the quantitative UX researcher

Expanding the scope of research to include additional study formats clearly meets the expectations of the product team. Based on the collected information, we believe that if a UX researcher limits his scope to small scale, in-lab qualitative testing, it may be difficult to build personal credibility with product managers and engineers.

Working with team B, we did not see the same sentiment in regards to qualitative data. It is important to mention that we know that the UX team has worked very hard in order to avoid UX function being seen as people who *"draw mocks and then they talk to three people about it"*, as the researcher from team B phrased it. Their approach to mitigate the risk of being perceived as such was, among others, to include more quantitative data and run a more diverse range of research projects, including some large-scale studies. One example allowed tens of thousands of people to use an early version of the product. The resulting feedback was analyzed and used to improve the application.

Another strategy to build credibility is to engage the product team in observing user studies. As confirmed by multiple interviews and meetings, the engineers and product managers from team A tend not to observe user testing. team B, on the other hand, is highly engaged in observing and sometimes even participating in user research. For team A, an impeding factor is that the product managers and most engineering teams are based in Zurich, while the user testing is primarily

conducted in London. Travelling to London to observe the sessions is challenging, in particular for the engineering staff, due to the lack of workstations optimized for coding related tasks. The team decided to move user testing to London, where access to a diverse English speaking population is easier. Not all stakeholders speak German and even the local testing in Zurich was primarily conducted in English. The move to London improved the quality of participant recruitment, but negatively affected the stakeholders' commitment to observing the sessions. We were able to observe a usability study via video conferencing and could confirm that observing remotely is far from ideal. The camera was directed at the participant's screen and while some interactions with the prototype were visible and easy to follow, whenever the participant would not point at the particular part of the interface in discussion, it was hard to understand what was happening. The geographical factor should not be overestimated though. From team B we learned that various team members went on a field trip to Dublin and Jakarta to observe the interviews.

When stakeholders rarely attend testing sessions, it is more difficult to really get the message across and convince them that certain issues should be addressed. This contributes to data results from research not always being taken into account. During our observation phase and the validation interviews, we witnessed a situation where a launch of a crucial feature had to be stopped due to very poor user feedback gathered during dogfood and through usability testing. One of the product managers told us that the launch was postponed because the feedback from both channels was in line. Having the feedback from the user research alone would have not been enough. Dogfood feedback was not seen as part of user research by this product manager.

During our observation of team A it appeared that in some cases the lines between what should have logically been be the researcher's responsibility and what was done by the designer or the product managers were blurred. One representative example was the analysis of the feedback provided by the users who tested an early redesign of the product (dogfood). The feedback was directly sent by the users to an online discussion group. Having analyzed these emails, and the follow-up conversations within the discussion group, we could establish that the researchers were not involved in collecting and analyzing the feedback. The responsibility was fully in the hands of one of the designers, with a heavy involvement of the product manager. The follow up discussions, for example, email replies to users or adding other product team members to the email thread, were managed mostly by the product manager, with some involvement of the senior software engineers. To us, this was a rather unexpected way of managing user feedback. Having a dedicated UX research function, we expected the researchers to be directly responsible for collecting and analyzing feedback especially when considering that, if such an analysis is not done in a systematic way, some data may get lost and issues may not be identified. In contrast, in team B, the dogfood feedback was analyzed exclusively by the researchers, who delivered a comprehensive report containing all the findings to all product team members.

Later during our research, we found out that, in team A's project, some issues which should have been highlighted at the stage of dogfood testing were not flagged, resulting in a negative impact on the whole project. In one of the design critique meetings, where the researchers were present, one of the designers referred to the dogfood feedback multiple times, but the researchers did not get involved in the discussion. We have reason to believe that the whole analysis was done without their involvement. That event was not the only example when the designers were heavily involved in analyzing user feedback. In one of the UX stand-ups a designer was giving an update on one of the features and said that he was doing a desk research on how people collaborate. The researchers did not seem to be involved in it at all. On another occasion, during a creatives review

meeting, which is for designers only, we heard the designers referring to the feedback they got from internal users working in the same company, but there was no mention of researchers. While brainstorming for solutions the designer responsible for analyzing the earlier mentioned dogfood feedback advised another designer on how to solve a certain problem. The idea of running experiments was coming up time and again, but no one indicated a possible involvement from the research team. It is possible that consulting the researchers was obvious and therefore it was not specifically mentioned, but it is also possible that the whole process is strongly driven by the designers and the researchers simply do not get involved. This makes us wonder if the user research function is understood as a real partner and if the designers consider the collection and analysis of user feedback as a responsibility of user researchers or their own.

While it can be beneficial to have designers or other non-researchers directly involved in collecting user feedback, to be familiar with the user research and to see research methods as a reliable way to test solutions, it can also be risky, if this involvement means excluding user researchers, who, in the end, are better equipped to run user research. We still are not certain, based on what we have observed, to what extent the user research is hijacked by some of the designers, but our impression was that in some situations where researcher's involvement would have made sense, the designers played a leading role.

5.3.4 Collaboration between researchers and other product functions

The strong position of research in team B is, amongst others, the result of getting the stakeholders' buy-in for user research projects. If the research activities were run in separate streams from the other product functions, the acceptance of the research findings and their perceived value would have probably been much lower. Evidence of the close cooperation between the researcher and the product manager in team B was highlighted by the participation of the researcher in one of the major workshops which aimed at identifying how the application developed by the team could be included in the list of default apps by one particular provider. Another example of this close working relationship was when the product manager and the researcher, together with a dedicated team, analyzed the reviews by the users and defined user journeys together.

The close collaboration is not limited to the product manager. Engineering is also directly involved in selected activities closely related to the user research. For example, after the launch a large amount of feedback was collected. The researcher asked one of the engineers to help her in categorizing the feedback to make sure the system could be directly used by the engineering team.

Since one of the standard tasks for the user research is the validation of user interfaces and design concepts, the natural partner for a researcher is a UX designer. We had the chance to observe a study preparation meeting between the researcher from team B and a UX designer. The meeting was the follow-up to a team meeting during which an idea for research emerged. At first, the designer presented a few mocks. Then, the researcher referred to findings from a previous testing which showed some risks associated with the designer's proposed solution. Despite her critical stance, she did not discard the idea. Instead she suggested testing the solution. To us, this is a professional way of showing the challenges, based on actual data, but also a way of respecting other member's ideas. We could also see how the researcher proactively solicits the feedback of the designer, asking him what should be tested. She walked the designer through various research options explaining the possible study setup and showing the benefits and the risks of each

solution. Together, in a collaborative way, they eventually decided on the preferred study setup and the backup option. The options are kept open until the engineers give feedback to the designer, instructing him on what solutions can be technically implemented to create a realistic testing environment. During the same meeting we also witnessed how the researcher and the designer discussed design solutions. The designer was not sure about which solution to choose and asked the researcher if she could provide data to facilitate his choice. The discussion evolved into brainstorming of design ideas and the identification of potential issues which could result from different solutions. During the discussion, the researcher proposed ways of designing the feature, but again in a very soft way *("What will happen if we do…?")*. In the end, the designer liked the high level idea and offered to create mocks, while the researcher was going to think about ways to test the solution. The discussion demonstrated the high level of preparation and the mutual respect present in team B. It was visible that the lead on design related questions was taken by the UX designer and the research related questions were answered mainly by the researcher. But at the same time, all parties collaborated to find the best solution together. This helps to get the stakeholder buy-in and increases the acceptance of UX research.

In team A the collaboration between the researchers and the other team functions is structured differently. More regular communication between the researchers and designers happens during the weekly meetings, or when specific studies are being discussed. The collaboration between the researchers and the product managers and engineers, on the other hand, is significantly less frequent, especially with the qualitative researchers. To our knowledge, the quantitative researcher has a closer working relationship with the product managers and the engineers. His function was recently established in the team and therefore the expectations of high impact quantitative research are immense, as confirmed by the leadership in an interview. The meetings we observed were not in direct connection with this relationship though.

Based on the data collected, we can confirm that the qualitative researcher, who is responsible for tactical research, works closely with the designers, whenever a new study is being planned. The product managers may get involved in the planning phase, but that's not always the case, as in some projects there are no direct interactions between the researchers and the product managers.

