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Co-design – Tools and Methods

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Title

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Abstract

The aim of the presented thesis is to review the possibilities that co-design can offer to a design process. Co-design is a growing form of design that in several ways combines the knowledge of design, business, innovation, and user interaction.

Co-design entails the essentiality to involve each of the stakeholders in to the design process. The extensive know-how from various fields increases the competitiveness on today's market.

The purpose of the thesis is to examine the use of co-design tools and methods which were used by professional designers along with professionals from various fields. The chosen co-design tools and methods explained in this thesis are diverse and can be used in various design processes. The example case used in this thesis is a design process of a mobile application for the Russian tourists.

The study seizes into the essentiality of user research in co-design processes. In co-design the users are considered as one of the stakeholders and the users are part of the creative design process. The study explains various methods how to fulfil user research, which increases the background knowledge. User information is valuable design recourse in several ways.

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Co-design – Työvälineet & Menetelmät

Tiivistelmä

Co-design on kasvava design menetelmä, joka yhdistää usealla eri tavalla muotoilun, liiketalouden, innovaation sekä käyttäjävuorovaikutuksen. Opinnäytetyön tavoitteena on käydä läpi mahdollisuuksia, joita co-design tarjoaa suunnitteluprosessille.

Co-designissa olennaista on kunkin osapuolen osallistuminen suunnitteluprosessiin. Kilpailukyky tämän päivän markkinoilla lisääntyy, kun eri alojen laaja kokemus sekä osaaminen yhdistetään. Tarkastelussa olevat co-design työvälineet ja työtavat ovat monipuolisia ja niitä voidaan käyttää usein eri tavoin, erilaisissa suunnitteluprosesseissa.

Opinnäytetyön tarkoitus on tutkia co-design työvälineitä sekä työtapoja, joita käyttävät ammattitaitoiset muotoilijat yhdessä muiden alojen osaajien kanssa. Opinnäytetyössä tarkastelun kohteena olevat co-design työvälineet ja työtavat ovat monipuolisia ja niitä voidaan käyttää useissa eri suunnitteluprosesseissa. Esimerkkiprojektina opinnäytetyössä käytetään venäläisille suunnatun mobiilioppaan suunniteluprosessia.

Tutkimus pureutuu käyttäjätutkimuksen oleellisuuteen co-designissa.Opinnäytetyössä käydään läpi eri käyttäjätutkimuksen metodeja, jotka lisäävät tärkeää taustatietoa suunnittelutyöhön. Käyttäjätieto on arvokas muotoiluresurssi, jota hyödynnetään monin keinoin. Co-designissa käyttäjät ovat tärkeässä roolissa osana suunnitteluprosessia. Tutkimus sisältää useita käyttäjätutkimuskeinoja, joka lisäävät taustatietoa. Käyttäjätieto on monin tavoin arvokas muotoiluresurssi.

Kieli	Sivuja
Englanti	38

Asiasanat

Co-design, Käyttäjätutkimus, Innovaatio, Liiketoiminta

CONTENT

1 INTRODUCTION

Designers are not often thought as researchers or scientists. It is more common to think that design is how things look, how beautiful they are and what the latest styles are (Brown 2009). Therefore, one could wonder how and why designers could help through research methods. However, design is both art and science. During hundreds of years design has changed millions of times by responding to the new needs and new desires in the world. Design has gone through thousands of styles and has learnt to compete with the new technology.

We are experiencing a transformation of the whole concept of design. For example a participatory culture in design field is emerging on a large scale. Not just designers are using the new tools to express themselves; it has become important for everyday people. These people who once were satisfied with being "consumers" now are becoming "creators". This human-centered design revolution is causing designers to rethink the entire design process. In order to drive the human-centered design revolution, there is a need to focus into the imaginations, dreams, wants and needs not only of designers, but also of everyday people. (Sanders 2004.)

User research has become a big part of a designer's job. The importance of an end user is easy to explain; in product design or in service design if the final result does not bring customers there is neither business nor profit. Reaching the end users and their needs and values can give a huge impact and value for the designer's job. Market research and user research are tools that provide guidelines for the needs and desires of the end users. Still, one cannot say it would be perfectly simple to know what people actually want and if they even know what it truly is. Distinguished designer Tim Brown writes about this subject in his book *Change by Design*: "*Watching what people don't do, listening to what they don't say.*" (Brown 2009, 43-44.) It is not simple to know whom to observe, or what actually takes us closer to the needed information, but it is safe to say it makes a huge difference if the company understands for example the buying habits of their customers. User driven and user centered design has different ways and methods on how the designer comes up with the knowledge that even the customers may not be able

to tell. Focusing on the users gives a totally different perspective, and surprisingly the possibilities users can bring often becomes forgotten in the field of business.

In order to understand users, it is necessary to have some sort of understanding of human behaviour. This is a question in the realm of psychology. There is no saying that a designer is a psychologist, but educating oneself always takes things forward, promotes new methods and perspectives of working. Concentrating on human behaviour does not only affect the field of design; it has been a popular focus point lately in several business fields. Especially presentation skills intrigue people, and the focus on how the different presentation methods appeals to a certain audience. Lately visualization has been a keyword for presentations. The whole idea behind a presentation is that one is selling the ideas to someone. It can be a student presenting material for professors, or it can be a boss explaining a new project for employees. In the end it is always related to teaching someone. During the past years there has been a change in understanding, in how people learn and how to attract their interest. This kind of information can be found while researching people and human behaviour. In the world of design visualization has always been a big and greatly affective part. Techniques such as collages are important tools for designers (Mattelmäki 2006, 19). User research can also be done as visual research; this includes how logos affect, how the commercials influence, does it have the wanted effect and so on.

The job descriptions for designers are no longer dealing strictly with designing and visualizing products. More and more design is a part of other economic fields, organizational management, marketing, technology and service processes. Designing is not only visual styling, but the designer works as part of the developmental process throughout the entire product development (Sanders 2008). New design degree programmes have been created, and new design fields have been named to correspond to today's demand. The changes in design and creating new design terms do not come about unexpectedly; it is a matter of years of work, improvements in the field and simply changes in the world. The design field is ever-changing. It takes influences from style eras, technology improvements and from solving the appearing new problems.

This thesis paper focuses on one of the latest design terms: co-design. Co-design cleverly unites design, innovation, and business and user interaction. The aim of co-

design is to enrich the process and the final design result by involving each of the stakeholders into the design process. Involving the stakeholders increases the knowledge, and the process is done within multiple areas of expertise. With co-design tools and methods designers are able to bring a new perspective to the whole design process.

2 THESIS FRAMEWORK

2.1 From theory to practice

It is extremely important to delve into the theory of the examined subject and then evaluate this information together with the existing material of real company cases. With concentration on the field of co-design, this thesis paper will go through co-design related subjects such as user behaviour, design methods and business thinking. Using the Russian tourist mobile service as an example case clarifies how the theory works in practice. Comparing theory based knowledge with a real life project gives advisable clues on how the theory actually works in different situations, what the facts that need more focus are, and also the part where the theory have problems or where there might be some improvement points. The collected information from the example case is not all public and therefore the use of the case information is partially restricted.

