Final Report - Digitalization of business cards

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1 Intro

1.1 Background for the project

In the initial phase we had two main ideas. We wanted to work with Wearables, and the group came up with the idea of putting a GPS on a high-visibility vest, often used by kindergarteners when they are walking outside of the kindergartens premises. The adults would then have a program on a handheld device (e.g. a phone) that would alert them should a child stray too far. Upon discovering that GPS-tracking of children in kindergarten already was implemented in Sweden (Færås, 2011) we went away from this idea.

At the same time we thought about making an application that would "gamify" reality. The idea was that we would help people perform tasks they would usually be reluctant to carry out by allowing them to set their own tasks and rewards for doing them (e.g. saying "hello" to your neighbour will grant you 50 experience points (exp) and when you reach 1000 exp you can buy yourself something nice). We realized the goals we had for this project did not remotely reflect the time limit of the final report and thus also went away from this idea even though it strongly intrigued us.

We then thought to ourselves: what if we could find an outdated technology in need of being *transferred* into the digital realm? After some discussion revolving around mobile technologies that are analogue one of the group members suddenly remembered something and proceeded to pull an old, curled and faded business card from their backpack (Appendix 9.1). We talked about how business cards are easily forgotten or lost and how this benefits neither the giver nor the receiver of the business cards.

We discussed the business cards and their functions. What are their strengths and weaknesses and how can we create a solution that takes the best of both worlds? We quickly agreed that what makes business cards so attractive is their *tangibility*, and yet this is also their greatest weakness, as they are easily misplaced or destroyed.

After some research on the topic of digital business cards we did not find any available solutions that satisfied our vision of digitalization. We want to make the cards easy to store and share as well as hard to lose without completely robbing them for their precious tangibility. In short: our aim is to convert an already mobile technology from analogue to digital, and yet attempt to keep it tangible. We want to create a digital platform where the user can store their received business cards as well as their own. We named our idea WonderCard.

1.2 Research question

In this project we want to establish what the current use of business cards is, and how they can be improved. Our goal is to improve the existing solution by creating an application that transforms the tangible physical cards, and make an easy-to-use application.

Questions we have asked ourselves and want to explore during our project:

- Are physical business cards obsolete?
- What are the perks and problems with physical, tangible business cards?
- Can we replace or supplement the current business cards?
- Can we make an application that solves the problems related to physical business cards?
- How can we make a mobile *analogue* technology to a mobile *digital* technology?
- Will digital business cards be a replacements or a supplement?

By researching these questions we want to answer this question: *Are business cards obsolete and how will transferring them to a digital platform affect their relevance?*

2 Literature review

In the article "*Expanding the mobility concept*", Masao Kakihara and Carsten Sørensen (2001) presents a set of ideas to how the modern society has changed with the introduction of information and communication technologies (ICT). The digital era has changed how we interact with objects. Previously geographically tied down technology can now be digitized and made mobile. Aspects of the article are relevant to our project idea in the sense that we want to transform an analogue and mobile technology and make it digital. We want to digitalize the interaction on the already mobile platform, without losing the tangible aspect of business cards. As Kakihara and Sørensen says "[...] 'being mobile' is not just a matter of people traveling but, far more importantly, related to the interaction they perform -- the way in which they interact with each other in their social lives" (Kakihara & Sørensen, 2001: 33).

We are set out to explore this aspect of *spatial mobility*, and try to change how people interact in social settings using business cards by adding the concepts of ICT. The physical aspect of mobility will also apply; the technology we're developing will change the physical dimensions of business cards, and replace the previous analogue organization tools. The *contextual mobility* term presented in the article is relevant as "contexts in which people reside continuously frame their interaction with others" (Kakihara & Sørensen, 2010: 36).

We aim to change the context and transaction of business cards. In our mobile application we want to have the ability to replace a forgotten card by just "hugging" the phones. Doing this will transfer one business card from one phone to another. While this is not a primary function, it can serve different needs based on the users' context (Kakihara & Sørensen, 2010).

In the article "*The Mobile Web to Bridge the Digital Divide?*" the author, Stéphane Boyera makes some good points that we need to consider for our project. Even though this article is more about E-services such as web, voice and SMS applications in the third world, and how the mobile web can be used to create a bridge over what the author describes as the digital divide between the third world and the developing countries. "[…] it is fundamental to take into account human factors. People would use services if they are configured on their phone by default and if the user interface is easy and correspond to their expectation" (Boyera, 2006). By using this logic we need our application to be intuitive, easy to learn and easy to use, while still being good enough to meet all of the users' needs and expectations. As this is an application that would require a user to create their own profile(s), it cannot be delivered configured, but we should strive to make it as easy as possible to set up, so it can be quickly taken into use.

Boyera also points out that it is important to know the context in which your target group resides. "The idea here is to understand how to take into account aspects like social and cultural specificities to design E-services that would be useful and usable for targeted populations" (Boyera, 2006). This made us think about the possibilities of making our application an E-service rather than a native application to make it more universal. An E-service could reach a larger potential user group as it doesn't require a smartphone, only a web browser.