This was exactly the case with the usability study we observed. About two weeks prior to the study dates, the designer sent an email to the researcher listing the goals and the general questions she wanted to have answered, and also highlighting what the product manager liked to see during the test. Compared to team B's approach, where the researcher creates a research plan and shares it with the whole team, in order to get the stakeholders' views on the research goals and questions, participant recruitment, interview script and others – our artifacts analysis confirmed that the research plans do include comments from the product management and engineering – in team A the collaboration across functions during the research planning is much smaller. For example, for the study preparation meeting we observed, the research plan was not the basis of the discussion. Instead, the researcher and the designer referred to a design document created by the designer. During our analysis of artifacts, we could see though, that research plans are being created - we have analyzed several of them – although our validation interviews showed that in some cases the product managers receive the plan only a few days before the study takes place. Product managers are invited to actively contribute to the research plans, but the analyzed documents did not show any input from them.

During the study preparation meeting we observed with the researcher and the designer, a design presentation served as a basis for the planned research. Compared to the meeting we observed in team B, the study preparation in team A was more designer-driven, with the designer trying to influence how the study would be run, and instructing the researcher on his preferred questioning method and interview flow. The designer's influencing efforts manifested themselves already in the initial email thread, *"I would not spend too much time on the second goal. I'm a bit worried to overwhelm people. So perhaps we can probe lightly in the beginning (...)?"*. During the meeting, the researcher adopted a passive role, not really providing personal input. After receiving more details on the design solution, the researcher asked the designer if she wanted him to ask the users directly about certain aspects. In the meeting, the researcher had an executing role and was not treated as an equal consultant, taking full responsibility for the area of his expertise. Our observation determined that at the research planning stage, at least for the tactical research, the information needed for preparation is rather handed down by the UX designer, making him the central communication point for the researcher.

Interestingly, at some point, it seemed like the designer was treating the study rather functionally, not approaching it with an open mind as a tool to find out what people thought about the particular solution, but rather as a way to validate a pre-existing view which confirmed a particular solution was the right one. The solution in question was about the issue of people not being able to find an entry button. The designer wanted to get confirmation from the usability study which would have allowed her not to make the button blue.

As far as the involvement of the product manager is concerned, we learned that it fluctuates depending on the project and particular individuals. For strategic, formative research, the wider team is directly collaborating with the researchers. In some cases non-UX individuals even participated in user interviews. Also the involvement in the preparation of the study is significantly higher than it is for tactical research. In the study we observed, the product manager did not participate in the study preparation meeting. The designer shared the design presentation with the product manager but did not receive any feedback from him when the study goals and the research questions were defined. The user interviews were observed only by the researchers and the designers, not by the product managers or the engineers. One product manager participated in the debrief workshop after the sessions where the study results were discussed. It is important to highlight that product managers rarely observe usability studies sessions, and the engineers even less frequently. The study we observed was no exception.

Compared to team B, where the researcher actively collaborates with the PM and engineers on presentations to the leadership or analysis of the research data, the collaboration of the researcher from team A with the other product functions is lower. Previously we described the analysis of dogfood feedback, which was run by a designer instead of a researcher. That analysis could have been a great opportunity for collaboration with the other functions. Nevertheless, the research team is trying to resolve this shortcoming and increase the team's impact on the product. After one of the usability studies run prior to our observation, the researchers created a findings log document and shared it with the rest of the product team. The document included a list of identified issues, recommendations as well as a tracker of follow-up actions with the individual items. When we analyzed the document, however, we realized that the tracker had not been updated and it appeared that most of the issues had not been solved in the end, indicating a lack of interest for this approach. During the validation interviews, we learned that there was no stakeholder buy-in and that the initiative did not result in a real collaboration.

5.3.5 Communicating the research results

The last identified area was the communication of the research results. The analysis of the qualitative interviews from phase I of our research showed that the way the research is presented is crucial in establishing credibility of the research and the researchers. Findings need to be clearly communicated and actionable, ensuring that the research has a positive impact on the product.

Our analysis is primarily based upon research reports. We assessed twelve reports from team A and eight from team B, and some additional documents.

We could establish that there is no company-wide, standardized way to present research findings. In both teams, most of the reports were created by the researchers as presentations and not as text documents. The presentations generally contained the main findings, detailed information on all results, participant profiles, descriptions of methodologies, study specifics and raw data in form of video recordings, transcripts and others. The reports were usually shared by email with the whole product team.

The discrepancies we determined, sometimes within the same teams, concerned the actual report structure:

- not all the reports contained recommendations or possible high level solutions
- when recommendations were provided, they were placed in different sections of the report, sometimes next to the findings, sometimes at the end of the report
- the type of additional artifacts from the study sessions varied; these include participant quotations, full video recordings of the user sessions, snippets of the video recordings, screenshots and illustrations
- additional artifacts were placed in different sections.

Based on the twelve reports created by team A, we identified a typical report structure consisting of the following components, in the most commonly seen order:

- key findings (positives and challenges)
- details of the study (what was done, study logistics, participant profiles)
- a detailed findings section consisting of:
    - positive findings, with the participant quotations
    - challenges, with the participant quotations, sometimes screenshots, but the without severity rating or the number of participants impacted
- additional resources (links to research plans and previous studies, raw data).

The structure is consistent throughout the reports, making it easy for the viewers to locate the elements they are interested in. Looking more closely at the key findings section, we established that there are usually several findings listed: five to six positives and a similar number of challenges. There is no priority assigned to these findings and also there is rarely an actionable recommendation (only found in two reports). The key findings are not directly linked to the additional data which would provide more context, for example, to learn how a specific issue was determined. The following is a typical example of the key findings page.

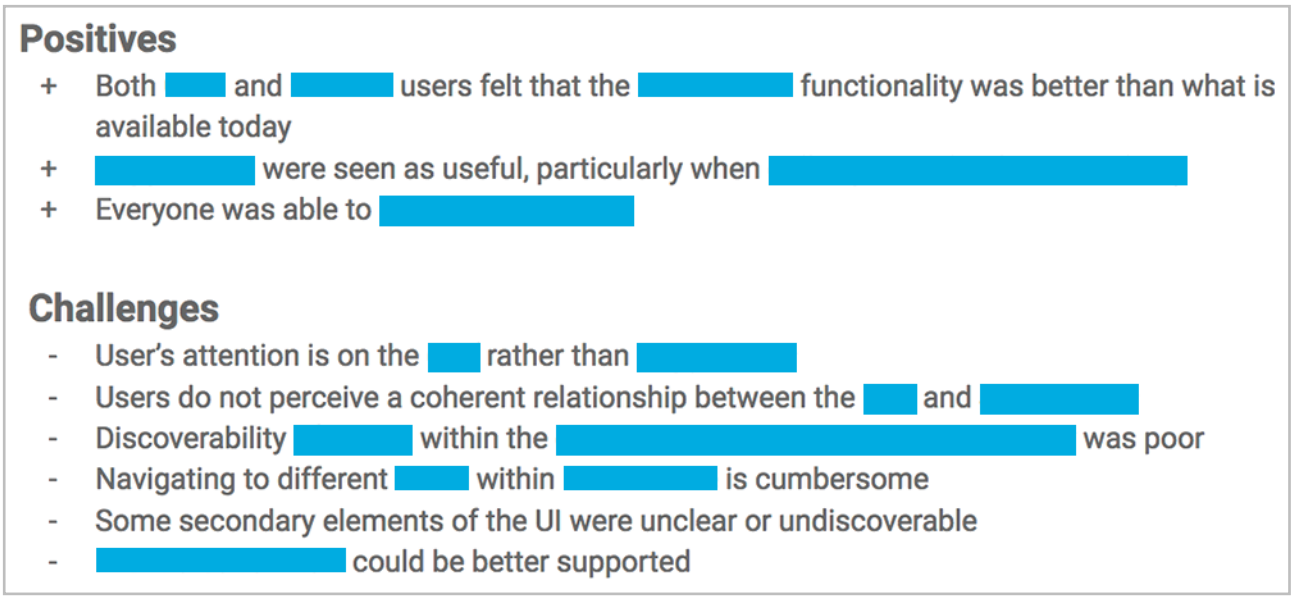

Figure 13: Key findings in a typical research presentation

The detailed findings section usually included a short description followed by the participant's quotation. In six reports screenshots illustrating the issue could also be found. Video snippets were not included in any of the analyzed reports. We believe adding them would have been useful. The more information illustrating how an issue was identified, either by adding a video snippet or a screenshot, the more difficult it is to disregard the particular finding. Having the finding linked to a tangible example also makes it easier to understand how a particular thing is a challenge.