The example case is a project executed by D'ART services, which is an enterprise service centre of Karelia University of Applied Sciences, more specifically the Centre for Design and International Business. D'ART uses design and innovation with finesse and has been involved with multiple projects dealing with several different business fields and public organizations. One of the current projects is involved with the tourism field. D'ART services is situated in Joensuu, which is a Finnish city close to the eastern border. KareliaExpert is a regional tourism promotion organization (in North Karelia Joensuu), and together with this company D'ART has been designing a mobile application for Russian tourists. Needless to say that in this specific project the user is an extremely important and valuable source of information. Russian culture differs from Finnish culture quite a bit, and the cultural differences already bring issues that need to be considered and dealt with. Cultural differences naturally flip the issue back to user behaviour. To understand user behaviour there needs to be an understanding of the culture. The understanding of how the customers behave in certain situations and why the customers behave this way can give tools for making the product or service more appealing for users. This ongoing project gives perfect real-life situation examples on how co-design tools can really make a valuable reformation to the design process.

Industrial design deals with product design and also with service design. The project used as an example case is related to service design, but the tools and methods are equally as valuable in product design. Even though service design is not strongly known yet as a design field, the design process of a service and of a product are fairly similar. The tools and methods explained later on are equally valuable in both of these fields. As service design is still a rather new field, it might be beneficial to be concentrated on that area. As the market share of services and solutions continues to increase quickly, it is safe to assume that while the companies try to keep up with the demands of their markets, there are bad decisions being made (Pattichis 2012, 3). Co-design provides tools and methods that could be the answer for several companies to avoid these mistakes in the growing service sector.

2.2 Process timeline

In Figure 1 the framework of the thesis is visually explained with a process timeline. The example case has been a part of the analyses process throughout the entire thesis work. The idea behind choosing co-design as the focus of this thesis was a practical training in D'ART services. It is a great privilege to be able to explain and prove the value of the methods using a proper company case.

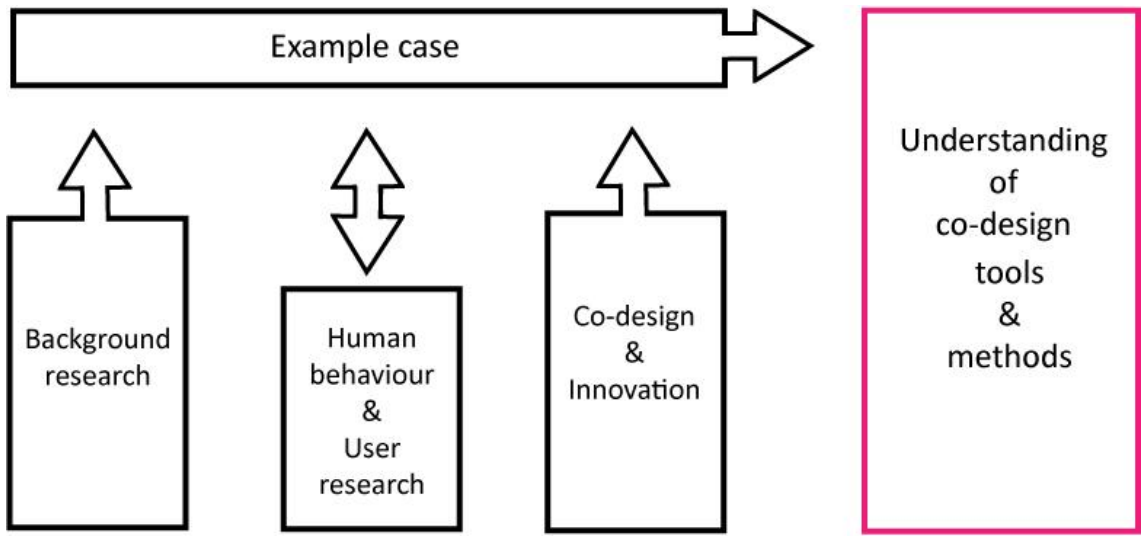

Figure 1. The thesis process.

The practical training focused on a mobile application's design process started in February 2012 and continued until the September 2012. During this period, the project

handled design methods and solutions, user research, planning and executing workshops and workshop material. Detailed information on the mobile application's design process will be explained later in this thesis. During the practical training the background research also began. Comparing the learnt information from the company case together with the theoretically based knowledge has been educational. One highly valuable part of the process has been user research and the methods learnt through that. The company case gives examples on how user information can be turned into a design solution. User research and involving the users in the design process is in an essential role in co-design.

3 CO-DESIGN

3.1 Design

The term design has been said to become from the Italian word *disegno*. *Disegno* is originally translated to a drawing. Design thought is so much more and there are countless definitions for it. Some also say the definition of design comes from the Latin word *designo*, which is translated to the word designate. (Verganti 2010.) Designate can be understood as giving directions, definitions and signifying. When design is thought to make things more meaningful, designate does seem to be the appropriate answer.

Design means creative work when designing; objects, the functions, the shape, services and usability, graphical look, branding and even parts of business project management. The design field is so wide that there is no easy way to make a definition for it. Design can even be categorized; this includes industrial design, product design, graphic design, clothing design, textile design and plenty of others. All these categories differ from one another and yet they can still be tied together under the definition of design. The Finnish designer Saara Renvall has said, "*Design is a word monster. Design means that for each soap, postage stamp, towel, plastic bag and door handle has been thought its own essence.*" Renvall reminds that design is part of people's everyday lives; even while washing dishes one can feel the shape of the plates. (Yhteishyvä 2012-01, 19.) A good design makes people's everyday lives easier, more enjoyable and richer with appearance, usability, functionality, ergonomically and intended use thought-out details. If successful, a good design combines these elements into an entity, creating a functional, aesthetically pleasing and user-friendly product/service.

One on the most obvious attributes of design is that it makes ideas tangible; it is capable of taking abstract thoughts and inspirations and making something concrete out of it all. Most of the results of design are visible, and that lends itself to another simple and yet strong definition: design is all around, and everything human-made has been designed in some way, whether consciously or not. The question to be asked therefore is not so much what is design and why does it matter, but how can I use good design to make the world around me better. (Hunter 2012.)

When defining design as a profession the UK Design Council has an excellent and definitely all-encompassing answer: designers help develop and shape products and services; they contribute extensively to the visual world around us; they create communications for organizations of all shapes and sizes; they influence how we use buildings and help improve our workspaces; they can contribute to building better public services or create more efficient working processes; they create the interfaces we use daily on digital devices; they help us digest information; they create the clothes you are wearing and the chair you may be sitting on. (Design Council 2, 2012) In general designers are working with multiple projects simultaneously. Design work is creative, and creative solutions sometimes need time to stew. When going from one project to another it gives more freedom to the process. Briefly put a designer's day consists of seeking information, finding ideation, developing ideas and shapes, finalizing details, printing, drawing or modelling the results and presenting the outcome. (Kujanpää 2008.)