Looking deeper into native vs. web applications, we discovered that web apps are easier to create for the purpose of cross platform compatibility because they only require one code that web browsers can understand, whereas native apps require different code for the different platforms such as android and iOS (Montecuollo, 2014). Despite this we decided to stick with our vision of a native application because a web-based application would require a user to have an active internet connection at all times, simultaneously the application would get another "layer" that would make it more complicated for the user. Native apps also tend to be faster than web-apps (Montecuollo, 2014). All of these things go against what we believe are key aspects of our solution. Our application needs to function when offline,

and the need to keep it as fast and easy to use as possible. This is critical because we are "competing" against something as simple as handing over a piece of paper.

2.1 Relevance

In chapter 6 of "*The Myth of The Paperless Office"*, Sellen and Harper (2002) writes about the hardships developers meet and the design requirements needed when trying to create new technology that can acceptably supplant paper. The chapter describes how different office workplaces uses DMSs (Document Management System), which allows people to store, search, access, manage, and share documents in the digital realm. We can use the DMS concept as we are planning on having a scan, and a library system for our users to store their business cards.

In this chapter, it is explained how one of the main reasons to why office personnel does not use the company's DMS, is because the owners of the received paper usually decide a large part of it is not worth the effort of scanning it into a digital system. Much of the paper sent to organizations, and a lot of the paper people keep, is deemed "not valuable" from the beginning or becomes obsolete with time.

We found that in some contexts it would seem as though physical business cards have become obsolete, but we hope we can make them more relevant by making them digital, and easier to share and store.

2.2 Physical vs. digital

In the article "*Conceptualizations of the Materiality of Digital Artifacts and their Implications for Sustainable Interaction Design*", Jung, Blevis and Stolterman (2010) strives to inform us how the digital era has changed the way we design tangibles, and what materials we choose to use in the design process. We can relate to this as our desire is not to remove, but to gradually replace the foundation and need for a physical card. Jung et al. writes

> *"[...] questions on how tangible or physical computing interfaces would transform the relationship between user and digital artifacts from longitudinal and socio-ecological perspectives, how they could achieve or would lose certain design qualities compared to the interaction with non-digital artifacts[...]" (Jung, Belvis, & Stolterman, 2010: 8).*

Our main goal remains to keep the physical business cards design qualities intact, we seek out and aim for a digital appification of the tangible technology, without losing functionality or design features that is characteristic for the original technology.

The article presents ideas that tactile properties of an object can offer rich sensory experiences and physical engagement. These factors serve as a motivation for users to interact with, and to a certain extent, feel attachment to an object. We want to build on this as a foundation, our idea for an application does not primarily aim to remove the physical connection to an object. Its primary function will be to sort, share and keep already scanned business cards available. By choosing this approach we will keep the physical engagement and transform it to a digital field.

We will essentially blur the boundary between physical and digital. Jung et al. explains how this approach contain benefits in terms of simple and intuitive interaction form direct manipulation, as well as a new form of portability, by merging physical and digital elements of a device. The article specifies how aesthetic qualities of form or tactile feeling have been less considered in the design of digital artefacts. We acknowledge this aspect, and aim to make the merger between digital and physical without losing the tangibility, and the connection to original technologies materials and functions.

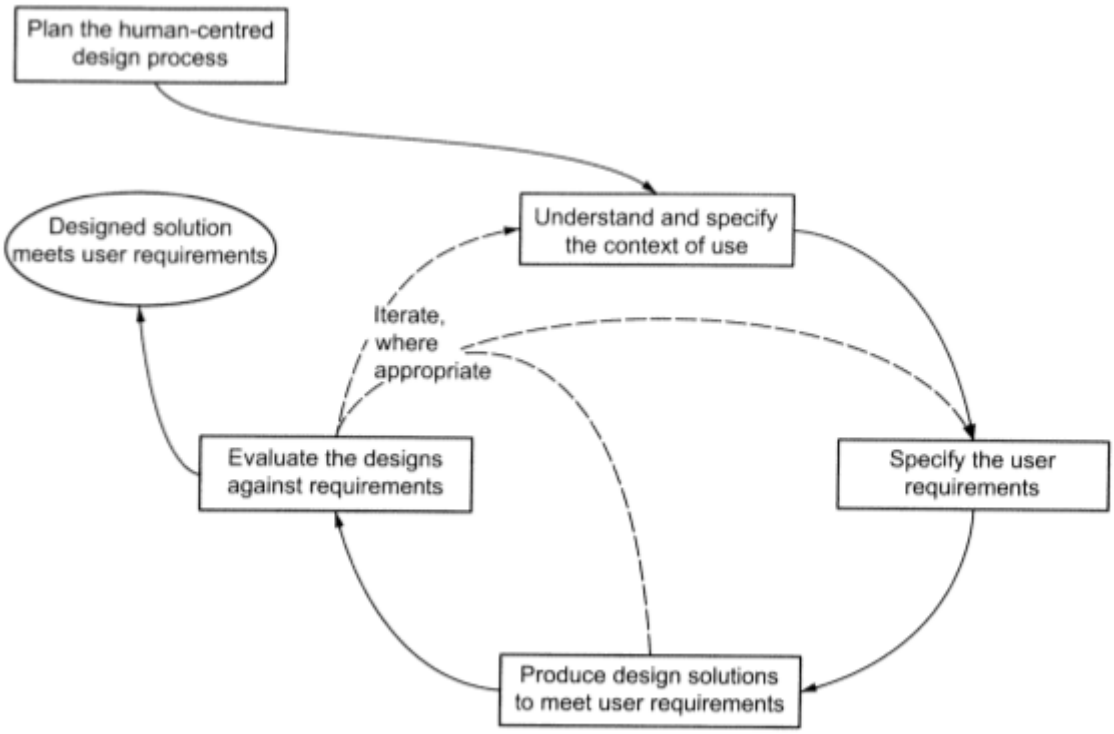
We can better understand the need for digitization of business cards when we look at the Janus faces of the physical business cards. As Michael Arnold explains in his article "*Janus-faces of Mobile Phones*" (2003), the Janus faces is a metaphor for the paradoxes technologies make: "the Janus faces metaphor signifies notions of irony and paradox, and is applicable in conditions where: [...], at least some of which pull in opposite directions towards contrasting conclusions" (Arnold, 2003: 234). In our case, the business card is given to the recipient to easier remember the giver, *but* as the collection grows the cards stacks up, possibly becoming hard to sort. In the end the recipient is not able to find any cards or remember any the card givers. There is no good way of predicting if the digitized version will have Janus faces, as the application must be in use before we can see the effects of the social setting and usage.

