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Gaming and Chatting

Integrating a Game Portal with Chat Functions

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Abstract

Gaming and Chatting, Integrating a Game Portal with Chat Functions

Elinor Forsman

This is a paper describing a project performed at the company Much Different, in which possibilities to combine a game portal and a chat program with suitable usability for children was studied. It included a theoretical background study of usability, human-computer interaction, experience design and design principles for mobile devices, and the information gathered was then used to design the interface of a mobile phone application including functionalities such as playing games, voice and text chats, and finding and maintaining lists of games and friends. A practical aim during the project was to integrate these functionalities in a way that enabled them to be used simultaneously. The final interface design was lastly evaluated using both expert-base and participant-based case studies, and after this project was finished the development of the product was taken over by Much Different.

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Summary in Swedish

Detta är ett kandidatarbete som har gjort i samarbete med företaget Much Different i Uppsala. En applikation för mobil telefoner har designats i vilken en spelportal har integrerats med chat-funktioner i form av röst-chat och text-chat. Denna produkt är riktad till barn i Sydkorea som ska lära sig engelska. Specifikationerna för applikationen är att användaren ska kunna köpa och spela spel, både själv och med andra, samt lägga till vänner och kommunicera via chat-funktionerna. Chat-funktioner ska finnas tillgängliga både i och utanför spelen. I fokus ligger att detta är en social applikation i vilken användare i störst möjliga mån ska kunna och ska uppmuntras att interagera socialt med andra användare.

Den resulterande designen har testats på försökspersoner som har lämnat feedback på designen.

Detta projekt har även bestått utav en teoretisk del där användbarhet hos teknologi har studerats tillsammans med barn-datainteraktion och hur man designar för att ge användaren en bra upplevelse. Även hur man designar för mobiltelefoner har undersöks.

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1 Introduction

1.1 Background

People of today will meet computers of all kinds in a variety of different environments. Thus the way people use them and interact with them differs depending on what the situation is. To enable these interactions, the interfaces need to be adjusted with focus on usability. The concept of usability is originally defined as systems that are easy to use and learn and engender a good attitude in people. This definition has expanded and now involves aims such as accessibility and suitability [1]. Because of an increasing usage of computers the standards on the requirements of the usability are getting higher. Human-computer interaction is the study of this interactions and involves both technical, computer-centered, ergonomic, social and esthetic aspects [2]. Interactive system design is concerned with the design of websites, desktop applications, iPhone apps, mobile systems and systems to support cooperation between people [3].

Human-computer interaction was established as an area of study in the early 1980s and by the late 1990s mobile phones had become a fashion statement for many people. Interaction designers worked with software engineers to create exciting experiences. The tradition with human-computer interaction has been in it's human-centeredness and usability concerns [3].

In 2007 Apple Inc. started designing interfaces that used the user's fingers as input devices. Many mobile devices have now adopted this technology [4].

1.2 Problem Formulation

This is a project done together with the company Much Different with the goal of creating a mobile device application combining a game portal with a communication platform including both text chats and voice chats. The final product will be released on the South Korean market as an Android and iPhone application for children.

Overall this application should revolve around the three main functions; games, voice chat and text chat. There should be functionality to purchase and play games, both single and multiplay, and since this is a social application there need to be functions allowing the users to find and add friends to their contact's list. The voice chat and text chat as well as invitations to play games are used to enable users to communicate with each other. Apart from games other items should be available to purchase and it should be easy for the user to stay updated with new game and item releases.

This project concerns the design parts of this product. It has been designed for Android phones with the goals to create a design that encourages the users to use the application as much as possible, interact socially with friends and buy new items and games in the store. The user should be able to use most functions simultaneously.

Since this is a project concerning usability and human-computer interactions a background study on usability, experience design, child-computer interaction and mobile device design has been performed. Usability is the study of how a system should be designed to help users interact with it and experience design is concerned with how to make that interaction fun and stimulating so the user is encouraged to use the system and particular functions. The child-computer interaction study involves children's interactions with computers and what is important for them when using an interactive system. Designing for mobile applications differs from designing for full screen programs and there must therefore be a background study on that subject.

