Mobile Ease-Of-Use and Desirability Through User-Centered Design

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***Abstract*-- From users' point of view the area of digital products and services is becoming increasingly complex in these days of a variety of devices, platforms, and interaction styles. Users are required to adapt not only to several complex technologies, but also to their rapid change. User-centered design (UCD) approach aims at high-quality design and utilises several methods to take users' actual needs and desires in account. This paper describes requirements set for UCD in mobile context, its principles and methods, its impact on human-product interaction concerning and beyond ease-of-use, and lessons learned in a project where UCD approach was applied into the work practice of a design consultancy.**

***Index Terms*-- User-centered design, usability, product development, mobility, digital products.**

I. Introduction

The rapid development of everyday and information technology causes problems to the user. The user is expected to adapt to the changes in his or her technological environment in an increasingly fast pace. The expected emergence of the mobile Internet may become a major source of inconvenience for its users, for at least as long as its technology, services, and devices remain in the phase of immaturity and competing human-computer interaction styles.

A. Mobility seems complex

The world of mobile devices, services, and platforms seems complex and even scary to many ordinary users. This is because a) it is complex and b) the language used in describing and marketing it is not familiar to them.

The borderlines between the hardware of the product, user interface level software, other layers of software, and the service itself, and whether applications are online or offline, as well as the roles of service providers, teleoperators, and hardware manufacturers are not at all easily recognized by the user.

There are several device types – personal digital assistants (PDAs), mobile phones, pagers, communicators, smart phones, and everything in between them. There are several operating systems competing in the market of a product type, such as Pocket PC, Symbian, and Palm in the PDA market. User interface (UI) solutions can be pen or keyboard based and, for instance, all mobile phone manufacturers have their own user interface styles. For devices capable to utilize WAP (Wireless Application Protocol) services, there are several types of browsers, such as the one compatible with Nokia phones and the Openwave browser, which display and control information differently. Certain services are open only for the subscribers of a certain teleoperator. The service offerings, the accessibility of services, and the principles of how and how much users pay for the services vary from country to country.

When compared to personal computers, the information appliances have had the advantage – in terms of ease-of-use – that they are designed for a set of specific tasks, which makes it slightly easier to provide a user interface, which fits well to the user's tasks [1]. The increasing processing capacity and other technological developments are turning PDAs into general computers in small size. This means that the vast amount of functionality of a PC has to be controlled through a limited UI, which sets new challenges to UI design. Also, new types of functionality is being implemented into e.g. mobile phones, such as embedded digital camera, multimedia message service (MMS), Global Positioning System (GPS) features, and so forth. Also, new local area networks, such as Bluetooth, make new device types communicate with mobile phones.

Even if the user interface design of these devices and services relies more or less on the principles of graphical user interface (GUI) design, it is rather problematic because of the limited possibilities with processing power, data transmission, and the input/output equipment. The companies are each trying to find their solutions, which leads to the fact that there is an enormous problem of incompatibility and inconsistency in the world of mobile user interfaces.

Considering the variety of issues described above, and the fact that public discussion on these issues uses a technical language and number of terms only vaguely understood by the users, or unfamiliar or irrelevant for them (e.g. related to the infrastructure, such as 'GPRS' or '2,5G', and 'UMTS' or '3G'), it is no wonder that they may feel uncertainty and even unwillingness to take mobile services in use.

B. Usability problems

Usability problems are in general caused by the technology-centered development approach, which takes the technological and manufacturing possibilities as the actual driving force for product development rather than the needs and desires of those to whom the product is meant for. In contrast, the starting

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point of user-centered design approach (UCD) is to obtain knowledge about what users really need, what they want, and how the solution should be designed to fit to the capabilities and characteristics of the them. This information is then combined to the technological and manufacturing possibilities.

Usability problems may occur when the development organization fails to identify user needs and desires, fails to turn them into specific design goals, and fails to validate the emerging designs with users. The problems may be due to the lack of total view of the emerging user experience in the development process. The 'ownership' and responsibility for the design of the user experience is divided to developers, to whom it may be a secondary task and concern.