One of the suggested approaches by Sellen and Harper (2002) for developing a DMS is to generate tools the user would find attractive in the given context, and attempt to develop ways of integrating two technologies (paper and digital) with one another. One example that is used in the article includes dataglyphs (fancy bar codes). In our case this could mean QR-codes, and associated smart paper technologies that allow users to link paper documents, through scanning, storing the data in the digital world.

The approach mentioned above gives more options for users and helps to overcome some of the technical obstacles that can force people to choose between different kinds of mediums. We realize it is impossible to change the traditional business processes of exchanging tangible business cards overnight. Our goal with this approach will be to gradually reduce the need for paper, perhaps by introducing new technological alternatives that preserve some of the affordances of paper.

3 Methods

In this section of the report we will present the methods we intend to use in the development and data gathering process of our application. Selecting the research methods to best reflect our ideas and answer our research question is based on different factors. Taken into account are the limitations we have in terms of time, resources, availability of participants and the general field of study. These elements have been essential in choosing the methods presented.



Model 1: ISO9241-210 Human-centred design for interactive systems (ISO, 2010).

The human-centred design for interactive systems has been central in our project as we have worked in iterations. We have taken into account what we learned during the interviews and applied the changes needed. As we did interviews and other data gathering

in different cycles, this lead to the change in context of use, user requirements and solutions. We had, during the entire project, a lean development, meaning we changed something when we saw it needed change.

3.1 Interviews

We have chosen to conduct interviews as a method of gathering data, as interviews allow for answers with great detail, detail other data gathering methods would have a hard time acquiring (Lazar, Feng, & Hochheiser, 2010). In our approach to gather information from users through the means of interviews, we chose to go to the career fair at UiO the 23rd of September. We had prepared a list of possible questions (Appendix 9.2), and sorted out who would interview what group; the students or the businessmen attending. At the fair we performed semi structured interviews with a random sample of people at the fair. We chose semi structured interviews because they give us the possibility to dig deeper, and ask follow-up questions (Rogers, Sharp, & Preece, 2011). Towards the end of our project we conducted interviews with two of the people we had asked to be in our focus group. The interviews were unstructured, loose conversations on the topic of business cards, where their pros, cons and use context were discussed in great detail.

3.2 Focus Group

After our initial research at the University of Oslo career fair we decided to proceed information gathering in a focus group driven study. The reason for this is to ensure that the data we collect will be directly targeted at our field of interest, as well as their ability to give access to reports on wider range of topics, that may not have been possible to observe using different forms of research methods. For us, the great attraction of the focus group was that we would be able to get large set of data in a cost- and time efficient manner compared to other qualitative data gathering methods (Freitas, Jenkins, Oliveira, & Popjoy, 1998).

We had set ourselves the goal of having formed the focus group by the end of October in order to carry out the workshop before the end of the project. We had found a few participants willing to take their time to attend a workshop, but as they are all working professionals, we had a really hard time scheduling a suitable time for all participants, as well as ourselves. We reflected on how we should utilize our remaining time in order to gather the data we needed without the benefit of the focus group. In the end we decided it would be wise to conduct separate or paired interviews with some of the members from the would-be focus group.

3.3 Workshop

We discarded our idea of using Iacucci, Kuutti and Rantas (2000) "Magic Thing" when we discarded the focus group. Instead, we replanned our workshop. As our participants were abroad during the small window of time we had to perform the workshop, we tried to make it compatible with the situation. Thus we conducted the workshop using Skype.

3.4 Data analysis

3.4.1 Qualitative data analysis

In this section we will present key aspects of our data gathering sessions, the process of analysing data begins in the field, at the time of an observation, workshop or interview (Schutts, 2011).