Another interesting thing is that the identified issues did not include an indication on how many users were impacted and how severe a particular issue was. Although the numbers were not fully relevant in small-scale qualitative studies, they would have been helpful, especially if the vast majority of users was impacted. Also in terms of severity of the issue, adding the actual impact would have been beneficial when deciding what issues should be addressed first. Some stakeholders said they find recommendations very useful, but unfortunately they were not part of every report. Clear recommendations were included in five out of the twelve analyzed reports but we couldn't determine a pattern on how the recommendations are included. In two reports they were found at the beginning of the report, in *"Key Takeaways"* and *"Key Findings"*, in two reports at the end of the document and in one report each of the detailed findings had a specific recommendation included next to the identified issue.

We believe it is difficult to connect the recommendations placed in a separate section if they do not clearly connect with an identified issue – this reduces the likelihood of the recommendations not being considered. In some cases the product managers or engineers may have their own vision which may not be supported by the research data and if the results are not prominent enough, it may be easier to not follow up on them.

Looking at research reports from team B, we could see the following typical elements:

- main findings and executive summary at the beginning of the report
- the description of the methodology found in one of the early slides
- plenty of visual elements together with quotations and video snippets
- participant details

- indication of how many participants were affected by identified issues
- what number of testers have similar preferences

The overall structure seemed to be consistent with main sections found across all the reports. The researcher included several visual elements in her reports. In most cases there was a graph, a screenshot or a picture illustrating what the participant referred to and links to video snippets were found in the majority of slides. The number of participants impacted by an issue or expressing an opinion was always included:

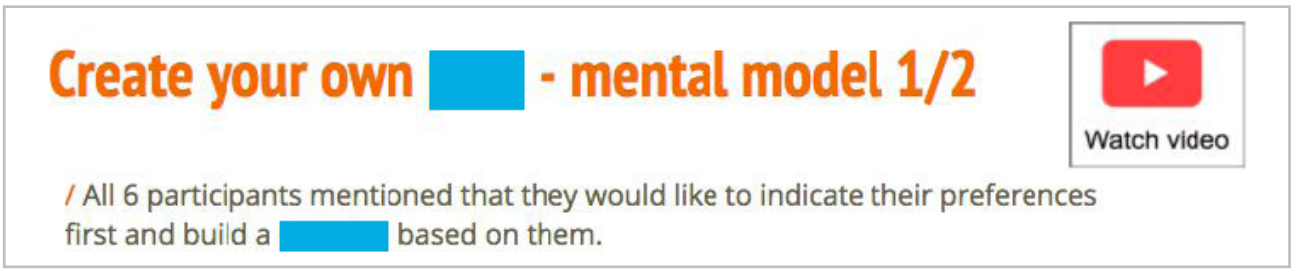

Figure 14: Participants impacted by an issue or expressing an opinion

Surprisingly, the recommendations were rarely added and in this area, the reports were similar across the teams. Based on the initial interviews though, it did not seem that other function leads considered the interpretation of the findings insufficient. It is possible that there is more clarity in team B because the main findings are communicated in an easy to read and understandable way, for example, they are linked to the locations where additional corresponding information can be found. While reading through the reports we could frequently see storytelling elements, with the main narrative going through the slides and findings, connecting them. A storyline was frequently found in the slide headlines. For example, one slide was titled *"Booking in advance takes away the flexibility"* and the following slide *"...but sometimes it is necessary"*. This makes the report consumption easier. Interestingly, a closer analysis established that the raw data was found only in some reports, indicating a higher confidence of the researcher. Our assumption is that she has developed a sense for the trust the other team members have in her.

5.4 Conclusions

In addition to observing actual events and analyzing artifacts, we tried to have follow-up conversations with the key figures involved in the events. The calendars of all the team members were usually full and our follow-ups were often days after an actual event took place. This posed some challenge as it was difficult to obtain additional information needed to correctly interpret what we observed. As an example, during one of the meetings, team B was referring to their collaboration with another team at a very detailed level. Without a follow-up meeting it was difficult to assess who the mentioned individuals were and what their relationship with team B was. On another occasion, when observing the presentation of one of the team A designers, we interpreted the reference to user feedback as a sign of a good collaboration. However, in the follow-up conversation with another team member we learned that the designer in question picked the findings very selectively and that research was normally not consulted by her. This made us adopt a more careful approach to our observations and also made us reconsider the validation phase of the project. Keeping these reservations in mind, the observation validated most of our conclusions from the first phase. It was especially rewarding to see that, even if we did not feel like the conclusions were universally applicable, the observed events and analyzed artifacts confirmed our

interpretation of the first phase interviews.

The observation was particularly relevant to the hypotheses related to the communication and the product development process. The hierarchy was difficult to observe directly, even though we had the chance to see how it impacted the collaboration. The structure of the team on the other hand was an area we could analyze rather well, especially based on the observed meetings.

Overall we felt like the cooperation between the UX research and the other product function was less effective within team A. The very fact that research was not involved in team meetings and therefore did not have all the information related to the newest product developments, had a significant impact. We could see that the reduced integration of the UX research function into the broader team made it difficult to unleash the full potential of the research as a source of valuable data coming at the right time to help the team to take the right decisions. This was especially apparent in team A, where the collaboration between research and the other product functions was managed by the designers. This contributed to users' feedback not being analyzed diligently enough and, as a consequence, the development of particular features was pursued even when the feature performing poorly. In team B, the interaction between the researcher and the other team members during the meetings was a great showcase of how this collaboration can work if the structure of the team is right.

Having analyzed the research reports, we could see how they relate to the information we got from the leads in the initial interviews. Some elements identified as helpful by the members of product management and engineering from team A, were missing in some of the reports prepared by the researchers from that team. Here we have in mind especially the missing interpretation of the results but also lack of clear prioritization of the findings. This would confirm why representatives of non-UX functions did not always see research as a source of valuable insights. On the other hand looking at the reports from team B, where UX research clearly has a relatively strong position, one of these elements – the recommendations – was not present. So even though we still believe that an interpretation of the results is a fundamental part of impactful research, personal preferences of the stakeholders may play a vital role.

As far as the third area is concerned, the product development process, our observation clearly showed the benefits of having UX research fully integrated in the team and not being a service function. The active involvement of the researcher from team B in team meetings, providing the team with the right data at the right moment, supports our theory. The fact that the research is brought at a very early stage, considering both that the research was active long before launch and that it had the opportunity to bring input for every user facing feature, also once the product was live, made a real difference. Nothing comparable was observed in team A. We are convinced that the point in time when research can start its involvement in product decisions is crucial in creating a more successful outcome.

6 Phase III: Validation

6.1 Change of plan

Initially, our approach included as a third phase a questionnaire to be sent out to a broader audience beyond the teams already analyzed. This questionnaire would have been based on the information gathered during the interviews and the observation. However, during our observation we realized we were accumulating far more valuable input than we expected. Meanwhile, we started to question if our interpretation of events and behaviors was correct given that we were only seeing a fragment of the picture and there was a lot of missing context and information. Further, when discussing next steps with our stakeholder, the research lead from team A, and sharing with her an idea of intensifying the observations of a selected product stream, we found out that our interpretation of the events was not fully correct. In particular, we interpreted the fact that one of the researchers frequently referred to user feedback in her presentations as a positive sign of collaborating with user research and including research findings in the design process. What we heard from our stakeholder though was that this feedback was used very selectively and the collaboration with that particular researcher was in reality rather challenging. Considering this new information, we felt the need to validate our interpretations and confirm if events really happened in the manner we thought.

Our stakeholder suggested we run individual validation interviews instead of sending out a questionnaire in the third phase of the project. The newly acquired knowledge would allow us to ask more specific questions than during the first interviews. Our first interviews contained high level questions on various topics, formulated in a general manner, allowing all our interview partners to answer them, regardless of their function. At that point, we weren't exactly sure how open our partners would be and we wanted to give everyone the opportunity to give their perspective. Asking the same questions also facilitated our analysis and gave us a rough overview of the current situation.

Months later, we had acquired detailed knowledge of the situation and a better understanding of how the teams operated and collaborated. We were in a position to ask targeted questions on observed events and behaviors. Another favorable change was the trust we had built with our partners. Over time, they had learned about our work and felt more comfortable when talking to us. Their openness demonstrated acceptance of our study.

The aim of the third phase was on the one hand validating our hypotheses and on the other hand verifying our interpretation of the observation. Through the conversations with our stakeholder, we learned that our initial interpretations did not always fully correspond to the reality. A few conclusions could be categorized as *"looks can be deceiving"* and we had to rethink the observed situation or behavior. Nevertheless, our interpretations proved to be correct for most situations.