The problems with the poor usability of products and services cause ineffectiveness, extended learning time, increased number of errors and recovery attempts, and discomfort for the user. For the manufacturer or the service provider the consequences may be decreased product quality, decreased user acceptance and loyalty, and worse reputation and public ratings. In addition to the direct results with the product or service quality, the consequences may include increased need for user training, instructions, or support. Also, the use of resources in online services is less efficient because of decreased user efficiency and increased number of unfinished transactions. Further, in UCD approach the possibilities for solutions are explored in the early stages of design, which focuses the product development to the right direction from the beginning. This leads to fewer late design changes, which reduces development costs considerably. Karat [2] reports that 64% of software life cycle costs occur after the product is released, due to unmet or unseen user requirements.

II. DIMENSIONS OF USABILITY

A. *Definitions and context of usability*

Usability forms an important part of the perceived quality of use. It is one of the factors on which the acceptance or rejection of a product or service is based.

Nielsen [3] sees usability as a part of overall acceptability. System acceptability depends on social and practical acceptability. Practical acceptability is divided into cost, compatibility, reliability, and usefulness. Usefulness is the issue of whether the user can achieve a desired goal using the system. It is based on both the system's utility – can the system actually do what is needed – and usability – how well users can use the functionality.

The core issue with usability is whether the functionality of a system can be operated by users. Shackel [4] defines usability as *the capability in human functional terms to be used easily and effectively by the specified range of users, given specified training and user support, to fulfill the specified range of tasks, within the specified range of environmental scenarios.*

In the international standard ISO 9421 [5] usability is defined as *the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.* Effectiveness means *the accuracy and completeness with which users achieve specified goals,* efficiency refers to *resources expended* in relation to that accuracy and completeness, and satisfaction is *freedom from discomfort, and positive attitudes to the use of the product.* Satisfaction is not a less important usability attribute than effectiveness or efficiency - in fact, in many voluntarily used product categories it is just the opposite.

Nielsen [3] emphasizes the importance of having practical measurable components for usability. He defines it by giving the following five usability attributes:

- Learnability: The system should be easy to learn so that the user can rapidly start getting some work done with the system.
- Efficiency: The system should be efficient to use, so that once the user has learned the system, a high level of productivity is possible.
- Memorability: The system should be easy to remember, so that the casual user is able to return to the system after some period of not having used it, without having to learn everything all over again.
- Errors: The system should have a low error rate, so that users make few errors during the use of the system, and so that if they do make errors they can easily recover from them. Further, catastrophic errors must not occur.
- Satisfaction: The system should be pleasant to use, so that users are subjectively satisfied when using it; they like it.

B. *Requirements for usability in design for mobile*

Mobile devices are typical 'smart products' or 'information appliances'. They typically fulfill one or more of the following characteristics [6]. Smart products (are):

- interactive
- physical products
- equipped with digital technology
- consist of original hardware and software
- dedicated for certain specific functions
- process information
- able to perform certain automated tasks
- often connected to information networks, wired or wireless
- equipped with limited input/output devices

In a more evaluative sense, smart products are:

- often rather complex in relation to their users' capabilities
- often packed with too much functionality

One of the basic characteristics is the overlap of hardware and software, which makes UI design different from designing pure software. Typical is also the contrast between an increasing amount of features and functionality made available

through a limited user interface, often a small grayscale display and a few dedicated and soft function buttons, or a pen-based input device. The UI design of smart products has until recently been a rather neglected area of human-computer interaction (HCI) research [7].

Many smart products are consumer products, which means that their users are a heterogeneous group. As digital technology is applied to new product classes, there is an increasing number of people who use information technology without a deliberate decision to do so. There is a wider variation in their levels of technology knowledge and skills than in the area of professional software. Often, there is little or no training available and even if there was, the users' motivation to spend time studying how to use a product is low. Their justifiable demand is that the product user interfaces should be self evident.

The impact of use context to the usability of a product is strong. It is an especially important question in design of portable or mobile products, which will be used in several environments. Väänänen-Vainio-Mattila and Ruuska [8] define three levels of use context for mobile phones and communicators. The mobile infrastructure context deals with technical issues, such as the network coverage or low communication bandwidth. Second, the physical context is about e.g. noisy surroundings, the freedom of being truly wireless, varying physical usage positions, the demand for small physical size of the device, sharing one's attention between operating the device and other issues, and the varying environmental factors concerning light, clothing and so forth. The third contextual dimension is the social context. The interaction is shaped by the need to take other persons into account – the ones who are communicating with the user and the ones who are in the same physical location with him or her. All these considerations have an impact on solutions for usability, physical ergonomics, the suitable types of content for the interaction channels and many other issues.