Conducting a qualitative data analysis (henceforth known as QDA) is not a linear process; it involves critical reading and interpreting to reach a shared understanding of our collected data.

The QDA process involves certain steps one should keep in mind when conducting qualitative data gathering sessions. One of these steps is that we should get to know our data, elevating the importance of logging as much relevant data as possible. Labelling the collected data is also important as it helps us understanding where the data came from, what it includes and when it was gathered. When conducting qualitative data gathering sessions it is important to evaluate our questions regarding the problems we want to solve, and possible solutions to these problems. Finally, when we have gathered all of our data, it is key to focus on interpreting these in the best way, attempting to put the collected data into perspective. By comparing the data from the various methods mentioned above we achieve a triangulated dataset, increasing the validity concerning the results of our data gathering sessions. The final aspect of the QDA is to draw conclusions and recommendations based on our findings. Doing this form of analysis provides us unique information to plan future implementations of functionality in our WonderCard application (Betterevaluation.org, 2011).

Using the QDA approach will allow us to get a valuable insight in the wider social context of our research study, and make it possible to describe indirect and direct, expected and unexpected impacts of our project in great detail. As well as aiding us in the development of WonderCard, QDA will also help us discover limitations of our project in addition to guide us in what focus future processes should have (Betterevaluation.org, 2011).

4 Findings

4.1 Career Day

The Career Day at the University of Oslo is a fair where different businesses and companies set up stands and talk to students about their company and what they can offer in terms of careers. For our purpose, we can divide the groups of attendees in three categories: the ones who don't have business cards, those who have impersonal company cards, and lastly those with personal cards.

After a quick talk with our course teacher Hani Murad, we decided to take a more discreet approach than previously planned. In our original plan we wanted to ask numerous people and keep the interviews semi-structured, but we found that they became almost unstructured. The people at the fair were primarily there to attend the fair and not to be interviewed. Because of this we had to go about our interview carefully, or they would lose interest and refuse to talk to us. In our experience, a warm-up and introduction was a very important part of the interview. Further, we decided to only speak with the company representatives, rather than representatives as well as students. The reason for this is because we realized the company-to-student setting was not the most relevant to us.

The goal of our data gathering session at the fair was to gain insight on the usage of business cards. To collect data we had a series of questions we asked the representatives of different companies (Appendix 9.2). When asked about business cards, a few people said they never used it. Others actively use them when trying to build a network, as connecting with people is deemed important for their line of work. As a follow-up question to those who did not use business cards, we asked why this was. The most common response was that business cards were old fashioned and they would rather refer to professional networking sites, such as LinkedIn, or send contact info by the use of SMS or the phones "send contact info" function.

When confronted with the question why they did not have business cards, one replied he would give them his name and the company website URL, so they could look him up and acquire his details there. He specified the fact that he would usually throw away the business cards he received because he considered them clutter.

We talked with two representatives from Norges Bank who use business cards, but only one of them were willing to share it with us after we presented our student project. We continued to discuss some of the problems surrounding the physical cards, and he pointed out the physical aspect of always bringing them with him, as he relied on them for work

situations. One interview subject seemed interested in the idea of an application that would help solve this problem, and was eager to share his opinions on what functionality the application should include. He said he wanted it to be easy to create, share, receive and browse cards. He suggested the application implemented these functionalities as a base for the context of use.

"Does *everything* have to be an app?" One person who was interviewed asked us this question. He had business cards, but they were forgotten at home. The interviewee said he had received so many cards over the years and thus had several binders at home. His organizing system was chronological, where he would put the newest cards in the back of the binder. This was a flawed system, and it was was hard to keep track of his collection of cards. He thought something should be done about this issue, and was hoping for a good solution that did not include a smartphone. He did not, however, have any idea what this solution might be.

4.1.1 Prototype 1 - Paper based

We made some mock-ups of a prototype that was going to be used in the upcoming interviews (Appendix 9.3). These were made to show the functionality that we thought should be included in the application. The main features were Create, Scan, Library and My Profile. The mock-ups included the colours we intended to use, the index page and the library page.

4.2 Interview with users

4.2.1 Yngve

We wanted to interview people outside the University of Oslo to research their use of the existing technology and what they think of our replacing technology. The first interview was with Yngve, a sales manager for Evry Consulting. He has been working in the sales in the public and private sector for over 20 years and has substantial of experience regarding usage of business cards.

When asked of his current use of business cards, Yngve told us he uses them sometimes, but after he got his iPhone several years ago, the use of cards declined. He said that while it was easy to give and receive business cards 15 years ago, the practice has changed in the last 10 years. After he got his iPhone he could add contacts, send contact information and reach the people he as he wished. Most of his professional contact is conducted via e-mail, where the majority of professionals have their contact information as their e-mail signature. However,

in the case of larger business meetings, Yngve brings his business cards. Having business cards can be practical of he meets new clients in a hurry, or is in a larger public setting where it is not socially acceptable to bring out your cell phone during a conversation, instead of a small paper card. He said that "sometimes it seems more polite or appropriate to do it the old way."