For preparation, we went through the notes of the observation sessions and collected our main findings and open questions. The result was a new interview script with tailored questions for individuals. In order to avoid influencing the responses, we always started from a very generic question (for example: *"What do you think about the research reports?"*, *"In what situations do you interact with product managers?"*) instead of sharing our conclusions straight away. Only once we

learned the first opinion of our interview partner, would we ask very concrete questions that directly related to what we observed.

6.2 Running the interviews

The selection of interview partners for the validation was slightly different to our selection of the first phase interviews. In the first phase, in order to get as many perspectives and opinions as possible, we tried to interview a broad range of roles. Some interview partners provided a lot of input for our analysis, some less. For the validation interviews, we chose those team members who were directly involved in the observed events and who therefore aroused our interest. We hoped they could answer some of our open questions and confirm our conclusions or possibly prove us wrong. Some of them were part of the first interviews, some weren't. Our final selection included:

- One UX design lead (team A)
- Two UX designers (two from team A, one from team B)
- One UX research lead (team A)
- Two UX researchers (one from team A, one from team B)
- One product manager (team A)

We only interviewed two members from team B as we felt there were not many outstanding questions to be covered in greater detail. Based on the observation, we had no doubts that the researcher worked very closely with the other team functions and we knew from the observed meetings what this collaboration looked like. For example, we knew that the product manager invited the researcher to key workshops, or who worked on the feedback analysis after the launch. We also had broad access to all the documents created by the team: research plans, use cases documentation, design documents, research reports and presentations. In all these documents, we could see what changes were made over time and who was contributing by commenting. The breadth of the artifacts made us feel confident enough to limit the validation only to what was really essential.

For team A we felt less confidence. Their team structure was more complex. Some of the researchers had very limited interactions with the product team and we did not get access to some meetings which could have been relevant to observe. Further, the documentation in which the researchers were involved was limited. We realized that the team was more hierarchical and that there were many hidden factors impacting team dynamics and collaboration between the functions.

Each interview was run according to the customized interview script that covered all the crucial events the individual was involved in. Some questions were repeated throughout the interviews, for example in case of team A we asked each interviewee how many sessions were observed by the other individuals and about the final outcome of the project. Collecting information from multiple individuals ensured that we could get a correct picture of the particular events. The interviews were run either in person or as a video conference and took between 30 and 45 minutes each.

6.3 Analysis of the findings

Validation interviews run with the members of team A proved that our observations and the conclusions drawn from them were correct. The fact that the researchers are not assigned to the

particular product streams was identified as the main issue by everyone we talked to, so our deduction here proved to be correct. We also confirmed that there is no regular communication channel established between the junior qualitative researcher and the product managers or engineers. Here we are focusing on the qualitative researcher, since the other researcher responsible for quantitative methods was very rarely part of the events we have observed. This lack of communication is clearly linked to the fact that the researchers were not assigned to the particular product streams and therefore did not attend regular team meetings. This setup is mainly caused by a lack of resources within the team that does not allow for a dedicated research staff. Having only one qualitative researcher who works with three main product streams, makes it very difficult for this particular individual to get truly involved and find time to attend relevant meetings. However, the product teams do not actively involve researchers and they clearly do not see research as a real part of the product team.

In addition, we confirmed that individual meetings between the junior qualitative researcher (who is responsible for regular usability studies) and the product managers do not take place on a regular basis. It appears that the situation we observed where only the researcher and the designer were involved in user study preparation was not unusual. Our interviewees confirmed that product managers would rarely be involved in research preparation, maybe with an exception of high profile strategic studies. Research plans we have analyzed did not bear signs of lively discussion and engagement from product managers or engineers and we have also confirmed that this is rather a common situation. Questions are defined in the research preparation phase and it is interesting to see that this is done mainly by the designers and researchers although, as we found out during our validation interviews, not all the designers have time to diligently look at the research plans and there is a consensus that research questions could be better defined. It appears that product managers responsible for particular features that go through user testing are not always actively involved in the research preparation phase. And even when they are, their involvement is at times superficial and, as with the designers already mentioned, they do not diligently look into the research plans and do not really collaborate with the researchers to refine the questions and get most of the research. It seems that usability tests in particular are not treated seriously enough by the team, at least this was the case with the particular project run during our observations. The interviews though confirmed that this approach is not uncommon. This, in our opinion, results in lower acceptance of research results by the product managers and the risk that research will not answer the questions important to the product managers is high. Our validation interviews confirmed this as well.

Based on the validation interview we could also confirm that, to some extent, the designers are dominating the researchers. The study preparation session we observed was a clear example and although during the validation interviews we found out that the relationship between the two individuals involved was especially uneven and most of the time the collaboration is not extremely designer-driven, we still confirmed that research plays rather a passive role. As an example, most of our interviewees agreed that during UX team meetings research could be more vocal and this is in line with what we have observed. Designers frequently became a hub for communications and the relationship between the junior qualitative researcher and the rest of the product team is moderated by the designers. This not the case with the research lead however, who apparently communicates regularly with the product managers, but we did not have a chance to observe relevant meetings.

The limited extent to which research communicates with product management has practical consequences and we have been able to witness them too. As described earlier, we observed usability studies run on a feature that, eventually, was not launched due to its negative reception. The launch had to be stopped at the last moment. Already during the second phase of our project when analyzing artifacts, we were surprised to see that user feedback gathered through dogfood was analyzed primarily by the designer and product manager (we did not see any signs of researchers being involved in these activities). Our interviewees confirmed that this was, indeed the case and the feedback from early releases (fishfood or dogfood stage) were historically always analyzed by the product managers and designers. In the case of the situation observed by us it appeared that the user feedback was not analyzed properly by the designer and the identified issues were not surfaced. Development was progressed even though the solution had some serious flaws; during usability testing run shortly before the planned launch date, very serious issues were identified and it became clear that launch should be stopped. This could have been avoided had the analysis been conducted by a person equipped to run it and the results taken into consideration.

During the observations, we got an impression that there are some issues with planning and that the priorities for the team are not communicated well. The validation interviews confirmed that this is the case and we identified the challenges on several levels. Looking at the resource allocation, both designers and researchers feel understaffed which results in various compromises. For example, a formal planning process takes place at the beginning of each quarter and the leads (both for UX design and UX research) confirm how many requests can be taken care of by the team. During the quarter, however it is not uncommon to see unexpected project requests as the product team´s needs shift. We have witnessed one such situation during the course of our observations. On a lower level of particular researchers not being in the relevant meetings the information is channeled through the research lead and designers. Not knowing the product strategy, the junior qualitative researcher is missing information on the criticality of the projects he works on and has difficulties prioritizing and adjusting the message accordingly. When analyzing research reports we found them not particularly helpful in seeing what the key issues were and the main message was difficult to identify. This all put together seems to confirm our conclusions from both the analysis of artifacts and the direct observation. In team A user research operates as a service function that could even be compared to an agency set up. We could see that the role of junior qualitative researcher in particular is limited to executing a study that, to a large extent, was already thought through by another team member (a designer or a product manager).

Since we had a chance to observe several usability testing sessions and the post-study debrief workshop, we wanted to confirm if our interpretation was correct. The sessions took place in London and we observed them remotely by video conference. We only saw some members of the UX team (designers and researchers) in the testing room or on the video conference – indeed, representatives of product management or engineering were not involved during the actual testing. In the validation interviews, everyone agreed with our conclusion that remote observation is a second-hand experience and it is difficult to draw conclusions from sessions observed that way. Since most of the testing still happens outside the primary team location, this problem will persist, but our interviewees did not have a plan on how to tackle it.

And, finally, during the validation interviews we wanted to confirm if our perception of the research reports is correct. As already mentioned, based on the analysis of twelve research reports we had an impression that the main message gets frequently lost in between smaller study findings and

the reports could be more helpful in prioritizing which issues should be addressed first. This means the main message does not always come across. In addition to that we did not see any signs of discussion within these documents, but we knew that this may not necessarily be the proof of a poor reception or lack of interest in these reports, as the discussion might be taking place elsewhere.

Most of our interlocutors felt that the reports could be more impactful and too frequently a synthesis and overall takeaways get lost in details. It appears this is partially a result of the team trying to get several things done during one study and combining what could be run as several user research projects into one. As the result the message gets diluted and the outcome of the study remains unclear. Considering that the user research studies are meant to help the leadership take the right decision and that the reports are the major way of communicating research findings, this is obviously an issue that should be resolved. Some elements such as participant quotations were highly welcome though, video snippets that could even better reflect the particular findings would be even more desirable. It was noted however that everyone is aware of the high time pressure and limited time the researchers can devote to perfect their reports.