The biggest question in design of mobile services and devices is what users really need? What they want? What are they willing to pay for? When compared to the wired Internet the user needs are different because of the different characteristics of the media. It has become obvious that the direct conversion and application of WWW contents and GUI styles is problematic. Users' willingness to try out new devices and services depends also on the price of using them, and on their believe that the service/device type will be one of the survivals in the competition – so that it will be around also in years to come. Developers should be able to consider the emerging product's usefulness of for the individual, from his or her point of view. Sanders [9] sees that design research in product development has focused on questions of desirability and usability of products, but not enough effort has been taken to develop studies on whether a product is useful or not. For the design of mobile services this question is crucial. UCD methods are one tool for creating devices and services that are really needed, useful, and suitable for the media.

C. Beyond ease-of-use

Usability and user-centered design is not only about ease-of-use. Personal satisfaction with a product – a part of usability as described above – is an essential issue in product design. In addition to the performance-based ease-of-use, the emotional and social aspects in human-product interaction have increasingly been included in the usability considerations recently. The user is perceived more holistically, some prefer to talk about human-centered design instead of user-centered. This area of design research is emerging, see e.g. Hofmeester et al. [10], Picard [11], Overbeeke and Hekkert [12], Mattelmäki and Battarbee [13], and Jordan and Green [14].

Logan [15] talks about behavioral usability – *the ability to complete some functional or goal directed task within a reasonable time* and emotional usability – the degree to which *a product is desirable or serves a need(s) beyond the traditional functional objective*. Emotional usability requires the product to be engaging, to foster a sense of discovery, and to eliminate fear.

Also Jordan [16] widens the focus of human factors to pleasure with products, the emotional and hedonic benefits associated with products. He adapts four categories of pleasure from anthropologist Lionel Tiger: physio-pleasure, socio-pleasure, psycho-pleasure, and ideo-pleasure. Physio-pleasure has to do with the body and sensory organs. These pleasures are connected with touch, taste, smell, and sensuality. For instance, a hand-held device may feel pleasant to hold or a the smell in a new car may make the owner feel good. Socio-pleasure is the enjoyment derived from relationships with others – friends etc. It also has to do with being part of a larger group or society and includes issues of status and image. Psycho-pleasure deals with cognitive and emotional reactions. Using products with a high level of usability causes less cognitive load and feels satisfying. Ideo-pleasure refers to the pleasures related with people's values, e.g. a product can be environmentally friendly or aesthetically represent the user's values.

Similarly as product design solutions have a direct impact on the level of usability of a product, the level of usability has a direct impact on the perception of design quality and the desirability of the product. Good usability may not yet have become an as important part of 'must' quality – the quality required for a product to be accepted – as good design, good materials, careful finishing, etc. have, but it certainly will in the future. We as users do not blame ourselves for the poor quality of e.g. a piece of clothing ('I should not have used these shoes the way I did, they are worn-out in only two weeks') – but we still sometimes *do* blame ourselves if we can not operate an unusable product ('This camera is so fine that I can't even use all the fancy features its got').

User-centered development methodology is not in conflict with imaginative design, on the contrary; applying it does not take the responsibility for creating unique engaging designs away from the designer. It just helps doing that.

III. USABILITY METHODS

Already in the 1970´s, Gould and Lewis [17] recommended three key principles in designing for usability. These principles are still extremely valid: *early focus on users and tasks, empirical measurement,* and *iterative design*. Gould and Lewis report that the reaction to their recommendations some 30 years ago was that the principles are obvious. In 2001, after a usability boom in product development world, these simple but effective principles are still ignored everyday.

A. User-centered design process

Below, a synthesis of the descriptions of the main phases and tasks in usability process is presented [6]. It is based on ISO 13407 standard [18], Usability Maturity Model [19], Usability Professionals' Association's 'Designing the user interface' poster [20], LUCID [21], and Stanton [22]. It includes:

- studying and understanding the current situation
  -communication with stakeholders
  -UCD management and planning
  -user and use context studies
  -analysis
  -user and use context specification
  -goal setting
  -documentation of information
- designing the solution
  -ideation
  -visualization
  -prototyping
- evaluating the design
  -evaluation (against requirements)
  -user testing
- implementing the product
  -development of user training and support
  -documentation of design
  -participation in the implementation
  -analysis of real use

There are always iterative loops backwards in the process from any stage where new data on users' actions is acquired – users' actions with other tools for the task, with previous or competing products, with design prototypes, or with the emerging product. After the fourth phase – implementation – the information gathering starts again for revisions or for the design of the next version.