The hypothesis for the study is that humans need the right amount of stimulation and challenge to be encouraged to use a system. This stimulation and challenge can sometimes differ for children

and adults, so to create a suitable design for children these differences need to be acknowledged.

1.3 Methodology

The design process for this project consisted of several stages. It started out as an envisionment process looking at the requirements and conceptual scenarios. Design ideas where drawn and represented with interaction sequences using flow charts to represent the user's movement through the application. In the flow charts pages of the application were represented with boxes and every page that could be accessed from it flowed out of it. They were redrawn many times during the project to come up with the final design.

Whenever a design was done it was evaluated by designer and experts to find flaws and if any were found it was redesigned. When the final design was ready it was implemented as an HTML file to enable non-expert users to evaluate it in participation based evaluations.

The theory part of the projects consisted of studying books and articles on relevant subjects. The information gathered from these studies where then used when designing the system.

1.4 Related Work

During this project similar applications to the one to be designed has been studied to to see what is already existing on the market and how their functionality have been implemented. There has also been a theoretical study using research related to the the subjects of usability and human-computer interaction to gain knowledge of how a system like this could be designed.

Similar systems looked at was either chat applications or game portal applications. The chat oriented applications studied were Skype and KakaoTalk, and the game portal application was Steam. Skype is a computer software that enables people to connect socially even when they are far from each other with the help of text messages, voice chats and video chats [5]. KakaoTalk is also a software that allows people to connect socially but is implemented as an application for mobile phones. The users can send and receive messages including photos, videos and contact information, both on a one-to-one basis and in groups [6]. Steam is an entertainment platform on which users can play games, connect socially and create and share content for games. The platform has over 2000 games of different genres and possibilities to meet new people and join game groups [7].

For the theory part of this project two books have been studied to understand the theory behind usability, experience design and how to design for mobile phones. These books are 'Designing interactive systems' by David Benyon and 'Designing interfaces' by Jenifer Tidwell. The book 'Designing interactive systems' is aimed at system designers and introduces practical issues of creating interactive systems and products from a human-centered perspective. The book also develops principles and methods of human-computer interaction and interaction design [3].

Since this is an application meant for children there has been a study on child-computer interaction using two articles [8] [9], which deal with what children seek in technology and how this technology should be adjusted for them. The main elements of these articles are what makes children enjoy activities and what makes them happy. This information has then been used when designing and implementing the application to create an optimal experience for the children.

2 Theory

2.1 Designing for Usability

2.1.1 What is Good Usability

Usability is one of the factors needed to achieve a good design. It refers to the quality of the interactions and can be identified by looking at the number of times it takes for a user to perform a task, how many errors there were or the time taken to become a competent user of the system. [10]

In general a system with high degree of usability should have the following characteristics; the system should be efficient so that the users are able to do the intended task using an appropriate amount of effort. It should be effective and contain appropriate and necessary functions and information in an organized manner that makes it easy to learn and memorize. It should also be safe to operate in, and lastly it should highly utilize in the things the users want to get done.

Over the years there have been several attempts to define what good usability really is. These definitions have been used to come up with principles that help interactive system designers create systems with high usability.

One of these principles claims that users and tasks should be put in focus early on in a design process. This is because designers need to study the nature of the task and know who the users of the final product will be. This is done by making the users part of the design team and through empirical measurements observe and measure users' reactions to scenarios and user manuals. Later on in the design process the users should use simulations and prototypes to carry out real tasks and have their performance and reactions are observed, recorded and analyzed. When ever a problem in the design is found it should be fixed and the system redesigned. After the redesign is ready it is tested again and this cycle is repeated as many times as necessary. This iterative design process is important because even the best designers will not make a perfect design the first time.

Another usability design principle is to put the interface between the people and technology in focus. The idea is that people have goals and things they want to achieve in life while technology only deal with simple tasks. Since they strive for different things the two need to be bridged which is done by translating peoples' goals into actions that the technology can understand, and then evaluate these actions to see if the technology was successful in moving the users towards their goals. For the users to understand their devices they need to be able to find out what to do and thorough instant feedback see what happens when that is done [11].