3.2 Innovation

Design work needs creativity and innovative ideation. It can be something big or it can be something vanishingly small. Innovation does not always invent something new; it can also improve something already existing. More than that, innovation is a new way of thinking, or a drive that keeps one inspirited and motivated. Innovation gives new approaches and perspectives in several fields. A mistake commonly made in explaining innovation is confusing it with inventions. The real challenge with innovation is not the new ideas, but how to make those ideas work technically and most of all commercially. (Tidd & Bessant 2009, 15.)

Innovation is also connecting. It starts with an idea, then it is important to toss it around and experiment with it. The idea is then used, tested and later on approved. The meaning of innovation is to push oneself forward. One simple trick for this is to have many mindsets involved. Sometimes it takes one mind to get the first idea, but another mind to take the idea forward. Innovation necessitates a balance between logical and illogical creativity. The approaches of the scientist, engineers and researchers are known to be systematic and specialized. Designers as partners in the innovation process ensure

divergent and even the radical spreading of ideas (Kälviäinen & Räty 2011, 3-5). Visual work can be applied to the innovation process as a means to support sharing values, feelings, experiences, ideas, mental images and maps which can be used as tools for the creative unconscious act, social discussion, mutual understanding and interaction between the participants in the innovation process (Kälviäinen & Räty 2011, 5-7).

3.3 Business

Designing is art, but it also differs from it. A simplified and controversial definition for this difference is; "*designer designs one´s work for sale while the artist paints for themselves*" (Yhteishyvä 2012-01, 20). However, in reality the line between art and design is more complicated and this definition is only a rough idea breaker. Yet, the commercialism is a notable character in design. The design firm Mozo's advertisement slogan "*we create reason to love and to buy*" is a simple truth considering what a designer can do. Branding is a creative design process, which has become a successful promotional activity for many companies. Branding is more than just logos; it is a promise to a customer about the quality of products or services. It is a way to motivate the buyers and to increase user loyalty, which naturally increases income.

Normally in the business world the problem is not generating great ideas. The problems arise while getting those ideas translated through a massive organization with many moving parts. Another problem that is often faced in various companies is: how to turn idea generation into successful execution? (FastCompany 2012) Design thinking is a human centred approach to innovate and to create a competitive advantage, using a designer's toolkit to integrate the needs of people, the possibilities of technology and their requirements for business success. (Brown, Ideo 2012) Critically thought about, the sentence "*How can I help you?*" has changed to "*How can I help you to help me to make more money?*" (Milne 2012). This is partly true. Naturally businesses do intend to use innovation to make successful products and services moneywise. It just has to work in both ways in order to be successful.

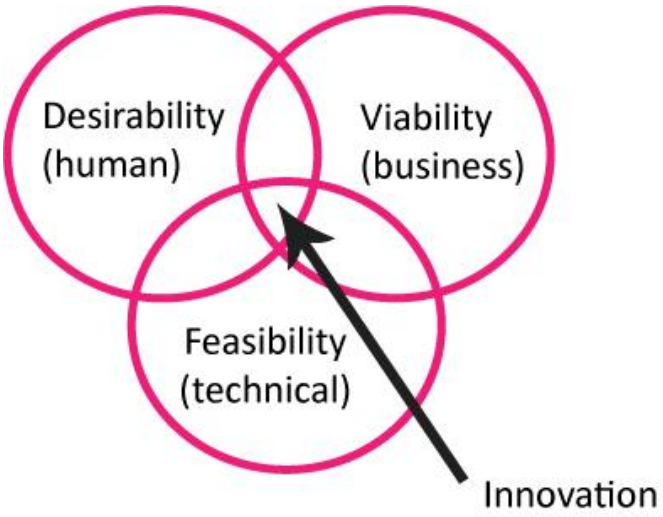

Figure 2. Design thinking (Source: IDEO).

In design thinking about the needs of the users' and the companies' capabilities must be considered at all times. As designs are moving towards a final solution, the assessing and reassessing of the designs is ready to begin. The results are new and innovative avenues for growth that are grounded in business viability and market desirability. The design thinking process is best thought of as a system of overlapping spaces. There are three areas to keep in mind: inspiration, ideation and implementation. Inspiration is the problem or the opportunity that motivates the search for solutions. Ideation is the process of generating, developing, and testing ideas. Implementation is the path that leads from the project stage into people's lives. (IDEO 2012) Innovation is the tool, which connects the three roles together. Creating innovative business solutions equals viability. Innovative technical solutions make the ideas feasible, and the innovative use of user knowledge provides the information on what is desirable on the markets.

3.4 What is Co-design?

Co-design is a certain kind of set of tools used by designers to be able to engage non-designers by asking, listening, learning, communicating and creating solutions collaboratively. It gives a more effective solution to a problem by working with the intended project audience, and quite possibly this solution can be realized even by only giving simply a paper and pen for the user. (Design Council 1, 2012) Co-design cleverly combines design, innovation and the business knowledge. It gives new tools for

businesses to innovate and create a competitive advantage or public sector to create services that the public actually wants and needs. In the words of Sir George Cox (2005): "*Design is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers*." It is a way for companies to make sure their products and services deliver what the customers want and need. In a way a designer's role in the co-design concept is to be the catalyst that gets the process rolling.

The role of a designer has changed. Earlier on it was a habit that the clients give a short brief and the designers kept working on their own with the wanted product. The design process has become more democratic. We are using a wider and richer knowledge environment. A co-design process can involve anything among experts from different fields, customer organization management, employees, the service/products, users and of course the designers. It is a matter of enriching the knowledge and the process. (Koskinen 2012.) The creative innovation process is inherently more social than an individual genius' work. With more perspectives, there are rationally more findings that teams generate more ideas. Together they build on the ideas of others creating synthetically better ideas (Kälviäinen & Räty 2011, 1-3).

It is particularly important to include all the relevant stakeholders at the beginning of the design process. The beginning is often blurry and confusing, and it can lead the designer in several directions and to many possibilities. Most particularly this is seen in design challenges on large scales and with great complexities, for example while improving hospital conditions though design solutions. (Sanders 2008.) The UK Design Council has created a "double diamond" model to illustrate the work of a designer. The model is divided into four distinct phases: Discover, Define, Develop and Deliver. It maps how the design process passes from the starting point, where thinking and possibilities are as broad as possible, to the end situations, where the possibilities and solutions are deliberately narrowed down and focused precisely on distinct objectives. Phase one, discover, covers the beginning part of the process, where the designer is noticing new things, gathering insights and developing opinions of what is seen and seeking inspiration and what could lead to the inspiration of new ideas. The methods included in the discover phase are: market research, user research, managing and planning and design research groups. Phase two is to define. A designer goes through

the gathered information from the discovery phase. Questions addressing what should be acted on first and which matters most start appearing. The goal is to develop a clear creative brief that frames the design challenge to the organization. The methods during this phase are project development and project management. The third phase for a designer is development. The process of trial and errors begins. During this period the solutions are created, prototyped, tested and iterated. Typical tools for this are: brainstorming, prototyping, visual management, and development methods and testing. The final part of the design process is to deliver. The final testing is approved and the resulting product or service is finalized and then launched. Each design process differs from one another, but this "double diamond" gives a basic answer to what actually goes through in any particular design process. (Hunter 2012)