Although the reports are distributed to everyone in the team, many of our interviewees felt like there is also room for improvement when it comes to how the reports are shared and a more engaging way of presenting research results is needed. Our impression that most reports seem like standalone presentations that do not always connect the dots and build a story was therefore confirmed. Interestingly, engineering is not seen as a recipient of these reports, which is a different approach to team B. The reports are written mainly for the designers and product managers, but it is also unclear how they are used in practice or what actual impact these reports have. We observed an initiative to create a follow up action tracker after one of the user studies where a high number of issues was identified, but our interviewees confirmed that this attempt was not particularly successful. Some of the product managers and designers expect researchers to provide some non-prescriptive recommendations post-study, however the product manager we interviewed suggested qualitative research should rather signal what to watch out for in the future than indicate what should be fixed straight away. Thus expectations of research reports seem to vary depending on the stakeholder and it could explain why an initiative to implement concrete follow up actions was not fruitful. At the same time, not all the researchers are aware that their partners expect at least some degree of recommendations and are afraid to overstep their role, which is then reflected in some of the research reports and a more passive level of participation in some common meetings.

Looking at team B, the validation interviews with the UX designer and the UX researcher also allowed us to confirm all our conclusions drawn from the direct observation. We confirmed that, unlike in team A, there is no formal process of requesting help from the researcher, although with the researcher being based in a remote location, some requests are passed through the UX lead first. This approach was, apparently, much less frequent when the researcher was sitting together with the rest of the product team in Zurich. Generally, the collaboration is very informal. People who have questions usually just talk to the other individuals directly. This solution may not be ideal for the bigger teams though, and experiments with a more formal research request process taking place in team A are also a result of a complicated structure and lack of research headcount.

In any case our interviewees confirmed that the team works in a very collaborative way, for example with bigger features everyone who is affected (product management, engineering, design

and UX research) would be actively involved in research preparation commenting on research plans and/ or meeting the researcher to discuss an upcoming study at a very early stage. Research on small interface changes or limited experiments could be prepared in smaller groups, for example during a meeting between the designer and researcher. The designer also appreciated the researcher offering some design ideas – in his opinion any feedback is informative and welcome. This confirms, again, a collaborative team culture. Also while we had an impression that product management plays an extremely important role in team A, and could even be said to be driving some solutions, the engineering voice is also very strong in team B and engineers are proactive in co-shaping product vision and working with user research.

This very open communication and the fact that everyone gets involved in shaping current projects suggested that hierarchy does not play a big role. This was confirmed by the researcher, however this could be explained by the fact that she is the only researcher in the team – whatever work needs to be done is done by her. Still, she confirmed that whenever her project partners are at similar levels it is easier to sell ideas or even override somebody else's ideas. In this context, limiting the difference in the hierarchy between collaborating parties (for example not higher than 25%) could be a desirable principle when bringing people together.

Active involvement of the researcher was another area we focused during our validation interview. We confirmed that the fact the researcher is present during team meetings and contributes to various design documents is appreciated by the designer and most probably by other parties. The researcher is seen as a representative of the user, and the team values her expertise. Our impression was that the engineers sought the researcher's approval when proposing certain solutions and the designer we talked with agreed with us. As he put it *"we don't want to build something users don't want to use, that's why we seek the researcher's approval. She knows what the users want"*. It seems the researcher is indeed seen as an expert. This position is also built through researcher's contribution to the design documentation and her opinion is seen as a valuable contribution especially since she is seen as a person that has focus on what users need and want. For the researcher on the other hand being in the team meetings and contributing to various documents, gives her an opportunity to be *"in the picture and express an opinion as a trusted advisor"*.

And, finally, based on the analyzed artifacts we concluded that the research reports are widely read and non-UX staff also actively contribute to the documents (through comments) and in follow up actions such as prioritization of the features and other ways of making actual findings useful for the team. This has also been confirmed and – as the artifacts selected by us indicated - is the norm and not an exception.

7 Overall conclusions and recommendations

Our first hypothesis related to the organizational structure *("For the efficient integration of UX research into the product development process, the research function should be dedicated to a concrete product and not as a function consulted by multiple teams on an ad hoc basis. The structure should facilitate UX research involvement as an equal partner")* was especially difficult to verify through direct observation. In projects, there are so many aspects to be considered, that it is impossible to identify the magic formula that will always prevent a failure. Still, we saw a clear difference between a situation where a researcher is dedicated to a product and where he or she is consulted occasionally. Being fully dedicated allows the researcher to understand product strategy and also form a strong relationship with the product team, as we could observe in team B. Consulting the research team on an ad hoc basis makes it a reactive service provider delivering research which, from a long-term perspective, is less useful to the product.

The promotion of UX research involvement through the structure is also directly linked to it. Based on how team A operated, we could see that simply having a UX research team is not enough for its proper integration into the product development process. In practical terms, having one researcher (in this case a junior researcher responsible for tactical user studies), juggling projects for several product streams, made it very difficult to understand the product strategy and build a good relationship with the product team members. Further, a structure where research activities are managed and executed by non-researchers (for example designers or product managers) undermines the position of research as an equal partner. From the hierarchy point of view we concluded that in team A, the product management and the engineering teams tend to dominate UX and within the UX team, design takes precedence over research. We do not think this results from a formal hierarchy, but rather from how decisions are taken, how communication flows and how the responsibilities are divided.

The second group of hypotheses classified as *"communication and credibility"* consisted of three hypotheses:

1) Research results that don't include interpretation of the data aren't helpful for the product team.
2) The presented research findings need to be well-structured with a limited number of actionable main findings highlighted.
3) Research reports need to tell a story and provide a narrative, instead of being a loose collection of facts observed during the research study.

Based on the analyzed documents, we could see that team A rarely provided interpretation of data and focused on describing the happenings during the testing. The reports frequently looked like a collection of various findings, without a main narrative directly corresponding to what our interview partners told us during initial interviews. This explained why not all the function leads found the research useful. The reports provided by team B were definitely better in telling a story and prioritizing. However, a fundamental question was, would the interpretation make a real difference considering the structural problems identified in team A?

And, finally, the third group of hypotheses related to the product development process were confirmed. The hypotheses were:

1) If UX research is part of the product team as opposed to being a service function, it can provide most value thanks to the possibility of an active involvement in all product discussions. This means it can contribute to product development by backing up decisions with data and identifying opportunities for providing data.
2) Involving UX research in product development from the outset (sprint 0) is the most beneficial setup for both the UX research itself in terms of research being able to understand the team priorities and product roadmap, and also for other team functions in terms of supporting their product decisions.

We could confirm that the difference between a truly integrated research (as observed in team B) and a pseudo-integrated one is significant. User research that adopts a proactive role with the researcher participating in conversations and stepping in whenever questions come up is far better integrated in the process than research that only reacts to the requests and does not have hands on information about the open topics. We could see what happens if research is engaged at the last minute. Proper user testing was not run on the product, instead internal testing within the company was run without researcher involvement. So even though the data indicating that the product has some serious flaws was there, it was not available for the research team. Designers progressed with a solution that was clearly poor instead of pausing and reiterating at a much earlier stage. Had the research team been involved in from the beginning, user testing could be completed within a week and the additional efforts spared.

7.1 Organizational setup

Looking at the model for anchoring user experience in an organization model (Hauri, Rosati, 2011), we conclude that the two analyzed teams were at different stages of integrating user research into the product development process. Within the analyzed organization user experience is an established function and the company definitely appreciates the contribution of high quality UX to creating great products. The principle of having three functions, product management, software engineering and UX, working together as a product team was definitely an indicator of some degree of integrating user experience in the organization. Depending on the team however, this integration looked very different as shown by our research.

Looking at team A, we saw that user research was treated rather as a service function and there was still a lot of work required to make it an equal partner fully integrated into the product development process. Even though everyone in the team agrees that good usability is one of the key elements of a successful product, user-centered methods are not part of the standard approach. Due to UX headcount shortages both designers and researchers are not able to support every initiative, so already at the operative level some challenges are present. Also, user research is at times included too late so immediate testing with the users is not always the case. In addition, not all the product managers see the value of user testing, which poses an even bigger difficulty. This is of course visible at the institutional level too. Even though the team has qualified research personnel, the benefit of user research is not evident to some of the key stakeholders. At the highest level, that of organizational culture and values, UX (including research) does not always feel like an equal partner. With the current set-up, it is difficult for the research team to really showcase its value in projects which makes its integration at the organizational culture level even more difficult.