2.1.2 Design process

A design process is divided into a conceptual design process and a physical design process. The conceptual design concerns what information and functions are needed for the system to achieve it's purpose and what the users have to know in order to use the system. When making the conceptual design the designer should be focused on “what” rather than “how”, that is, keeping the design abstract and avoiding assumptions about how functions and information will be distributed.

The physical design is about how the system works and what the look and feel of it should be. In short the physical design takes the conceptual design and translates it into something concrete. The user's interactions should be structured into logical sequences with all of the functions represented. How functions work and how content will be structured and stored should be specified as well as color, shape, size and information in the layout.

It is important to involve and consider all the people who will be affected by the finished system or

product, the so called stakeholders, during the design process to achieve a good result. The stakeholders could be either the users of the finished system or the people who will not use the system themselves but will be affected by it [12].

2.1.3 Design principles

Design principles are concerned with how to help users access, learn and remember a system. To learn a system the functions available and the system's current actions must be visible for the users at all times. This is due to the psychological principle that it is easier to recognize things than to have to recall them. If making them visible is not possible, make it observable instead. The use of design features should be consistent, both conceptually and physically. Conceptual consistency is about ensuring the mapping is consistent and that the conceptual model remains clear. Physical consistency ensures that behaviors and for example the use of colors, names and layouts are consistent. There are also times when inconsistency desirable to draw the user's attention to something that is important.

Users recognize and remember a system faster if it feels familiar to them. This can be achieved by using language and symbols that the users have seen before, and if a concept is unfamiliar to the users suitable metaphors is as a good replacement.

A system's purpose should always be clear to give users a sense of control and to let them know what to do with it. It is important to keep in mind that this can be culturally determined. Users should be allowed to move around and navigate with the help of given support such as maps and directional or informational signs. Always make it obvious who or what is in control at the moment and give the users instant feedback information on actions so they know what result that action had. Recovering from actions, mistakes and errors need to be quick and there should be constraints on what the users are allowed to do so they are not able to take inappropriate actions.

A system is flexible when it allows multiple ways of doing the same thing and when there are opportunities to change it's layouts or behaviors. Since people will have different levels of experience and interests, providing a flexible system will make different kind of people able to use it and appreciate it in a more personal way.

A polite, friendly and pleasant system is generally more likeable. It can be argued that a software should be designed similarly to a likeable person. It should bee interested in the user, have common sense, anticipate the users needs and gives instant gratification [13].

2.1.4 Learning the Software

Perception and navigation are two important abilities people have to be able to move through an environment. Perception is how people come to know environments through their senses and navigation is how they are able to move through it [14].

Visual perception is concerned with extracting meaning from the light falling into our eyes, such as recognizing a room or a button in a software. The brain extracts and makes sense of the data picked up by the eyes and that way creates a stable, three-dimensional and full-colored vision filled with objects. When the brain is presented an image it tries to make sense of it and makes unconscious interferences [15]. The other types of perceptions are non-visual which are usually identified with the four senses taste, smell, touch and hearing [16].

Navigating includes object identification, exploration of the local environment and way finding towards a known destination. When people have learned an environment they have a mental representation of it called a cognitive map. In way finding they orient themselves according to this cognitive map by choosing and monitoring routes and finally recognize when a destinations has

been reached. This is done by learning landmarks and how they relate to positions.

When designing an interface to move around in it is important to take these concepts of perception and navigation into consideration to help the users learn and navigate in their software. It is also important to take into account that people bring meaning to a space. A practical aim is to design in such a way that encourages people to develop a good understanding of the space by making it enjoyable and engaging. It is a good idea to make the users gain gradual knowledge of the space through usage and to have availability of different routes to reach the same destination. When designing environments it is important to keep in mind that too much similarity between different spaces can cause confusion for the user [17].