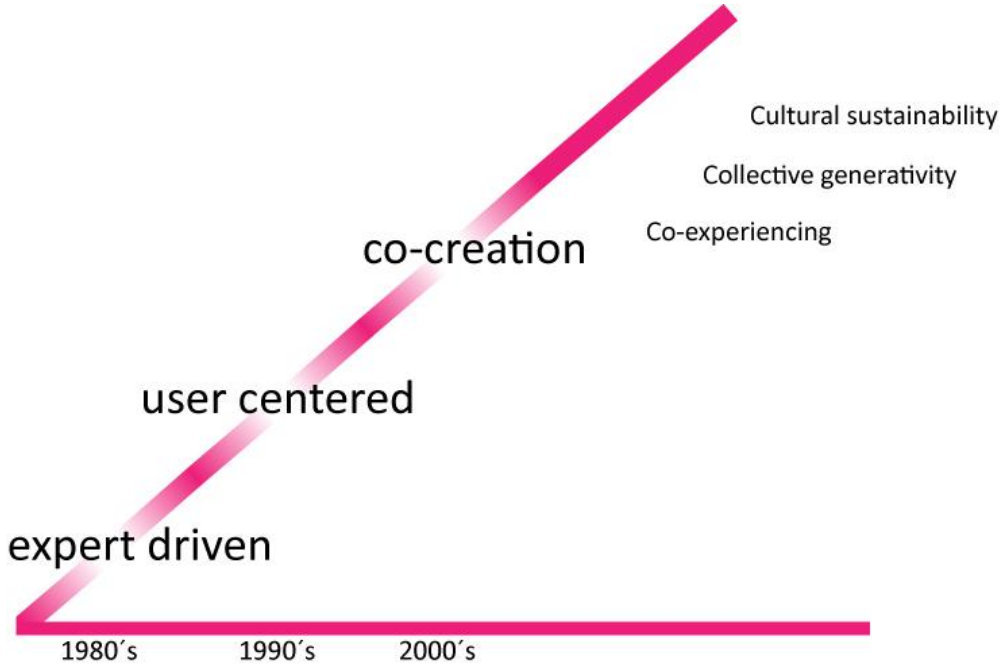

Figure 3. The changes in the design industry (Source: Sanders 2008).

In Figure 3 parts of the design history and present has been situated on a timeline. During the 1980's designing has been expert driven, which in a way meant it was "a designer centred way". The designer worked in silence and then unveiled "the master piece" at the business meeting for the managers. During the 1980's the directions for the design process were usually based on market researches. A basic market research produced only information about the current situation on the market. Slowly the realization towards user centred design started to take place during the 1990's. User centred design together with marketing research went deeper into the user's needs, which also widened the understanding about what were the future needs on the market.

During the 1990's and even during the beginning of the 21st century user centred design has improved greatly and extended its domain. The use of user information has become more important and specialized. User centred design slowly started to get involved with other actors. Currently co-creation and co-design are taking a bigger role in the design industry. If one has the experts, the users, the designers and the business managers, why would not take advantage of them all and put their knowledge together? As the technology continuously develops and the future of the world can only be guessed, other important issues in design world also appear, including cultural and environmental sustainability.

As mentioned earlier, there are multiple design terms that are closely related to co-design and are also focused on users which is highly important in co- design. For example participatory design is a more known term. The terms differ a little, as co-design does not prioritize any of the participants from one another; designers, business department and users are all in a "holy trinity". In many ways the user can play a vital part in the design process. A simple example between business and design is how design refers to the word users, whereas business refers to them as customers or clients (Pattichis 2012, 12). In practice this means that businesses tend to think about the customer only as someone who purchases the product/service. Conversely, a co-designer sees the customer as a user of the potential product/service and seeks other values in addition to purchasing.

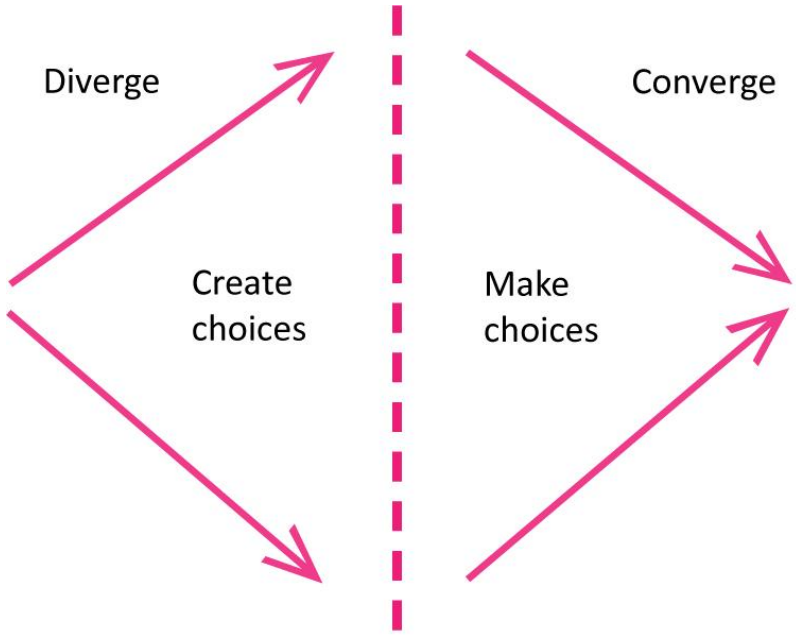

Figure 4. Creative design (Brown 2009).

The essential part in design is being creative. In Figure 4 Brown (2009) points out how it should not be about making choices of what one has, but to make new ideas and new innovations by creating choices that have not existed yet. It should create choices that others do not have, which gives an advantage on the market. This way we create innovative solutions that are valuable and profitable. With co-design those choices are created with each actor working together: co-creating, co-experiencing and co-working.

In times of change there is a need for new ideas and new alternatives, because the existing solutions are simply not enough. Design thinking gives us a new way of tackling the problems; this goes against following our normal convergent approaches where we make the best choice of what we have. It gives the courage to take divergent approaches to create new alternatives and ideas that have not existed before. Before all of this there is an important first step that must be considered: what is the question we are trying to answer, i.e. what is the design brief? (Brown 2012)