When Yngve was presented our idea, he was intrigued. He liked the early mock-ups (Appendix 9.3) of the application and had some input on how it would work in the best way for the given circumstance. In his opinion, for it to work and be accepted in the same massive way as some social media, it has to be easy to use and share, and he pressed the importance of a rapid transfer. He was picturing two scenarios; the first in which two phones would "hug", and the data exchange will happen. In the other both had to open the application, and scan each other's cards in some way. Yngve thought the first scenario would work, and the second would not. He expressed negativity to an application that would take as much time as the second scenario would. On a side note, he liked both the colour combinations and that there were so few buttons. In his opinion the application should be easy to use and not have to many functions, as this would only counteract the meaning of it.

As some finishing remarks, Yngve was hoping that the application in the future could be connected to his address book on his iPhone. This way he could keep his contacts in one place, so that he didn't have to use two different databases for storing information.

4.2.2 Martine

For our second interview, we wanted an evaluation by an expert in the field of networking. We contacted Martine, the group teacher for the university course ENT1000 (Entrepreneurship). Martine also works as an interaction designer for the company Snapsale and was part of the UX-lab startup. She works in environments that heavily rely upon networking. We divided the interview into three parts; 1) about her current use of business cards, 2) her evaluation of our ideas and our mock-up and 3) how we should further develop our application.

We asked her if she owned any business cards, and what she thought about the traditional way of exchanging contact information. Martine answered that she had her own business cards that she would use in work related settings, as well as collecting cards she received from other people. She found the way of trading cards more personal, as it allowed the users some interaction before the exchange of information. However, she often leaves her

business cards at home and forgets to bring them for situations where they would be useful. She told us that after collecting and keeping other people's business cards for some time, she would have a hard time remembering which card belonged to whom, and in which setting she received them. Because of these two problems she preferred to use LinkedIn rather than tangible business cards.

After establishing Martine's current use of business cards we explained, and presented her with our mock-up prototypes, asking her for an evaluation of our prototype. Her response was generally favourable. She thought it was a good solution to tangibility because it kept the good properties of a business card. It gives their users opportunity to interact and establish an association with each other before exchanging contact information, yet it would solve the problems with keeping a collection of cards.

Martine's main assessment about our mock-up was that we should avoid making the application too complicated, and keep it simple to operate. She particularly liked the simplicity of the interface, and thought it was important that we keep it simple when further developing the prototype. Making the application too extensive would turn it towards LinkedIn, as it is significant for us to keep a clear line between these two.

Concluding our conversation, we asked her what she would like to see in an application like ours, and what kind of functionality she thought would be beneficial for us. For the Create function in our app, Martine wanted simple templates that would be easy to edit in the way the user sees fit as personalization is an important aspect of business cards. Another important feature she would like us to add is the possibility of organizing the digital cards in the library with different folders. This would make it quick to browse through the library and easy to find the card(s) that you are looking for. She expressed a desire for a calendar-function. The possibility of adding dates to each card, the date and location of when you received the card.

4.3 Skype Workshop

4.3.1 UX-lab

After the interviews described above, we created a new prototype (5.3) based on the information we got from Yngve and Martine. We saw a need to test this prototype, and contacted the founders of UX-lab, a start-up that specializes in user experience. As they were currently in the US on a conference, we had to do a workshop using Skype. We gave them a link to our interactive prototype (Appendix 9.4) and listened to their feedback. They had

some critique, but also a lot of creative ideas as well as compliments to our idea and prototype.

First of all they were very unhappy with the Home-menu, as all options of the menu are reachable from everywhere in the application. Instead, we should consider having either Library or Scan as the opening page as this is the primary function of our app. "What am I going to use the app for 9 out of 10 times?" one of our participants asked. This should be our main concern when developing an application. This is consistent to the 80/20-rule by Hibbs et al. (2009), which we will discuss in Section 5.2. Later in during the workshop, the topic fell on the placement of the Menu and Search bars. They thought we should consider moving the Menu bar down, because it offers better affordance when you consider how a person usually holds their phone and average thumb length. Further; as a Search bar usually is found at the top of what you want to search through, this bar should be moved up.

When exploring the Library-function, they wished it was possible to see the card owners contact information without explicitly viewing the card. One of them asked: "might the card itself be secondary information and the contact info primary?". However, they were very positive about being able to tag their received cards. As they were looking at John Doe's card, they wanted to press his name, but nothing happened. They wondered if it could be possible to automatically save a person's contact info through the press of a button. They told us they often shared other peoples contact information, and wondered if this was something they would be able to do here.

They disagreed with our assumption that one user would usually have more than one personal business card, thus adding your business card to your profile is only something you would need to do once. They suggested we make the user add their card when creating their profile and then "hide" the Profile-element in the Menu bar as to make room for the more important features. As a last remark, one of our participants thought it really excessive to search your own cards, and as a result there is no need for a Search bar on your profile.

5 Discussion and analysis

In this section we will discuss our findings from the Career Day at the University of Oslo and try to answer our research question. We are going to analyse our finding from two perspectives; one is context of use, the other is the Technology acceptance model. The analysis process has been conducted with the QDA process (3.4) in mind. We chose to not use a strict step by step QDA process. The reason for this approach is the size of the dataset

is relatively small, and thus did not need to use a strict pattern to organize and label our dataset.