2.1.5 Acceptability

Another concept of usability is acceptability, which is the study of how to fit technologies into peoples lives. There are many elements of what makes a device acceptable and one of them is political acceptance. This involves whether people trust the device and if it respect human rights. There is also a cultural aspect to acceptability since the device needs to fit in with peoples' social habits and everyday life without any disturbance. Other factors are making the device convenient enough to effortlessly fit in to an intended situation and making it useful in it's context, as well as offering value for the money the user payed for it [18].

2.2 Designing for Experience

Experience design is a design principle that goes beyond the regular design for usability. It is is not only about creating a functional product anymore, the technology should also provide the user with a great experience and be fun, enjoyable and engaging. A medium is engaging if it draws the the person into it and seems to surround the activity in a way that stimulates the imagination [19].

Similar to usability there has over the years been several attempts to define what good engagement really is. Also here the definitions have been used to come up with principles that help create interactive systems with high engagement.

One of these principles is stated with the help of some key elements. The first key element is that the users need to identify themselves with the system they are using and the experience needs to have a sense of authenticity. By changing level of difficulty, pace and movement of the system it will become more personal. The second key element is that a good experience design should always tell a good story, which can be implemented when for example moving through a menu structure in a mobile phone. The third key element is that the users should feel wholly involved with the system, almost like they are being taken over and transported somewhere else. The last key element is to provide the user with a good flow when moving through the system by giving the sense smooth movement and gradual change from one state to another.

An other principle argues that there are four aspects of pleasure; physio-pleasure, socio-pleasure, psycho-pleasure and ideo-pleasure. Physio-pleasure is concerned with the body and the senses and is a type of pleasure that arises from touching or handling devices. Socio-pleasure arises from relationships with others and devices enhancing socio-pleasure either facilitates social activities or improve relationships. Psycho-pleasure concerns cognitive or emotional pleasure. Perceived ease of use and effectiveness of a device and the satisfaction of acquiring new skills. Ideo-pleasure is about people's values and aspirations and they are more likely to enjoy using items that fit their value system [20].

2.3 Child-Computer Interaction

There has over the recent years been an increasing trend for children to use information and communication technology. Because of this it is becoming more of a concern to ensure that products and services are appropriate for children and that they support the children's development and well-being. Child-computer interaction is about understanding the interaction between children and technology and what children seek when using it [21].

To understand this there has been studies on what children seek in toys and games. It has been found that they seek control, social experiences, physical sensations and fantasy, and like to express themselves through visuals, sounds or physical movement.

Fantasy is the evocation of mental images or roleplaying and since children seek it their play should attempt to optimize the level of it. This is to create a successful story line that gives meaning to the child's play and it can be achieved by providing creative and constructive activities.

Basic needs for children are belongingness, love, esteem and self actualization. Their emotions should be addressed so they feel physiologically involved in the game or play.

Since children easily loose their patience they need to be challenged and captured in what they are doing. This can be achieved by empowering them in their play and to tune the level of challenge right so that activities are not to complicated nor too easy. Too complicated activities could cause anxiety and frustration for the child while too easy activities could cause boredom. If the challenge is tuned right the activity will become rewarding and the children will do it just for the sake of doing it. The result of an activity should be contingent upon the children's behavior and they should have a sufficient choice of options and power to realize the most important tasks and actions.

It is also important to point out that parents want their children's activities to be learning and help them engage in meaningful activities [22].

2.4 Designing Interfaces for mobile phones and Android

Designing for mobile phones differs from designing for other types of devices. Mobile phones have smaller and varying screen sizes and use touch screens, and because they do not have keyboards there could be difficulty when typing text. Mobile phones will often be used in challenging physical environments with social influences and limited attention.

Because of the small screen sizes not a lot of information and functions can be fitted into on each page. This leads to only putting the most important information and functions on the front pages making them quicker to reach, while less important information and functions should be either discarded or buried deeper inside the system. As a designer you need to ask yourself; what do users in a mobile context actually need? In general this is not the same range of needs as a user of a full screen site would have. Common needs are either to know particular facts or if there is some information needed right a way. It could also be the case that the user has a few minutes to spare and wants to be entertained or connect socially during that time. Since mobile devices are frequently being used simultaneously with other things, or just used for a short amount of time and with limited amount of attention, the design must be easy, self-explanatory, quick and re-enterable.