Having analyzed the current team's processes, we can definitely recommend the closer integration of user research and the other teams' functions. Making it a true part of the team is crucial. We understand that it may not be possible to hire enough user researchers to make sure that they are dedicated to each of the three product streams, so even though this would be a preferable and recommended solution, we feel an alternative solution needs to be identified first. At the moment, the UX research function is split between quantitative and qualitative researchers supervised by the UX research lead who, on qualitative projects, takes care of the strategic initiatives. It is understandable with the seniority level that types of projects change so even though such a split complicates things a bit, it would be counterproductive to try change it. In the qualitative research field though it would make sense to involve the more junior researcher in some strategic initiatives. This is the field mostly appreciated by the decision makers so it will help the researcher to build credibility and impact (we will discuss this in details later in this chapter). It is also crucial that the team moves from being involved as a service function that is consulted on an ad hoc basis by multiple streams and not fully included in projects from the outset, to having UX researchers fully integrated in the development process from the earliest stages. We will devote more time to how this can be done in the *"Collaboration"* section. Tactical research needs to have a chance to prove its value and to do so user testing needs to become part of the development process. The current situation where user research is consulted at a late stage of the project and the findings are not always considered, leads to the situation where a launch may need to be stopped at the last moment although relevant data could have been gathered much earlier.

Another aspect related to organizational setup is access to information and the position of UX research in the organizational hierarchy. As shown by the example of team B, even if a researcher is relatively low on the corporate ladder, she can still run impactful research and develop an effective partnership with the decision makers. Therefore, we would not recommend any actions to increase the seniority of researchers. In organizations like the one analyzed, people value expertise and knowledge so the artificial promotion of the research function would contradict the company's culture. It is however crucial to make sure that the researcher has access to all relevant information, including product strategy. In the current setup, the fact that the tactical researcher is on a temporary contract working through another company, creates obstacles in fully integrating him into product development. In order to avoid a risk of co-employment, there are often limitations put on a contingent workforce – frequently temporary workers are not allowed full access to strategic information and decisions. Since we see understanding of product strategy as a crucial success factor in a researcher's work, we do not think that such a structure is beneficial to integrating user research into the product development process. If a contingent workforce needs to be included, the areas the temporary researcher cannot have access to should be clearly defined at the outset and these should be covered by other researchers directly employed by the company. It is also crucial that everyone in the team has a clear understanding of the limitations so that these expectations can be managed and also to ensure that the temporary researcher imposes limits on himself even in the situations where he could be involved.

In team B, user research is far more deeply rooted in the team processes at all levels. We witnessed how the researcher was involved at the very early stage of product discussions and research efforts are part of long-term planning. The other team members also accept the role of user research as an indisputable element of product development. This is also visible at the level of the team's leadership. It is still to be seen however if, after some of the current team members decide to move to another project, user research will still be equally well integrated.

Institutionalizing user research could be the right step in rooting it in the team's culture, but considering the fact that formalized methodologies and processes are not very common within the analyzed organization, this might be counterproductive as research might be seen as something imposed and therefore rejected. Providing good documentation and showcasing research successes could be helpful in demonstrating its value to future team members. Placing user research as a recommended methodology into part of the development process in certain models could be a step in making sure it is deeply rooted in the team culture and not dependent on its support by specific team members who will inevitably change over time.

7.2 Roles

While education of the team members in user-centered methods is beneficial, a clear distinction between the individuals' fields of expertise and area of responsibilities is crucial for successful cooperation. In the analyzed organization product managers are ultimately responsible for the product roadmap and since good User Experience is seen and accepted as one of the crucial elements of a successful product, product managers at times venture into the areas of user research. We could see this in case of the team A, where one of the product managers preferred to release an early version of the product within the immediate team or within the wider company in order to observe user reactions and collect feedback. Also, engaging designers in activities such as desk research or taking a full responsibility for analyzing user feedback are excellent examples of this phenomenon. Looking at team B on the other hand we did not see interest from non-researchers to get extensively involved in research activities. It was clearly seen as an area of expertise belonging to the researcher and whenever the product manager or an engineer got involved in UX research, for example for categorizing user feedback, it was still limited to what was strongly linked to their role in the team.

We see a situation where non-researchers independently run UX research as counterproductive for several reasons:

- *Skills and training*
  User researchers are qualified to test products and analyze feedback in a systematic way. While others may also be to some degree knowledgeable when it comes to evaluation methods, we do not believe that the level of skills and experience is comparable to that of a professional researcher.
- *Bias*
  A designer may not always be able to detach from his or her piece of work and may therefore analyze the feedback in a selective way. A product manager may have a priority to launch the product quickly and therefore may not pay enough attention to faults in the product.
- *Noise*
  A product manager is used to balance various factors that influence the product roadmap when taking final decisions. Having these in mind may also negatively influence his or her ability to analyze user feedback properly. We do not think that these other factors should not be considered, on the contrary, a product that is not perfect can still be launched if this is part of the wider strategy and some key features may be added at a later stage. But in order to avoid serious mistakes, the decision makers should have access to objective data gathered in a diligent and thorough way by an independent team member that can focus on the user instead of trying to balance all kind of factors straight away.

- *Team dynamics*
  We do not think it is a healthy situation when the team members are “hijacking” each other's areas of responsibility, it can create a negative atmosphere, alienate certain team members or even be perceived as disrespectful.

Altogether we are convinced that things that belong to UX research such as feedback analysis, product testing and evaluation, should be handled by UX researchers.

7.3 Collaboration

There is a great advantage in having multi-disciplinary teams, as people with an expertise in various areas can bring in diverse perspectives and, when working together, achieve more than a less diverse team. UX design teams with people specializing in visual or interaction design, research teams with people coming from the field of HCI, psychology or statistics, the computer science background represented by the engineering teams and the business acumen brought by product management should all come together and work hand in hand to develop products. But it is not always the case if certain areas are dominated by others and have no opportunity to bring in their perspective and expertise. The team members should see each other as partners and not competitors and should take concrete actions in order to build this awareness. Some of the people we interviewed adopted some countermeasures to ensure UX is not marginalized by the engineering or product management teams which, considering the company’s culture, have a naturally superior position. For example, they would try to speak in one voice at important UX related discussions. In an ideal world, this should not be necessary, but considering that UX teams have less people than the engineering ones and the average project has just one researcher working on it, it makes sense to build stronger presence in many ways. Close collaboration within the UX team is therefore helpful, especially if the collaboration with the other functions is challenging.

Each team must work closely together if they want to produce the best possible product. Given that our client employs intelligent and talented people it would be a waste not to make use of all the available brainpower to improve the end solution. Not only this is good from a project management perspective, but the boost it provides the teams is a key element in building a positive culture. One of the crucial elements of a successful collaboration is an early involvement and communication. It is not a one-way street and it should be a shared responsibility of the researchers and other team members, especially the product managers. As a first step the researchers must stay informed about product priorities in order to be able to step in at the right moment but also to design their research projects in a way that corresponds to the most pressing questions. Regular participation in relevant team meetings and a regular communication with the product managers is the first step. On the other hand, as soon as the researcher starts drafting a study concept, it should be sounded out with all the stakeholders. Soliciting feedback at a very early stage is crucial, and it should cover research questions, but also the interview script and participant profiles.

Another element is expectation management. This concerns the responsibilities of the involved individuals (we have covered this already in the previous section), but another crucial aspect is related to what the research should actually bring. We heard some of the decision makers saying that *“they learned nothing”* from the research and we also heard that only in the middle of a usability studies, have the team realized that some crucial questions were not being answered. This should not happen if the expectations of the stakeholders are clarified prior to the research.

User research should answer concrete questions and the stakeholders must be involved in defining them. Of course, the data gathered needs to be analyzed in the right way, but if the questions are wrong in the first place, even the best quality analysis will not bring anything.

7.4 Geographical distance

During our project, we could see how two aspects of geographical distance impact the team's work.

The first aspect is directly linked to the location of the team members. Working in a virtual team poses additional difficulty in building relationships, gaining trust and strengthening one's credibility. Daily interactions are invaluable as a base of creating a strong position for the team members and the functions they represent. Small, naturally occurring face-to-face interactions when an engineer quickly consults with an UX designer on the implementation of a solution or when a researcher answers a spontaneous question from a product manager can definitely foster collaboration within the team. Dispersed locations make all these interactions impossible - video conferences unfortunately cannot replace face to face interaction of individuals sitting in the same room or on the same floor. It is still possible to work in a productive way even as a virtual team as proven by the example of team B where the product manager and the UX researchers are based thousands of kilometers away, but it requires much more effort and consciousness from everyone involved.