B. Usability methods

The following section presents briefly some of the possible techniques that can be used in user-centered design. They are classified here into three groups – information gathering and analysis, solution generation, and solution evaluation. These sets of techniques are basically in the chronological order, but as stated above, the development process is iterative, and there are typically several parallel tasks going on simultaneously.

1) Information gathering and analysis

In order to learn about users' life, tasks, goals, desires, abilities, or other relevant issues product developers have taken techniques from anthropology and sociology. Several terms – such as *field methods* or *contextual inquiry* – are used to refer to going out to where real users are and observing and interviewing them in their own environment. The principles of ethnography include using natural settings, holism, and being descriptive [23].

The basic methods of field studies include observation to learn what people really do and interviews to learn what they say they do and why, how they see the situation they are in and their actions. These inquiries are recorded by note taking, and audio or video taping. Field studies are relevant to design for several reasons. First, designers often do not know enough about the setting they design for – if they do not gather that information they face the risk of designing more for themselves than the users. Second, the possible uses of technology are sometimes unknown. Third, communicating with users in a laboratory or a design studio leaves out the impact of the context [23]. There are a number of specified design techniques based on contextual inquiry, some of them are more thorough and others are designed to fit to more time critical situations [24].

Task analysis focuses on users' tasks and how tasks break down into subtasks. It aims to understand in detail what the user wants to do. A 'task' is considered to be something the user sees meaningful and desirable to undertake. The terms vary depending on the author, but generally a *goal* is a higher level state of a system the user wishes to achieve. A *task* is activity which is considered necessary to reach the goal. A task can be divided into subtasks, until they are divided into *actions*, which are simple, mechanically conducted tasks [25]. Many of these methods are difficult or slow to use. There are also more light-weight approaches, such as CUTA [26].

Usability testing is described below in the evaluation part. It is used in requirements gathering phase for benchmarking.

The *usability goal setting* can be either a prioritization of usability attributes or defining measurable values for usability. The goals can be set at the end of information gathering and analysis. Design concepts will be later evaluated against these goals.

2) Solution generation

There are many kinds of envisioning techniques for imagining, communicating, and evaluating future use of technology. These are needed because of its complex and multidimensional nature. In addition to technical specifications, tangible representations of the use of emerging products are needed in order to allow the participation of a variety of stakeholders.

Scenarios are a large group of textual or visual narratives, which are concrete, focused on the particular, open-ended, and informal, and lead to an envisioned outcome [27]. Scenarios can take the form of visual *snapshots* or *storyboards*, which

stimulate thought [25]. These techniques are a vehicle from the present to the future and from analysis to synthesis, they force the designers to see other people's points of view, are engaging, and foster empathy [28].

Software or paper prototyping techniques are for representing the product's behavior and the interactions with it. Software prototypes can be built with many kinds of tools. Software prototypes can be very realistic – actually 100% similar to a software product, considering the look and behavior. Paper prototypes are here understood to be similar kinds of interactive representations of the product or system as software prototypes, except that they can be built without coding or computing power. They are images of the product's static and dynamic UI components drawn on paper, which can be used in simulating the operation of the product. A user manipulates the picture's input devices, e.g. presses the images of buttons, and a designer does the Wizard of Oz trick by changing the screen contents accordingly [29]. Paper prototyping is a flexible and cost-efficient way to test UI designs before using resources in detailed design or coding. It has limitations in representing dynamic, rapidly changing interactions [30].

To keep the emerging design on the right track *design guidelines* or *checklists* can be used to review the concept and to fix possible violations of design principles [3; 31; 32].

Participatory design is the approach where the real users of the emerging product are invited to participate in the actual design, instead of being mere informants for the designers, as in contextual inquiry approach. There are several participatory group work design techniques (see e.g. [33]), in which participants – users and developers – use low-tech materials to ideate and sketch systems together.