Many mobile devices now a days come with touchscreens which should be utilized to enhance the user experience. In most of the interaction the users' fingers will be used for input, which is why the targets need to be big enough to touch with a fingertip, with a minimum of size of 1 cm on each side. It is very inefficient to type text with touch screens which is why it should be avoided as much as possible by designing interaction paths in which typing is unnecessary or limited. The users will use their mobile devices in all kinds of places and contexts so the design must be usable in a variety of different physical environments and situations. For example text color and background color

should not be too similar so text can be read in brighter light. Also users movements need to be considered when designing, for example targets need to be easy to hit to avoid users making mistakes [23].

When using a list of selectable items, each item should be presented with a thumbnail sized image, some explaining text and possibly some extra smaller text when showing complex content. The image makes the items look more appealing and helps the user identify it [24].

When a user wants to move backwards in an application that can be done in two different ways. Either the user wants to move back to the previously visited page or the user wants to move backwards based on the hierarchical relationships between screens, in other words upwards in the tree. This need to be considered when designing the go-back functionality for an application [25].

2.5 Case Studies and User Tests

To create a good design of an interactive system evaluations are of greatest importance. Evaluation involves reviewing, trying out or testing a design idea or a system to discover whether it meets the criteria set out [26].

Before each evaluation a plan should be drawn that will guide it. This plan specifies the aims of the test session, number and type of participants and practical details such as where and when it will be conducted. The length of each test session and equipment to be used should also be specified. The tasks that the participants will carry out need to be decided as well as the definition of successful completion and what type of data will be collected and analyzed [27].

There are two types of evaluations, expert-based and partition-based. Expert-based evaluation involves an expert in the subject looking at the system and trying to use it. It is a simple, quick and effective way to evaluate systems but it is not a substitute for getting non-experts testing the design, but rather a way to pick up on common problems based on the experts experience [28].

Partition-based evaluation uses normal people who have not been a part of the design process. There are many ways to involve people and various degrees of cooperation. It can involve designers sitting down together with participants or leaving them alone with the technology [29].

2.5.1 Cooperative evaluation

One type of partition-based evaluation is cooperative evaluation. In this evaluation process participants are not passive but rather work as co-evaluators. The experiment consists of preparation before the experiment as well as tasks during and after it.

Before the experiment all scenarios are prepared and written down as tasks on a draft list and the time complete each of these tasks are estimated. This list will be given to the participants at the time of the evaluation.

When it is time for the experiment to carry out the prototype should be ready in a suitable environment in which the participants can do the evaluation. The list of questions are brought along with pen and paper for documentation. The participants should be aware that it is the system that is being tested and not the participants themselves as well as that they are required work individually. During the evaluation they should be encouraged to give a running commentary on what they are doing and why they are doing it as well as what difficulties they encounter. All unexpected events are documented and if participants gets stuck they may be helped.

During the session the participants can be asked questions. Good sample questions are: What do you want to do? What were you expecting to happen? What is the system telling you? Why has the system done that? What are you doing now?

After the experiment the participants are briefly interviewed about the usability of the system and all notes are written down as soon as possible. Here good sample questions are: What was the best/worse thing about the prototype? What most needs changing? How easy were the tasks? How realistic were the tasks? Did giving a commentary distract you [30]?

2.5.2 Heuristic Expert Evaluation

Heuristic Evaluation is a expert-based evaluation and it refer to a number of methods in which persons trained in human-computer interaction or interaction design looks at a design to see if it measures up to a list of principles or guidelines. The expert could examine any of the following: visibility, consistency, familiarity, affordance, navigation, control, feedback, recovery, constraints, flexibility, style and conviviality. Ideally several experts examine the system separately and note the problems they find and suggests solutions if possible [28].