In today's world, geographical distance cannot be avoided as projects frequently span locations and time zones, especially in a global company. Therefore, even though we agree that bringing all the team members to one office is ideal and we would definitely recommend such a set-up, we don't think it is a realistic solution. Instead we would rather focus on how to best work in a distributed team.

The key recommendation is: presence. Team members should meet physically as frequently as possible. It is necessary to enable all the team members to travel to meet the key stakeholders, even if it means expanding the travel budget. And whenever physical meetings are not feasible, it is necessary to participate in all the team meetings, even those that seem only partially relevant. This is especially crucial for the researchers, who can identify opportunities for UX research to bring value and build their product knowledge. We feel that the lack of physical presence is one of the biggest obstacles in integrating UX research into the team and personal interactions are especially crucial in distributed teams.

The second aspect is linked to the location of actual research projects. As described earlier, stakeholders' engagement in user research and their willingness to observe at least some of the user sessions, is one of the first steps on the way to run impactful research. Seeing things with one's own eyes make it much more difficult to ignore them.

User research needs to be brought closer to the key decision makers or they need to be brought to the places where research is happening. We need to remember though, that for a company that builds products used globally, focusing on just one study location (where the stakeholders are based or can easily travel to) may not be recommended. Data quality cannot be sacrificed to making observations easier.

If an in-person observation is not possible, making remote observations easy and pleasant is a key. If teams are observing the sessions remotely, the set-up should be tested well to ensure the stakeholders can stay focused and follow what is happening. Additional cameras that show the participants' face and screen, adjusting the interview script to make sure a remote observer can really understand what part of the interface the user is referring to, creating a way to signal an especially important piece of feedback while it is happening (for example by a note-taker present during the session) or other similar adjustments should be made. Also for those who cannot observe the sessions, high quality video snippets that carry the message are key (we will talk about this at a later point).

7.5 Credibility, respect and open-mindedness

In the analyzed company the organizational culture is strongly focused on engineering, which is why the user research teams, as well as the broader UX team, need to make an extra effort to gain the respect of the other teams. It is essential though to make this effort, especially since credibility (of research and individual researchers) was highlighted multiple times during our interviews as a key factor in the successful integration of user research in the product development process.

Credibility is built on multiple levels:

- *Expertise*
  Being a competent researcher is obviously essential, but it is also necessary to demonstrate that the knowledge and skills can be applied in the business environment for example adjusting research methods to current constraints (budget, time), ability to identify key findings and prioritization etc.
- *Communication*
  Even the best research will not have impact if it is not communicated in the right way. Here both the actual content of the research reports and the way research findings are shared with the stakeholders are crucial
- *Respect*
  Respect is another key element and we have already touched on this in the "Roles" section. Without a respectful relationship between the team members it is difficult to build credibility, but it is also difficult to be respected without being credible.

The best way to gain credibility is to prove that user research adds value and helps guide the right product decisions. The early stakeholder engagement already recommended in the previous section is necessary to produce meaningful research. Research should be owned by the researcher in terms of deciding on the methodology, executing research and analyzing the results, but without stakeholder involvement, making sure research asks the right questions and getting buy-in is extremely difficult. This buy-in also applies to research participants - as long as the participant selection is questioned, the data will be questioned too.

At the next step stakeholder engagement in actual research, especially through observations and participation in the post-study discussions, increases research credibility. The stakeholders need to have an opportunity to see the sessions with their own eyes and have an easy access to data (for example to a structured collection of the video snippets). And post-study a research report that clearly shows priorities and can serve as a basis for future actions is another important contribution to gaining trust. A researcher who helps interpret research results and therefore saves

time for the stakeholders will be seen as an expert and a partner, not just as a person who just executes research ideas.

7.6 Presentation of the research results

Presentation of the research is one of the key elements of a successful research project. They are the main way of communicating research results and in the case of research that was not directly observed by the stakeholders the only point of contact with research for the decision makers. In the observed teams the reports are usually shared in a form of a presentation, which has many advantages:

- It is not text heavy therefore easy to consume
- It can be divided into clear sections
- It gives the reader a possibility to consume it in a nonlinear way (selecting relevant sections only or jumping between the sections)
- Ease of including visual elements makes it easier to craft a persuasive message
- It can be directly used in a live presentation

The analyzed reports have some recurring sections such as Key findings, Methodology, Participant information and Detailed findings. The order of these sections and the way they are structured vary slightly throughout the reports. For example, as already noted in the *"Communicating the research results"* section (see chapter *"Observation"*), some reports include recommendations, while others do not. Further, some findings are illustrated by concrete examples, but in other reports this is not the case. While researchers may have different style of presenting the results for the stakeholders it would be easier to consume the reports if a fixed, recurring structure were used.

Creating standardized templates could be one step in this direction. The templates should be reviewed with the stakeholders to ensure that the information and the style of presentation meets stakeholders' needs. We have observed the discrepancy between the expectations some product managers from team A have and the researchers´ understanding of their role. This especially concerns recommendations and actionable findings – they were clearly expected by some decision makers, but as we found out in our validation interviews, not all the researchers feel empowered to provide recommendations and did not feel that suggesting solutions to an identified problem is part of their role. Also, many of the analyzed reports did interpret the results but were limited to a description of user actions. Some decision makers however expect insights and an interpretation of the observed events.

Analyzing the reports, we also saw that in some cases the reports tend to over-inform and it is difficult to see which issues should be prioritized. The decision makers expect to see just a few actionable findings, but some of the research reports analyzed included a high number of identified issues without a clear hierarchy or assessment of the severity of the impact these issues have on the user. This creates noise and makes it difficult for the research to help in the decision-making process. After all the goal of any presenter should be to ensure the audience receives only the information relevant to them and which can be easily remembered after the presentation.

A reference to actual data should be another fixed element of these research reports. This is strongly linked to the credibility of research so it the actual data that back up the findings should be directly accessible. Good examples here are to link a concrete finding with a video snippet showing

the corresponding user action or to use screenshots of the prototype or the tested tool that directly illustrate the problem described in the report.

And, finally, the way research is shared with stakeholders is important too. Ideally, stakeholders should be involved to some extent in post-research activities such as study de-briefs and post-study workshops and they should also be consulted on some post-study action lists. As an example, if the feedback is going to be used by engineers, it is reasonable to consult with them on how it should be categorized to ensure that the final output will be actionable.

Once a report is ready, the right way of sharing it is important. Usually the reports are shared by email with the relevant group and in the case of larger projects a presentation is organized. This makes sense since presenting everything, even a small tactical research piece, would cost too much time. It is crucial though to create a space for discussion. Soliciting active feedback during individual follow up meetings is one idea. Also during a presentation, stakeholders should have an opportunity to ask questions. Leaving them to work independently through the data poses a risk of crucial points remaining unnoticed or the stakeholders missing an opportunity to get the additional information needed to take actions based on the report.

7.7 Closing thoughts

As we have seen based on some successful projects and collaboration, properly integrated user research can add value and ensure a team functions in a more effective way and develops better products.

Team dynamics are one of the key elements of the successful integration of user research and other functions. Ensuring smooth collaboration requires a constant effort from everyone to make sure each part can contribute to the process with the greatest benefit to the end result. In our project, we focused primarily on what researchers should do, but this was not a one-way process. Promoting the integration of research into the product development process needs to be driven by the leadership. Research should be empowered to be proactive, propose solutions and provide additional data, and their presence should be encouraged in relevant meetings. At the team level, the researcher should have a place at the table whenever decisions on the user facing parts of the product are taken.

Importantly, research should be seen as an integral element of the UX team. It is not uncommon for leadership to see research as a nice-to-have, a useful but non-essential part of the process. However at a more fundamental level, especially in a data driven organization, research can make a significant contribution to taking informed decisions. Designing products without identifying users' needs or testing concepts can turn the product development process into a guessing game. Therefore, user research needs to be a core part of this process, have a long-term perspective as a partner and not as a function that is involved in the project only once the other parties think some research is needed. And once user research is prepared and executed the team should focus on making sure that the research answers the right questions, without predefining what the expected outcomes are.

Two prerequisites to a successful collaboration emerged from the research – the active involvement of researchers and regular channels of communication with the stakeholders. These really are the first and inevitable steps in order to even consider a successful collaboration. Being

in relevant meetings and being part of the regular communications to learn about the product and understand stakeholder expectations from the data are all critical factors. For single projects, making sure that everyone is on the same page is essential: from the most fundamental level of what role each individual should play in the project, through to information sharing to make sure people understand the decisions to, finally, research execution where everyone agrees on what is going to be researched and how.