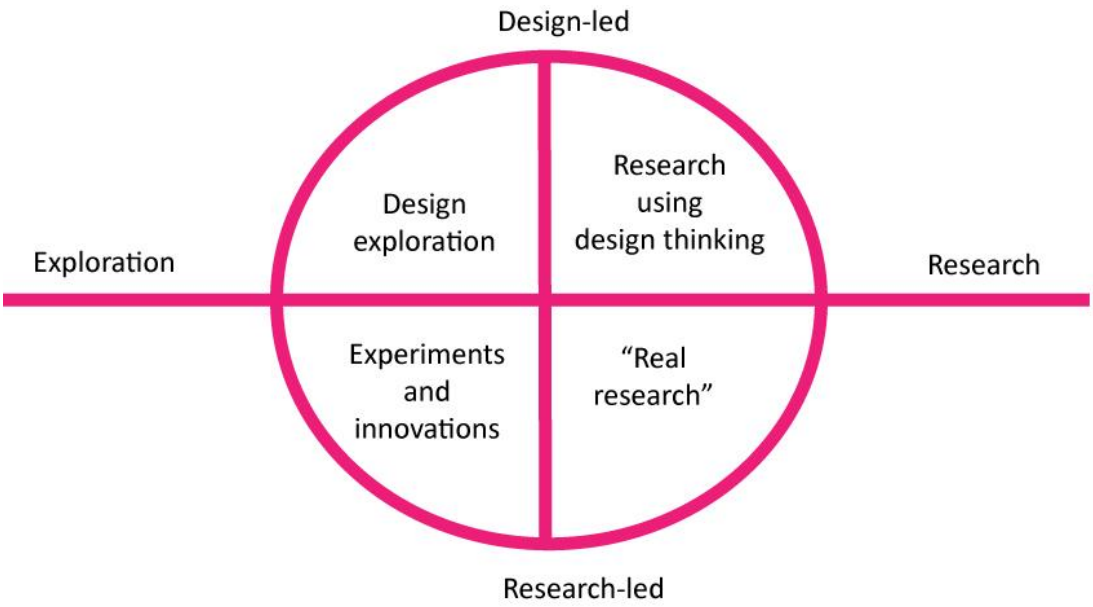

Figure 5. Design equals research (Sanders 2008).

As the design has slowly yet surely started to appear increasingly more as research, there often rises the question as to which one it is, designing or research. At the IIT Design Research Conference, Sanders (2008) presented a map (Figure 5) which shows the equality of design and research. There needs to be no clarification, it can perfectly well be both as it is. On the top of this map is the design-led and on the bottom of the map is the research-led extremes, but because of design thinking the gap in between these two is no longer that wide; it is easier to cross the boundaries. Exploration is opportunistic, future-oriented, serendipitous and open-ended, while the "real" research is more systematic, rigorous, structured and knowledge seeking. The design process utilizes each section.

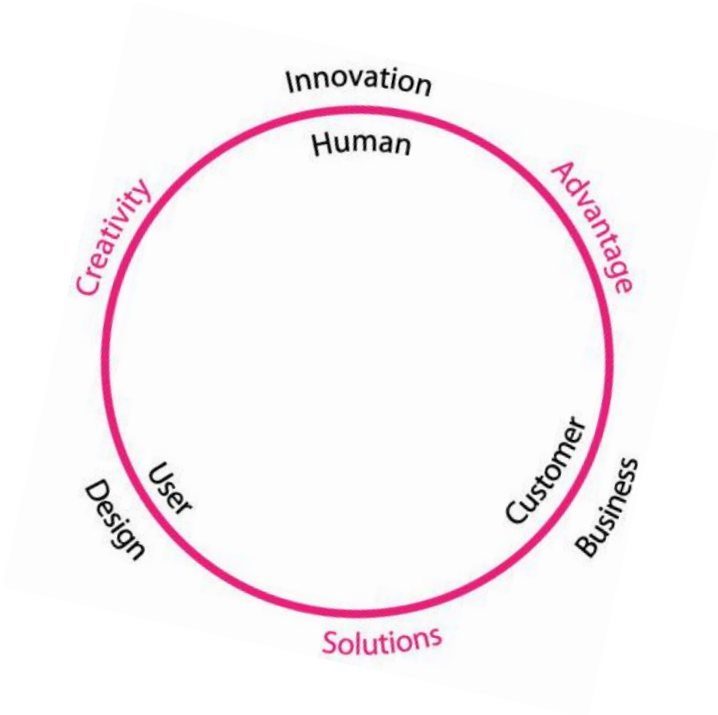

Figure 6. Co- design circle.

In summary, when co-design links design, innovation, business and user interaction the result is creative solutions, which give companies advantage on the markets. The business field concentrates on the customers, keeping the solutions profitable. Innovative solutions can be part of the ideation process, detailed design stage, modelling, marketing solutions etc. It can be part of each step that must be taken before launching the product/service on the market. The designer's world circles around creativity, innovation and open-minded ideation (Figure 6). The designer takes advantage of using user research and user information as part of the background knowledge. The amount of information gathered from the user knowledge can give an extraordinary advantage. When there is the courage to think outside of the box, innovative ideation is possible.

4 USERS

4.1 Human centred design

Design has become human centred as the realization of its potential has increased. Design can often start from consideration of what the human needs are, what makes life easier and more enjoyable. Design may integrate with economics and technology. It makes technology more enjoyable, but design is always more than just good ergonomics. Often the designer must have an understanding about culture and context before the designer even knows where to begin. (Brown 2009.) A great example of increasing knowledge of human centred design is the advertisement slogan by one of the leading importers of products for personal care items and small electrical household appliances in Scandinavia. OBH Nordica's slogan "*Designing good life*" is selling products by advertising the items and appliances that can improve a user's life. OBH Nordica has also concentrated on user-centeredness in their ongoing TV- advertisement campaign, where the product is presented as designed with the help of a specific user. In the advertisement the user is introduced by name and the viewer is familiarized to the user's life. The situation in the advertisement is made to fit the viewer's life, and more specifically the target group's lifestyle. One of these products is a curling iron that only needs to be pulled through the hair and it gives the wanted curls in a matter of seconds, which makes it easier and faster for women to get ready; it makes the morning better. The message in the adverts is that the products do help the hectic life and make it better, in line with the company's slogan.

Human behaviour in design is based on information about social sciences, social psychology, cognitive psychology, environmental psychology, human factors and ergonomics. Combined with an understanding of design processes, it can contribute to the planning, design, and management of environments that enhance individual and organizational effectiveness. Human centred research can focus on environmental settings across a range of scales (from products to buildings to cities), that support safe, healthy and productive behaviours and foster sustainable design and lifestyles. (Cornell university 2012) This is all while keeping in mind that design is currently also involved

in designing services and other intangibles. It is important to acknowledge the scope that the design field has reached during the past decades.

As already mentioned, user can be a keyword for a designer's work, especially in co-design. It is important to understand the users' and their needs. Human behaviour is complex, but understanding the user needs and behaviours can create a more effective solution to a design problem. The users are diverse and have different needs. Individual characteristics such as culture, gender, stage in the life course, family structure, role or task affect the environmental needs.