5.1 Context of use

We analysed the feedback we collected at the career day and analysed it towards the context of said fair to examine the relevance. A lot of companies had a card with general company information, rather than personal information. When we asked people if we could have one of their personal cards, many were reluctant. Through our experiences at the fair, we concluded the setting may not have been as relevant as we first thought. We theorize that because of context – as well as the interaction between company representative and students, the professionals are reluctant to give away their real business cards to students they offer no "real" value to them as a contact (usually) in a professional networking setting. Evidence points towards business cards being used inside a professional setting where all participants exchange their own. We received a tip from Murad, which supports our theory. Murad told is that in Japan it is customary – and in a way mandatory, to exchange business cards. We did some research online and found the exchange of business cards to be an *essential* part in Japanese business etiquette and telling someone that you've run out of business cards is seen as a great disrespect (Roland, n.d.).

We discovered that some digital business card applications do exist, with a download count between five and ten million downloads since July 2014 ("CamCard Free," 2014). This tells us there is a need for such an application. Our aim is to make something which is easier to use and with added functionalities. In order to keep tangibility we want to let receivers of business cards scan and store the business card to the application. This allows the user to obtaining a digital copy of the physical card effectively. We were hoping to implement this function first. Due to time constraints we were not be able develop our true vision for this digitalisation as the ideal is the use of peer-to-peer transferring of data, with the use of NFC (Near-field communication) technology where data is transferred between devices upon touching. This way, transferring will not simply be an act of the receiver scanning a code, but the giver also get to interact and, it will (we theorize), feel somewhat like handing out physical copies of the card. The article *Borderline Issues* by Brown and Duguid (1994) states that many new designs lie outside of conventional frames of reference and that new design threaten to remove resources on which users rely. They also say "When technological changes strip away ponderous physical constraints, they may also be removing the social inertia that has underwritten authority" (Brown & Duguid, 1994). By implementing a

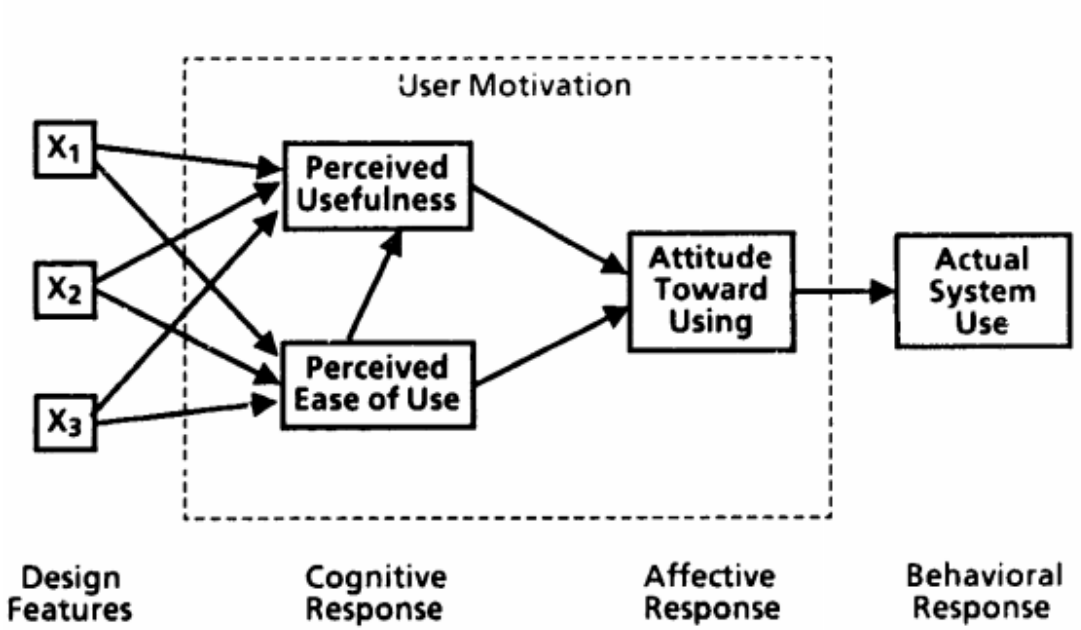
function that lets users exchange cards when their phones touch, by using the earlier mentioned NFC technology we would retain the physical exchange aspect and the social aspect of trading business cards.

Our project is focused on a certain user group with the user context of business to business and networking use rather than student to business use or other contexts.

As different user groups will require different functions because they don't share the same context of use, we would have to implement functions that would be central to one user group and useless for another group and vice versa. As Brown and Duguid states: "...a designer needs to look beyond the object, engaging more closely with the social context of use and responding more directly to communities of users" (Brown & Duguid, 1994: 6). The same article also describes the limited capacity of a newspaper as a fishing net that catches the most important news and lets the less important news slip away. This is also a good reason for us to create the application in a way which keeps the traditional business card "look", avoiding unnecessary information.