3) Solution evaluation

In *heuristic evaluation* usability specialists inspect an interface using guidelines of good design, the 'heuristics'. The guidelines can be general guidelines applicable to all user interfaces, category-specific guidelines, according to the product type, or product-specific guidelines [3]. Successful heuristic evaluations require that the inspection is conducted by several evaluators, because experience has shown that different people find different usability problems.

Other expert inspection methods include e.g. *cognitive walkthrough* [34], which is a theory-based process, where a group of evaluators go through a detailed description of the user interface. They have a task scenario and explicit assumptions of the user group and use context. At each step of the use sequence they consider the behavior of the interface and its impact on the user, and judge whether the user would be able to perform the task or not.

In addition to expert inspection techniques, designs can be tested with users. This has the advantage of providing empirical data, if compared to expert reviews, which are basically subjective opinions, even if well-educated. *Usability testing* is the most common usability engineering method. In usability testing real potential users of the emerging product perform tasks with a prototype of the product according to a task scenario. The test is traditionally conducted in a usability laboratory, videotaped, and the tapes are analyzed later [35]. The test measures whether the design fulfils the requirements that have been set earlier. The measurable usability attributes include issues such as number of errors, time spent, etc. Usability testing is often conducted too late in the process, which means that if severe problems are identified, they are difficult to fix, because extensive changes can no longer be made. Testing can and should be used in several phases of the process, first for benchmarking and exploration purposes, later for assessment and validation purposes.

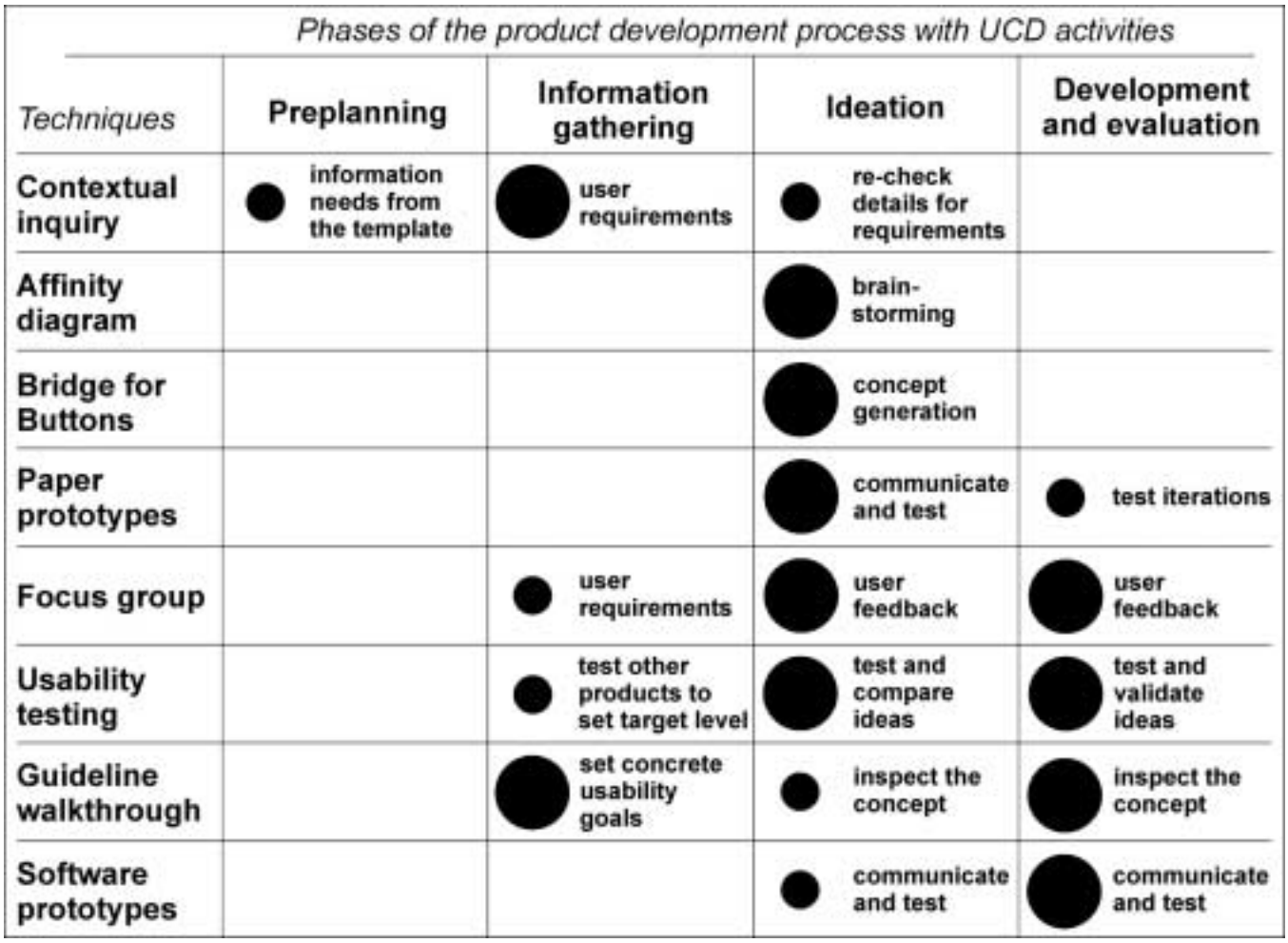
In addition to the ones briefly described here, there are several other user-centered design and evaluation methods and applications (see e.g. [22; 36]), as well as approaches, which integrate several traditions, most notably contextual design [37].