A new idea is a about something new or unique, and making that idea real is an invention. Innovation is an invention that has some sort of a socioeconomic effect; innovation changes the way people live. User information is an important source of new product/service ideas (of what should be designed), which has the potential to redirect a company's technology capabilities towards radical innovation. Having recognized the primary importance of understanding how people interact with design, many research methods are borrowed from the social sciences. With these methods a designer tries to explain and predict human behaviour in the pre-design process and to measure how people perceive, understand, remember, and learn in the design evaluation process. (Chayutsahakij 2012)

4.2 Human behaviour

Human behaviour is a complex, quite unpredictable and intriguing subject. Human behaviour is influenced by complex systems: culture, society, values, morals, ethics and genetics are at the top of the long list. It is studied in psychology, sociology and even in economics. As user centred design became fashionable all this information became extremely helpful and precious. For example with branding, companies try to connect the target user's prospects emotionally. That is how brand loyalty works. When the users feel emotionally attached to their product/service, it improves their desire to choose other products/services from the same brand. When users are part of the design process there are multiple factors that need to be considered. People do not always work rationally; emotions greatly affect in surprising situations (Mattelmäki 2006, 20-23).

When human behaviour is studied by design research, the studies can be unlike the commonly known psychological researches. The subject is the same, i.e. to understand the complex behaviour of human, but the aspects and the research focuses are different. In the design aspect the human is mostly studied as a consumer or as a user. As an example, in the design point of view the human behaviour study's target can be about consumers' buying behaviour. This is influenced by social, cultural, personal and psychological factors. The aim of the studies is to understand human behaviour so that it gives guidance for the design process, which is why the focus point is related to the design related issues. Knowing why and how consumers act in a buying situation, together with market researches, provides guidelines on what should be designed for the market, and even how the product should be packaged and advertised.

An interesting example of design related human behaviour research is the recent studies of consumer response to a visual form. Kälviäinen (2007, 3-4) explains results of what Crilley, Moultrie and Clarkson have distinguished in their design study (Seeing things: consumer response to the visual domain in product design, 2004). Their result had three aspects. Aesthetic response concerned the attractiveness of the product; semantics concerned evaluating qualities such as mode-of-use; lastly the symbolic aspect dealt with what the product says about the user. The complexity of pleasurable responses to products is also pointed out in other studies. It has been noticed that cultural, socialization and personal experiences affect a consumer's response to a visual from. (Kälviäinen. 2012, 2-4). A consumer's response to a visual form is not the most typical study target of human behaviour, but in the design field the information of this study gives valuable information.

While many of a designer's hours are spent in the model shop, in project rooms and peering at computers screens, many of them are also spent in the field with the people who are the ones benefitting from the design work. If the users of the product that is designed are school children or office workers, the only way really to get to know their habits is to see where and how they live, work and play. In observation it is important to also watch what people do not do and listening to what they do not say. Observation can create great ideas that would never emerge from a more traditional design methodology. In the end, even if the users are not the ones writing the check, they are the ultimate clients. (Brown 2009, 43-44.)

5 EXAMPLE CASE

5.1 Living Lab

D'ART services is an enterprise service centre of Karelia University of Applied Sciences Centre for Creative Industries. D'ART design resource centre is also a member of the European Network of Living Labs. Living Lab is a research concept, which works around user centred design and open innovation. Living Lab for Design and Services focuses on creating and improving sustainable product/service concepts with user-driven methods to achieve a global competitive advantage through user value and engagement. The concepts combine the knowhow from several SME's (Small and Medium Enterprises) in achieving the right value offering and user experience in the areas such as living, work, tourism, learning or senior solutions. (Kälviäinen 2012.) Living Lab takes advantage of working in real-life surroundings and involving all the actors: users, enablers, developers etc. Living Lab projects can deal with developing a product that is already on the market, associating in a launching phase and also in the ideation stage of the product development. The Living Lab projects are user centred and the D'ART design resource centre also emphasizes the importance of the enables, developers and providers. Due to these reasons, the mobile application's design process has been an excellent example of the opportunities that co-design tools and methods can provide.

5.2 The design process of mobile application

Together with Karelia Expert Tourist Ltd., the current project of D'ART design resource centre has been designing a mobile application for Russian tourists. The application is firstly concentrating on providing shopping possibilities listed by the owners of the shops and stores in Joensuu and secondly on those recommended by customers. The meaning of this mobile application is to get more tourists to visit Joensuu and to help them get the best out of their trip. Later on this application will be extended from shopping all the way to sports, entertainment and other similar listings. The mobile application will be published he early 2013.

There are also lots of freemium models in mobile applications, which mean that the service is usually not sold to the end user, but the profit comes from the advertisers. If the application reaches the users, more advertisers are interested. When designing a mobile application it is good to realize that a service is an experience and it must be wanted because of its usability, but also because of its appearance. In other words the graphical look needs to be right. Nowadays the realization of usability and appearance is of course applies to many projects dealing with mobiles and other technology. The Finnish service design company Palmu Inc. has made three basic rules for a guideline when designing services. The first is to start with people and know their ways. Secondly one should research, try out, concretize and test. Thirdly comes evaluation and optimization of the customer experience and business value. (Rönnholm 2012.)

As already mentioned D'ART design research centre is located in the Karelia University of Applied Sciences Centre for Creative Industries, and because of this D'ART has the privilege to cooperate with the university students. Students get highly valuable practice, connections and confidence in the business world, while D'ART multiplies its resources involving the business and design students in the design processes. Along the mobile application process D'ART has had students involved in the project work in several ways. Tasks for the students have been: creating user profile and user paths, (both explained in detail on a section 6.2) market research, creating and testing pilots and potential customer evaluation.

A surprising and negative phenomenon occurred at the beginning of the project: the difficulty of getting the local companies in Joensuu involved in the design part of the project was a frustrating set back. It has been easy to notice during this project that most companies are expecting a readymade product. They do not yet understand the possibilities of improving the product if they involve themselves in the design process. This has been a problem on many occasions and it has not yet been solved by any specific tool. One option is to present the case and possible values brought by user centred innovation. It is also necessary to present correctly and strongly. As explained the presentation skills in the world of co-design are also nearly mandatory. In all cases designers are not able to face the potential participants, but when this situation does occur it is a highly essential talent to present correctly and to be able to convert the

potential participant to understand co-design's strengths and experiment with its potential.

The personnel of D'ART organized two workshops that were held by service designer Reima Rönnholm from Palmu Inc. The workshops included a great deal of information about designing a service. Most importantly, Palmu Inc. together with OSKE (Centre of Expertise Programme), had an extensive travelling and living experiment project called Rucola: Russian Consumer Latent Needs. The meaning of the project was to find out what the needs of Russian travellers are. Responding to those needs would hypothetically increase the number of services they use and extend the length of their stay. A deep analysis of social media (over 500 employees), conducted surveys made in St. Petersburg, and Russian blogging trips organized by OSKE proved that the Russians would like to use more programmed activities and cultural services, but they either do not exist or cannot be found. The tourism income and employment by Russian tourists in Finland has therefore all the more opportunity to grow. The Rucola Project collected a huge amount of information about Russian tourists, including their travelling needs and habits. This information package was used at the workshop and was given to each participant at the workshop. This information package has also now been in the use of D'ART and is highly important while designing the mobile application.