5.2 Technology Acceptance Model

The technology acceptance model, as described by Fred D. Davis jr. in *Perceived usefulness, perceived ease of use, and user acceptance of information technology*, is a model which builds upon the theory that the *perceived usefulness* and *perceived ease* generates an attitude towards using a system, which directly affects a systems actual use (Davis, 1985).



Model 2: *Technology Acceptance Model (Davis, 1985: 24)*

As we can see from the figure above, all design features lend to the *perceived usefulness* and *perceived ease of use*, which then generates an attitude towards using a system, or in our case, an application. Therefore it could be good practice for us to dissect our application in different design features and map each feature's *perceived ease of use* and *perceived usefulness*. One could say that more features equals a more useful application as it covers as many areas of use as possible, but piling on with loads of functions would also make the application more difficult to use as it would become cluttered. In the book "The Art of Lean Software Development: A Practical and Incremental Approach" by Curt Hibbs, Steve Jewett and Mike Sullivan, they claim that extra features equals overproduction (Hibbs, Jewett, & Sullivan, 2009). In the same book the authors also present the 80/20 rule which states that 20 percent of a product's features covers 80 percent of the users' needs, which again leads to 80 percent of features are rarely or never used (Hibbs et al., 2009). This point was also made by our workshop participants from UX-lab.

The technology acceptance model together with the 80/20 rule makes it a critical point for us to identify which design features we need for making this application as successful as possible and keeps us from producing waste. Therefore we should further investigate which design features that give the most value to the largest amount of users, and avoid functions that would only be nice for a select few of potential users. By doing this we should hopefully be able to develop an application in which the majority of potential users will have a good attitude towards using. Following the concept of the technology acceptance model, the attitude towards usage of a system is in direct relation to the actual usage of a system.

As one of our goals is to hopefully replace the traditional paper based business card over time, it is very important to keep these things in mind, as we need to get across the so called "chasm" in the technology adoption life cycle to reach the majority of users ("Technology Adoption Life Cycle," 2014).

5.3 Prototype 2

Based on the results from our findings and the analysis from the interviews from Martine and Yngve, we made and improved version of the existing prototype. We did this with a tool called Fluid UI. It allowed us to try on some of the different functions by clicking on the different images (Appendix 9.4). This is a fun and simple way to view the different functionalities of the prototype. So far the 'Create' part of our prototype has not been implemented in this mock-up.

6 Conclusion

We set out to answer this research question: *Are business cards obsolete and how will transferring them to a digital platform affect their relevance?* We have during this report answered the first part of the question, and have found that business cards are *not* obsolete. After our experience through the interviews as well as our field trip to the Career Day, it seems clear that some jobs require higher amounts of networking, and using business cards is one way to do this. We spoke mostly to people in banking and IT, but heard from different sources that especially realtors and other sales oriented jobs use business cards frequently.

Still, the second part of the question remains unanswered. We have tried to answer how transferring the business cards to a digital platform affect their relevance, but we have not been able to complete a functioning application prototype. As a consequence, we cannot find the answer we are looking for. It requires extensive statistical research in the events that occur after we have finished the product. In retrospect our aims and goals were too ambitious for our time frame. We should have realized earlier that in order to answer the second part of our research question, we would need more time and resources.

7 Limitations and scope for further work

7.1 Limitations

With all technology there are some constraining factors. Although we feel that we have come up with a good solution for gradually transferring physical cards to a digital format, our application still has its limits. Our application requires the user to own a smartphone which supports NFC technology as well as running on one of the major platforms. To reach our goal of eventually replacing the old, physical card with the digital card, we need the application to be the standard for business card transactions.

Qualitative research allows us to examine issues and needs in detail and depth; however there are also some limitations to the qualitative data gathering. Research quality is heavily dependent on the individual skills of the researcher, and can easily be influenced by the researcher's personal biases. The researcher's presence during data gathering can also often affect the subject's response. These issues and biases might affect our research.

7.2 Further work

The application “WonderCard” needs to be finalized. We have to write code to actually create the application so that it can be used. iPhone and Android will be prioritized before

Windows as they cover 95% of users according to idc.com, 2nd quarter 2014 (IDC, 2014). The time needed to actually build the application will be hard for us to estimate, as none of us have much experience with app-programming. After the finalization we can begin to distribute WonderCard and after that we can start to look at the effects the application has had on the relevance of the already existing physical business cards.

7.2.1 Prototype 3

After our workshop with UX-lab, we went through their feedback and found the interface in need of improvement. We will need to remove the Home-menu completely and make Library the main page. The Menu and Search bar will need to switch places (one goes up, the other down), and the Search bar should not be present on the users' profile. The feedback from UX-lab made us realise the importance of saving a person's contact information easily, so it would be useful for the application to recognise text when you have scanned a card and ask if you wanted to save the information as a contact.

We do not possess the resources or skills to finish a high-fidelity prototype within the time span of this project, but if we did, these are some of the important changes we would make based on our feedback from the workshop.