IV. Developing the UCD approach – a case study

Last, some experiences are described from a research project where UCD methods were applied to the work practice of an industrial design consultancy [38]. They illuminate, that designing high-tech products does not happen solely with high-tech tools and that UCD methods can be adapted to various kinds of organizations respecting their local needs.

Researchers from the University of Art and Design Helsinki worked together with the industrial designers at ED-Design Ltd, Scandinavia's largest product design consultancy for over two years in an action research project. Action research is an qualitative, participatory research method, in which members of the community under study and outside researchers analyze the current practices of the community, develop new ways of work and test them in real life, and aim at enhancing the practices permanently. The goals are twofold: to learn about the community and the change process and to develop the everyday practice further.

The design process at the company was analyzed from the point-of-view of user-centeredness. The existing usability related methods used in the company were sharpened and new ones were introduced and adapted. The applied techniques were tested in four client assignments and in one in-house development project.



A. Practical result

The outcome for the company was a set of UCD techniques for four stages of the development cycle.

A theme list for interviews and observations in *contextual inquiry* can be used prior to project launch to check what kind of user information will be needed. The main use of contextual inquiry is the gathering of user requirements in the early stages of the process.

Affinity diagramming is a group work technique, where the participants write pieces of information (for instance, notions from contextual inquiry) on e.g. Post-It® notes, attach them on the wall, and categorize them, in order to see the emerging important themes for the design and to share knowledge and opinions.

Affinity diagramming is also the first part of *Bridge for Buttons*, a group work technique adapted in the project from a GUI design method called 'The Bridge' [39]. Bridge for Buttons [40] includes six efficient steps for discussions on user-related information in a multidisciplinary team and for generating initial concepts for both the product's physical and software user interface.

Paper prototyping is used to prototype and test the user interfaces and interaction with the product. In this project the technique was adapted in 3D – product design appearance mock-ups and paper prototypes were combined in order to cover more product attributes simultaneously in an easy to implement manner.

Because the informal communication with users seemed important in the sessions of using other techniques *focus group* interviews were added to the tool set in the end, even if they were not tested in the project.

Usability testing is one of the most important UCD techniques. It can be conducted in information gathering phase for benchmarking purposes, and later to test if the emerging solution is on the right track, and finally to validate and approve it.

For *guideline walkthrough* a document was developed in the project. It consists of 10 usability guidelines, of examples of their meaning in practical level, and of a space dedicated for the product specific rules. It is designed to serve two purposes; at the beginning the designer responsible for the project

defines and writes the product specific usability related guidelines. This forces the designer to consider the usability goals at the outset. Later, one or more of the co-workers, who are not working in the project, evaluate emerging prototypes against the specified list of guidelines. This arrangement enhances usability knowledge and helps the inspection, because it combines general level principles to the use of detail level product-specific checklist.

On–screen, throw-away *software prototypes* are built to test and communicate user interface solutions in addition to paper prototypes, which are not suitable for all kinds of UI elements and interaction styles.