During these two workshops (explained on a section 6.2) the local companies that did take part were divided into groups together with the personnel of Karelia Expert and in each group was also a designer from D'ART. Only one of the groups was focusing on the mobile application, while others were focused on getting new potential ideas, but the focus for all was tourism and travelling in the Joensuu area. The workshop started from explaining the potentiality of a workshop activity. It was explained that the ideation should come freely, and even tiny, funny and foolish ideas should be written down. The brainstorming session brought several ideas that were compared and discussed within the group. Some ideas were brilliant on their own; some were joined together and some were rejected. The process went further with the approved ideas together with the learnt knowledge of the Rucola case. OSKE had developed a booklet for the workshop, which consisted of assignments that provided guidance on how to turn the problem solving into ideation development. The booklet also gave questions to consider while solving the potential ideas. It reminded of the importance to consider the idea from a customer

point of view and from a business point of view. OSKE had also included in the booklet their idea development's evaluation table, where the potential ideas were situated to indicate the value for customers and the value for the businesses. In the end the final results were presented for the other groups and the new mindsets looked at the ideas with a fresh mind. Then the viewers asked questions, gave feedback and even more improvement proposals for the ideas. Sharing the ideas and bouncing them around can take the ideas even further. During these two workshops the companies were guided to learn tools and methods that could help them to improve their already existing services and how to continue with new ideas and innovations.

The design process is mostly a big mess at the beginning. Likewise this process had several opinions and possibilities on where it was heading to. From early on it was realized that the Russian habit was to choose a travel destination that had been recommended, either by family, friends or in the social media. Giving recommendations seems to be an important part of the culture, and the possibility to do so was decided to be included in the application.

The first demo or the prototype of the application involved basic illustration prints of how this application would look on the mobile screen and what the application should offer. The first example prints were made by the design students of Karelia UAS. The mobile application was coded and launched on the market by the personnel of Karelia Expert Tourist Ltd. During the autumn of 2012 the prototype of the application was coded, tested and tried out by the personnel of Karelia Expert, designers of D'ART and most importantly by the potential users. Feedback of prototype included; opinions, observations, user information and improvement points. Comparing the prototype to already existing products/services is also possible and quite common. When researching how the map applications work in others cities, it might reveal some focus points that are missing and causes inconvenience in the usage. This should be taken into consideration while designing one's own prototype. The practice shows that through visual ideation material, probes, sketches, situating strategies such as scenarios and storyboards, social pictures, service touch points, images describing the complex participant network of different levels of prototype and models can reach tangible thinking and outcomes (Kälviäinen & Räty 2011, 1-2).

User value defines how much the customer is willing to pay, how often the customer will buy the product/service, and whether or not the customer will recommend the product/service to other customers. A conclusion was that with this mobile application the most valuable question was: are the users willing to suggest this application forward? Emerged questions and problems during the design process were also how to get the local companies to add information to the application, to keep it interesting, and the question of the possibility for shops to advertise offers, along with the provision of such advertisements. A key question was also what the possible location for the potential user to most likely to find this mobile application would be. All these emerged questions were answered as a result of the co-development between the well educated design team and the business organization. The work utilized user research and feedback from the possible users.

6 TOOLS & METHODS

Besides innovation and creativity, there are numerous design tools and methods that vary from one another depending on which field and project they are used. Design tools and methods are constantly being developed, and new ones appear while the design thinking is applied to new issues. As mentioned several times, co-design gathers together tools from design, business and innovation. The example case gave valuable real-life clarifications on how this actually happens. Often is said that designers do not just think, but they develop ideas into tangible forms. They actually think through making things (Hunters 2012). The chosen co-design tools and methods that are presented in this paper played an essential role in the design process of the example case.

6.1 Visualization

Visualization comes naturally to designers. An eye for colour and understanding language form are parts of the basic design knowledge. Tools like Adobe Illustrator and Photoshop, 3D rendering programs etc. are part of designers' everyday tools. Recently there have been several studies on how visual effects affect people's buying behaviour. A few years ago the use of new and unordinary colours on household products raised the sale numbers dramatically. Advertisement, logos and info-graphics are the most common visual tools for the graphic designer; whereas an industrial designer's visualization is more commonly seen in products and in branding solutions. This is even though the boundaries between design industries are nowadays fairly tepid. It has been realized that people read deep meaning into the visual aspect; therefore people connect themselves with the values that they hold important (Kälviäinen 2007, 1-2). Visual design research supports the interdisciplinary communication, joint idea generation, opportunity search and evaluation of ideas, and the interplay of divergent and convergent thinking (Kälviäinen & Räty 2011, 1-2). Visualization can be seen and thought of as a joint language between several different actors. Visual information is useful for exploring values and meanings, generating creativity and prompting respondents to add ideas and details (Kälviäinen & Räty 2011, 6-11.).

Visualization can be used in design in multiple ways. In this specific project the visual tool was in the form of info-graphics. Info-graphics is everything from timelines, technical drawings, symbols on traffic signs and pictorial instructions to user interfaces. At best info-graphics manages not only to illustrate and enhance understanding, but it also makes information attractive in the visual ways. Even dull information may change into something fascinating with the correct use of info-graphics; however, the visually beautiful may not always be the most informative. It can still reach its intended purpose if it fixes the attention of the viewer. Therefore, combining visualization and information is not always that simple. The nature of the information, target group and aims can lead to multiple visualization solutions. (Ballerina 2010.) As mentioned, in the example case info-graphics played a rather important role. Mobile phone screen size is fairly small, and that is why the use of space is extremely limited. Symbols on the application must be simple, informative and easily understood by multiple viewers.

6.2 User understanding

The relevance of user research has been brought up on several occasions. In this specific example case the benefit of the user research, if possible, was even more extensive than normally. The differences between Finnish and Russian culture are enormous and numerous. To understand the potential customer and the user in this case was only possible by understanding the Russian culture. The knowledge and understanding was learnt by multiple different user research methods.

User profiles and user paths are not created on information based on a real person. The meaning of these tools is to figure out what kind of users this product/service could have. The user profile is a mental image of a user created by the designers. When considering who could be the potential customer for this service, a profile is created. To make the profile feel alive, the profile is given a name, age, background, hobbies and a lifestyle and in order to make it even more realistic pictures of magazines are sometimes used to visualize the user profile. It is mandatory that the created user profile is actually considered as a potential user. Why and how would this imagined user use this service/product? With the collected information the user path is created. The user path illustrates the hypothetic path of the created user profile. The path shows the whole

circle of use; when considering where and how the user profile finds the product/service, it presents the use of this product/service as well as when and how the use is over and the potentiality of repurchasing. User path is a hypothetical testing evaluation of the product/service in the user profile's life. Several possible user profiles and paths are created, and with these tools a designer can have user research information, even if the project cannot deal with real users yet. On the other hand, if the user path tool is used at the workshop with real users participating, the user him/herself can be thought as the "user profile" whose path is being created. The visible profiles stimulate ideas and aid decision making (Design council 3. 2012).

Participation in the co-design process can be done in several ways. Workshops proved to be an excellent tool in the example case. Co-design workshops can be arranged together with users or with stakeholders. The workshop material is made for each user participant group or stakeholder group specifically. During the workshop it is intended to expose user needs and at the same time produce a demand definition for the service or the product. While planning a workshop it is good to consider the target group participating in the workshop. For elderly people the assignments should be different than those for a children's assignment, for example. Assignments are best kept simple in order to make sure the time at the workshop will be spent joyfully. After taking part in various workshops and their planning, it has been a clear observation that a relaxed atmosphere increases the number of ideas and thoughts.