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9 Appendix

9.1 Ruined business card

9.2 Interview guide for the Career Day

For bedrifter

- Når/hvor (setting) benytter dere visittkort?
- Hva synes dere er viktig med visittkort?
- Er det viktig at utveksling av visittkort går hurtig?
- Føler du at visittkortene du deler ut blir glemt / borte i mengden? Hvis ja: KVIFOR?
- Er det noen problemer med visittkort?
- Hvordan kan man løse problemet?
- Hva tenker du om å kunne dele ut visittkort digitalt?
- Ville du vært villig til å ta i bruk en app som gjorde dette?

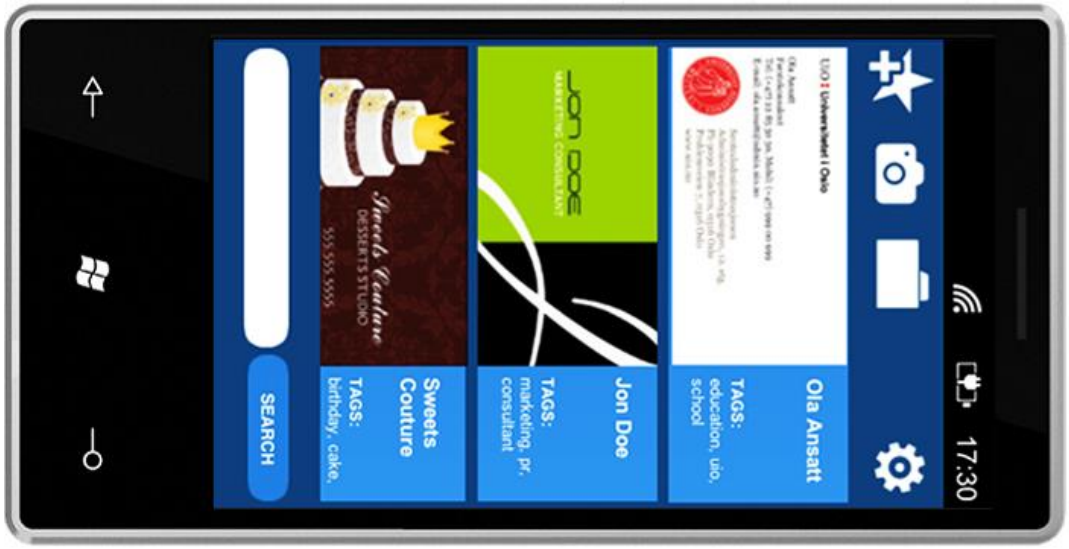
Side note: Samle inn visittkort om de har. Lete etter potensielle samarbeidspartner

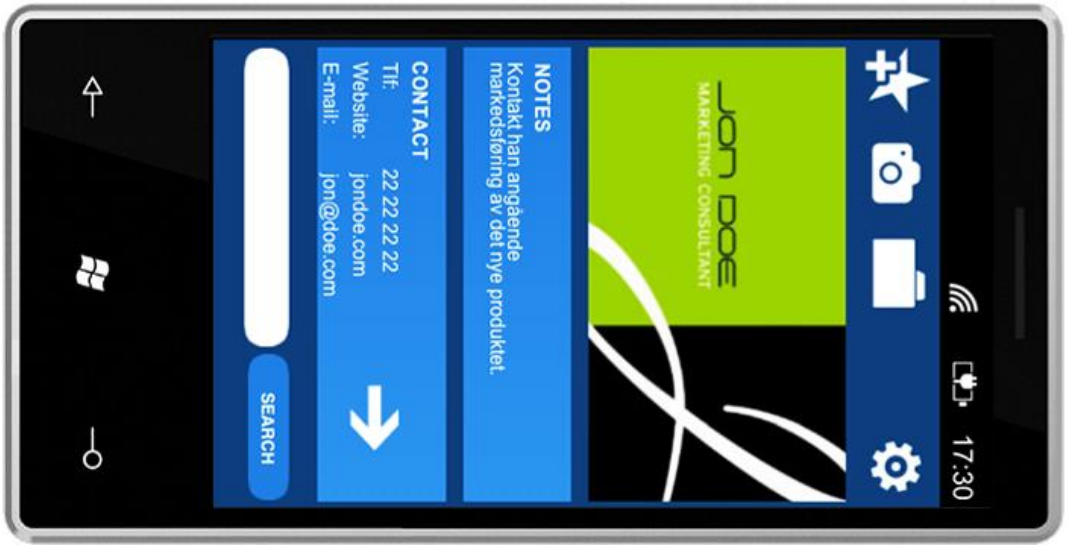
For studenter

- Får dere visittkort?
- Hvor lett er det å holde oversikt over alle visittkortene du får?
- Tar du vare på og behandler ordentlig de visittkortene du får?
- Har du kastet visittkort du senere har fått bruk for?
- Er det noen problemer med visttkort?
- Hvordan kan man løse problemet?
- Hva er dine tanker om digital lagring av visittkort?
- Ville du vært villig til å ta i bruk en app som gjorde dette?

Valgfritt: Hadde du vært interessert i å kunne hente visittkort fra andre brukere i nærheten som har samme app?

9.3 Early Mock-Ups of our prototype





9.4 Interactive Mock-up

https://www.fluidui.com/editor/live/preview/p_sAhrpVWpTsw37HbQNHnyIztzTS80D5oW.1416215934246