B. Lessons learned

The set of UCD techniques evolved in three phases. At first, the researchers suggested a holistic UCD process with a large number of techniques applied in novel ways. This was based on literature and on the benchmarking interviews with representatives of international consultancies known for their UCD focus. Second, after a pilot client case, the goals were modified, and the changes were grounded with real-life needs. The instructions for the techniques were long and detailed – e.g. the procedure for usability testing included five different forms to be completed. This was because it was assumed that the designers were inexperienced in usability, and it also reflected the spirit of HCI literature, where usability research is conducted by full-time human factors personnel. In the third phase, the trials in client cases, the applications evolved further. As the designers became familiar with the techniques the instructions were simplified and some techniques merged. Instead of a process, the participants began to talk about a toolkit, from which one could pick a technique every once in a while, depending on the situation at hand. The toolkit was seen as support for the designers' own thinking, rather than as detailed instructions for action.

Conclusions from the development process include the following notions.

Integration of product wholeness in design is important. The many-faceted set of design problems needs to be solved by using a variety of techniques and ways of studying the existing situation in the users' lives as well as representing the large number of design ideas and concepts during the several phases of the development. It is required to not only consider the many dimensions of a product and its use separately, but also their impact on each other during use.

The considerations are possible through the use of design representations. Visualizations, models, and prototypes can represent several aspects related to the use of interactive products: the designed objects, events in time, the users, or abstract ideas. There are several types of representations, each suitable for one or more purposes. The underlying purpose of producing representations is to communicate. They provide the participants from many backgrounds a common language. The value of visualizations and prototypes is in the conversations they can trigger.

Low-fidelity prototyping makes some of the goals presented above possible. Lo-fi prototypes are fast and inexpensive to build, and the number of characteristics which may distort attention and understanding is smaller than in more finished ones. Low-fidelity prototyping also supports participant collaboration and the sharing of knowledge and ideas by being easy to master by everyone. In spite of their roughness, lo-fi prototypes can provide a 'hands-on' feeling of product use.

The early phases of product development process are important for both the aesthetic product design and the user interface design, because it is the phase of the process when the most important questions about the product are asked and answered – what does it do, how does it look like, how is it used, how different parts work together, how tasks are allocated between the physical part and the software, or between the system and the user, and so forth. That is the last phase where the solutions on one area still can have a major influence on another. After that, the development tasks of several professional disciplines become specialized and to some extent, separated.

V. CONCLUSIONS

User-centered design approach may be a valuable tool in the development of new mobile services and devices. It can help developers to find out what their users think, what they value and desire, thus allowing the designers to focus their development efforts correctly and to identify new potential product ideas. It can support actual design by providing tools for collaborative work, enhanced communication, and evaluation of product concepts. These benefits help developers to create technology which does not foster frustration among users and they learn how to communicate ideas in the most suitable way.

As the case study reveals the UCD philosophy can be adapted to different settings in a flexible manner which respects both local needs and the essence of the methods.

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User-centred design (UCD) is a process or set of tools used to design a service which focuses on what users need at the very beginning and continues throughout development until launch. Typically services are designed from a technical and business perspective, with consideration for users added in later. Instead, User-centred design ensures the service focuses on what users need before balancing this with the technical and business requirements. UCD holds users at the centre of all decisions. User-centred design is an approach to designing which holds the user at the centre of all design decis In user-centered design, you need to focus on creating a product that will address the needs and pain points of users; this means knowing who they are, and what steps need to happen for them to achieve certain goals or solve their pains. We address these during product discovery through the creation of user personas and user journey maps, which is why designers are deeply involved in this process. Creating User Personas. User personas answer fundamental questions about the user: who, what, where, and when. Who is/are the user/users? What are the userâ€™s goals for using the product? Where does t Design thinking, or human-centered design, is the practice of using these three lenses to find the best solution to a problem. The Value of Integrated Teams. Atomic Objectâ€™s project teams are integrated, bringing together designers and developers to form one product team. This makes us uniquely equipped to use human-centered design and create a superior product. Designers, developers, and clients work closely together to explore and balance the facets of desirability, viability, and feasibility within each feature and component of the project.Â When this happens, taking a close look through the lenses of viability and desirability can help the team make smart decisions. See more ideas about user centered design, user experience design, design.Â User Centered Design. IDEO model of desirability. IDEO model of desirability - Google Search. Ui Ux Design. Identity Design.Â When thinking of User Experience, we often think of a simple, beautiful, and easy to use feature-set of a product, that makes the userâ€™s life easier. But as a matter of fact, features are merely aâ€¦ Graphisches Design Tool Design Design Room.