The meaning of a workshop is usually to do things together, but it can also have individual assignments. The assignments themselves may not be understood by the users. The realization of how the assignments will help the design process is complicated, but the design group will analyze the results in their own ways. Each of the assignments are designed by the designers is order to collect important data for the design process. A day can be divided into different groups, with different assignments; in order have more material from the participants. Ordinary material used at a workshop can be for example: different coloured pens, sticky notes, paper, pins, stickers, cardboard, cameras and many more. Every design workshop has their own target group, number of participants, different timelines, different assignments, different leaders and their own aim and goal. The idea is to keep the ideas coming and flowing and then produce concept outcomes together with the stakeholders.

While creating and running a workshop it is also beneficial for the leader to know him/ herself. There are many leading styles that can be used. A good way to hold the workshop is to mingle with the participants. This includes familiarizing oneself with the participants and ideate with them. Leading a workshop can in some ways be very similar to holding a presentation. If it feels naturally good to be in front of an audience and to talk to a group of people, it may be a preferable choice to give instructions in this way. (Sims 2006, 1-10.) In workshops it is important to get the atmosphere open and welcoming. There are no right or wrong answers, and when the participants know and feel this, it eases the tension, opens up creativity, and the probability of success increases.

Not only by choosing a pleasant leading style does success become certain. How should people's private lives and the exchange of experiences be observed and examined in the workshop? How should the designers motivate participants to talk about their lives, values, needs and feelings? A mutual understanding between the members of the design team and creating this also between the users and then promoting this understanding to the client makes all the possible ways needed (Mattelmäki 2006, 36). It is a matter of many features that ensures the success of discovering the needed information. A workshop is only one possible way for users and stakeholders to participate in the design process, but it is practical and convenient, and it proved its value during the example case.

6.3 Prototyping

Instead of thinking what to build, design thinking builds in order to think. It moves rapidly to learning by making. Prototypes speed up the process. The strength and the weakness of a product is easily noticed and understood when it has been put out in the world (Brown 2009). Someone would not build a building without building a prototype. Why would anyone build a strategy for a company based upon PowerPoint? (Heiselman 2012). With prototypes the company can build a narrative for themselves, a story that answers the question: "Where will we be in three to five years?" Through prototyping, the clients can begin to tell the story of who they want to become. (Heiselman 2012) Prototypes at the beginning of the design process can be just visual scenarios. Even the

services need to be described and communicated by creating scenarios, social pictures and touch points (Kälviäinen & Räty 2011, 6-7). Usability evaluation and usability testing are mandatory. The faster the prototype is possible to be tested, the faster, the better and more the prototype can teach about its possibilities.

6.4 Terminology

It is a well known fact that each profession has their own vocabulary, concepts, theories and thinking styles. Explaining the problem to a different minded person sometimes reveals unconscious assumptions. (Kälviäinen & Räty2011, 3-5.) In this example case, there were several small local companies involved, most of them shops. Some of them were more and some of them less familiar with the technology and with mobile application possibilities. For the participating shops the mobile application was a new marketing solution. Technology terms, marketing terms, and business terms can all sometimes be a turn off. What co-design tries to prevent with participation is to familiarize each factor together and prevent the possible problems caused by difficult terminology. A co-designer naturally has been educated in design and has the knowledge of design terminology and the visual tools as help, but when a designer gets involved with co-design, designer benefits in having a background in business as well.

6.5 The use of design tools & methods

As has been explained, design is a constantly changing field of various definitions. There are names for different design fields, and those names have been evolving together with the world. Exactly the same will happen to technology and medicine for instance. If the design field and needs keeps changing, so will the tools and methods.

There are numerous amounts of design methods and tools. Machines, computers, programs, pens, research methods, ideations methods all provide just a brief view of them (it can be almost anything). It is a matter of finding the right tools and methods for the right project. Even the tools and methods used in this example case of designing a mobile application may not be the correct ones with another application. The design

process is never the same. The processes can be very similar; but even when they are not so, there are multiple ways one can learn from an old process or from an on-going process. The base of design is an open-mind and creative solutions. The importance is therefore to keep an open mind and use the tools and methods in a creative way, or even better, to improve the old tools and methods to meet the needs of a process.

7 CONCLUSION

"Few people think about it or are aware of it. But there is nothing made by human beings, that does not involve a design decision somewhere" (Morridge 2012). Design is creative, innovative, open minded and it is there to enrich and improve ordinary people's lives and to add value to the business sector. Before a true innovation can occur there is deeply beneficial information, wide knowhow and capability to connect all of this in a revolutionary way, where people are in the key position.

There are three executable topics in co-design. The business value: is this product/service really valuable for the company? The question of production: is this product/service possible to execute the way it has been designed? Third is the role of the user: is it really beneficial for the user, and is this product/service desirable to the users? When all of these three topics are considered together it adds value and possibilities for the project to be successful and simultaneously lowers the risks of flaws and errors. That is why the user research and human centred design are such clever ways to make a successful product or a service design. The designers should care a great deal about those whom they are designing the products and services for. By caring about the users designers are capable of increasing the value of the design and creating products/services that will improve people's lives. The gathered information, knowledge and understanding of the co-design ideation, tools and methods are strongly precious and beneficial. The study of this paper shows that the knowledge of co-design increases the advantage and value in multiple fields. The future development of the design world is still an open question, but there will be even more methods and tools covering the co-design ideology, which will combine the stakeholders and factors together.

Each design process is unique and there can be various ways that enables reaching the goal. The design process is about exploration. Everything from opportunities, possibilities and potential are to be taken into consideration, and the goal is to design forward. Ultimately, design is giving to the people, whether or not they are aware that they need it. A designer is a catalyst, an impulse, a stimulant or a spur that gets things

moving, changing and improving. As long as the planet keeps turning, design keeps evolving, exactly the same way as technology and medicine do.

Designers have exceptional know-how of creative and innovative ideation. Connecting this know-how together with the business knowledge increases the competitiveness on today's rough markets and this increases the value of a designer. Unfortunately these days the chances of employment are getting thinner and thinner. Reinforcing ones know-how can extend the designers own possibilities on the labour market. A designer must understand how a successful and innovative design can add companies' competitiveness and this way raise the need of designers. Currently co-design offers extremely beneficent requisites for this. By understanding the principals of co-design, designer can increase the extension of his/hers expertise. As the designer's job description is experiencing radical changes, designer´s themselves must realize the possibilities that the changes are offering for them.

The aim for co-design is to create better services and better products with innovative solutions. Innovation can begin with the smallest idea and become the greatest one and this can happen when the great minds are brought together. Ultimately the users are designer´s clients. The design is always made for them. The experts can bring the knowledge of creating something truly feasible and viable. Creating together with users and other stakeholders is the whole base of co-design. Connecting, co-creating, co-designing; the truth what good designing can be all about.

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