We are convinced that research, when deployed effectively, can make a far greater contribution to successful product development. While it is clear that user research will not be a key decision driver in a complex corporate environment, where multiple factors need to be considered, it can still provide vital data points and answer some of the decision makers' questions. Just like engineering provides expertise in terms of what is technically feasible and designers advise on how design patterns should be applied, UX researchers contribute with their expertise in the field of discovering users needs and evaluating current solutions. We are confident that having user research as an integral part of the product development team is the most beneficial solution.

8 Lessons Learned

8.1 Topic

Reflecting back on the project, the first question that comes to mind is: did we select the right topic? Yes, we did. Examining how user research works together with the other parts of the product team is an exciting although a complicated endeavor. There are so many factors that impact this collaboration (personalities, team dynamics, historical developments within the team, the expertise of individual team members, hierarchy and organizational culture and so on) that it is impossible to identify the key factors which will ensure a smooth and effective cooperation.

Still, we are convinced that asking how user research is integrated in the product development process is a fundamental question. Even the most diligent and competent researcher will not be successful if the environment makes it impossible to run a high-quality research and to have an impact on the end product.

8.2 Methods

This type of research is not easy to run for several reasons. Exploring how different team functions work together is difficult due to various factors listed earlier impacting the current state. Further, running research on people´s daily activities meant we had to find a balance between gathering data but at the same time giving them enough space to do their work. As already identified in the relevant sections, each of the research phases had their own challenges.

Still for this particular topic, we feel the methods were selected correctly and the mix of methods described in the earlier chapter allowed us to successfully run our research. The initial interviews proved to be very useful in identifying important areas and making sure that we focused on the questions important to our stakeholders. The observations were a logical step in validating what we found out during the initial interviews and they proved successful in giving us the answers we needed. The final phase of the project proved that our observations were accurate most of the time and the conclusions we drew from them correspond to the reality.

We had to modify our initial plan and decided against sending a survey with our recommendations to a wider group of people within the company. Instead we decided to run validation interviews with the observed individuals to ensure that our interpretations of the events were correct. The data collected in that third phase allowed us to be confident in terms of the recommendations we eventually made.

8.3 Success stories

Certain things worked particularly well during this project. All the individuals we talked to were very open to our research and even though some limitations existed (for example we did not get access to all the meetings during the time of our observations), we managed to get very honest feedback and plenty of data to analyze.

We are also fully satisfied with the approach we adopted to analyzing interview data. Systematic interview coding and classification of the content proved to be extremely helpful in extracting what is important. Using the interview data to formulate hypotheses and to direct further research also proved to work well.

As mentioned earlier, the timing of the observation had a fundamental impact on the outcome of the research. Our observations of team A came at an ideal moment from an observational point of view – we witnessed situations where research was dominated by the other team functions, researchers were brought into the process at the very late stage and were not involved in analyzing user feedback. Eventually, we witnessed how the product evolved in the wrong direction and ultimately the launch had to be cancelled. All that was a case study of how not to work with user research.

Finally, the selection of the teams we worked with was a crucial factor in allowing a successful comparison of approaches and methodologies. The way teams work and the degree of integration of user research in the product development process varied significantly - the two teams we selected were very different with team B being an example of a very beneficial set-up and team A still having much room for improvement. Selecting teams which were more consistent in their approach would not have allowed us to make such significant conclusions about the impact of team dynamics on the role of UX research in a broader team context.

8.4 Challenges

And what did not work that well? Some specific challenges have already been described in the relevant sections and looking back few additional things should be mentioned here.

Unfortunately, we were not able to expand our research to include a third team in our assessment. It became clear after we selected the first two teams to work with that due to time constraints we would not find another team. Having a third team would have been helpful as we might have been able to discover more patterns. On the other hand, collaboration within a team is impacted by so many factors, that it is equally possible that no broader patterns would be identified and an additional team would not have made a significant difference to our analysis.

In ethnographic research the timing of the observation is always a challenge as there is always a risk that no suitable events or phenomenons occur when the research is conducted. As an example, during our project team B was just preparing the launch and afterwards run some post-launch analyses, so we did not have a chance to observe an actual user research exercise. In the end, we managed to gather relevant data, including from the research preparation stage, but the fact that it was not always easy to directly compare how the two teams conduct the same activities was an additional complication.

While observing the teams we sometimes missed additional context for how the collaboration between some designers and researchers worked and we were not always aware of certain patterns and the dynamics. For example, the fact that one of the designers included a lot of user feedback in her mockup presentations, made us assume that the collaboration between these two individuals and the functions they represented was running smoothly. During follow up conversations however it appeared that this feedback was being used in a very selective way to prove that the design concept was correct, while contradictory data was being ignored. We

mitigated the risk of drawing wrong conclusions by including an observations validation phase into our project.

And finally, one of the biggest challenges throughout the project was an uneven access to some resources. Since only one project team member had a direct connection to the analyzed organization, it required an extra effort to include the other team member to the same extent. Some examples include access to some internal documents or directly to the team members involved in the project, familiarity with the company's structure and culture as well as the time each of us could devote to the project. This meant there was much more flexibility on the side of one team member and many more constraints for the other team member. We have ensured that both project team members were involved in all the activities to at least some extent, but ultimately it was not possible to have exactly the same access to all the information and to be able to devote exactly the same amount of time to working on the project. This is especially challenging not only looking at how to split the project time and the activities but, more importantly, to ensure that both team members had a chance to profit from being involved in this exciting opportunity through learning and driving the project.

9 Bibliography

Babbie, E. (2008). Podstawy badań społecznych. Warszawa: PWN.
Guérin, F; Laville, A.; Daniellou, F.; Duraffourg, J.; Kerguelen, A.; (2007). *Understanding and transforming work. The practice of ergonomics*. Lyon Cedex: ANACT.
Beyer, H.; Carroll, J. (2010) *User-Centered Agile Methods.* San Rafael, California: Morgan & Claypool Publishers.
Gothelf, J; and Seiden, J. (2013). *Lean UX*. Sebastopol, California: O'Reilly Media, Inc.
Schaffer, E.; Lahiri, A. (2013) *Institutionalization of UX*. Upper Saddle River, NJ: Addison-Wesley Professional.
Varma, T. (2015). *Agile Product Development.* New York, NY: Apress.
Sharon, T. (2012). *It's Our Research.* Waltham, MA: Morgan Kaufmann

Papers
Kuusinen, K. (2015) *Overcoming Challenges in Agile User Experience Work Cross-Case Analysis of Two Large Software Organizations.*
Ferreira, J.; Sharp, H. (2010) Robinson, Hugh *User experience design and agile development: managing cooperation through articulation work.*
Tzanidou, K.; Ferreira, J. (2010) *Design and Development in the "Agile Room": Trialing Scrum at a Digital Agency.*
Hauri, C; Rosati, S. (2011) *Die nachhaltige Einführung und Verankerung von User Experience in Unternehmen. Gesamtheitliche Betrachtung von Kultur, Prozess und Mensch basierend auf einer Untersuchung bei Schweizer Unternehmen im Jahr 2011.*
Schaffer, E; Weinschenk, S. (2009) *The Evolving Institutionalization of Usability User Experience as Strategy*.

Manifesto for Agile Software Development
http://agilemanifesto.org/ (as of 7 January 2017)

Grounded theory
http://www.groundedtheory.com/what-is-gt.aspx (as of 7 January 2017)
http://www.qualres.org/HomeGrou-3589.html (as of 7 January 2017)

Coding qualitative data
http://programeval.ucdavis.edu/documents/Tips_Tools_18_2012.pdf (as of 7 January 2017)

10 List of tables

11 List of figures

Selbständigkeitserklärung

Hiermit erklären wir,

- dass wir die eingereichte Masterarbeit “Chasing UX Research” selbständig und ohne fremde Hilfe verfasst haben, ausser derjenigen, die ausdrücklich erwähnt wurde.
- dass keine anderen als die von uns angegebenen Quellen und Hilfsmittel verwendet haben.
- dass diese Masterarbeit noch nicht anderweitig eingereicht wurde.
- dass wir keine durch Copyright geschützten Materialien in dieser Arbeit unerlaubterweise verwendet haben.

Zürich, 31. Januar 2017

Massimo Bartolotta

Katarzyna Kotecka-Ravasi