3 Results

3.1 Design

The finished design is divided up into five main pages presented in a bottom bar. The bottom bar options are: friends, voice chat, text chat, games and more, which makes both the game functions and the chat functions represented in the it. The Friends page is also the Start page of the application. This is the first page the users will see once logged in and it is the page most of the time returned to after completing some function. The more page contains all of the functions that did not belong to any other bottom bar option but were needed.

3.1.1 Interfaces

Log In

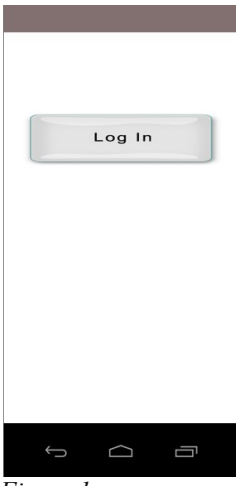

Figure 1

The log in page is the first page a user will ever enter. If the user chooses to remain logged in this page does not have to be visited every time the user logs into the application (see figure 1).

Friends

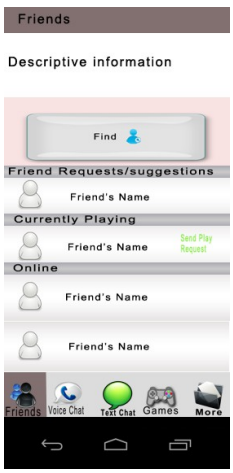

Figure 2

Figure 3

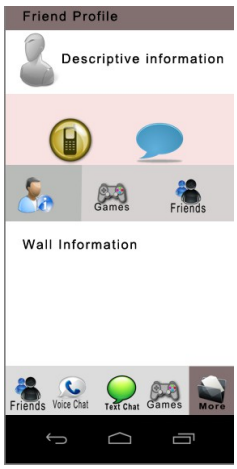

Figure 4

Figure 2 shows the friends page which is also the start page of the application, and it is here the most important and commonly used functions are located. The button named find links to the page

where other users of the application can be search for so that the user can add them as friends (see figure 3). Under that button there are four lists. The first one listing any new requests or suggestions the user has received. Requests are mainly friend requests and suggestions could be games or items that the user's friends have suggested.

The next list lists all of the user's friends who are currently playing a game. To send a request to join that game the user can simply press a friend in that list. The friend will then receive the request and decides if the user can join or not. The last two lists informs the user of what friends are online and offline. By pressing friends in any of these two lists the user will move into their profiles.

Figure 4 shows a friend profile which contains links to start up a voice chat or a text chat, information about that friend and the friend's games and friends. By pressing a game both of the users have in common a game lobby will be started with both users selected as players.

On the very top of the page there is space for information describing the page or it could be used for advertisement.

Voice Chat

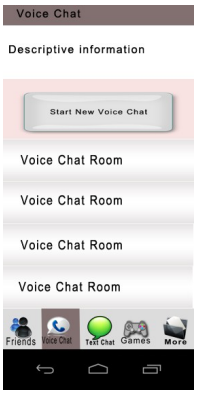

Figure 5

Figure 6

The voice chat is one of the main functions of this application. Inside the voice chat page shown in figure 5 there is a list of previous voice chats and a button to start a new voice chat. When this button is pressed the user gets to invite all the people who will join the voice chat and is then moved into the voice chat room (see figure 6).

Text Chat

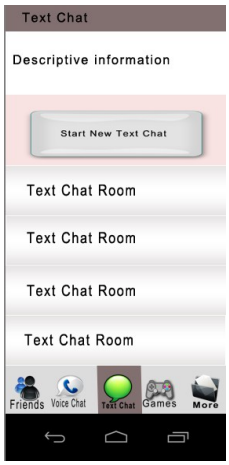

Figure 7

Figure 8

The text chat is also one of the main functionality of this application. Similar to the voice chat page there is a list of previous text chat rooms and a button to start a new text chat (see figure 7). When the button is pressed the user invites some friends to the text chat and then a text chat room is created (see figure 8).

Games

Figure 9

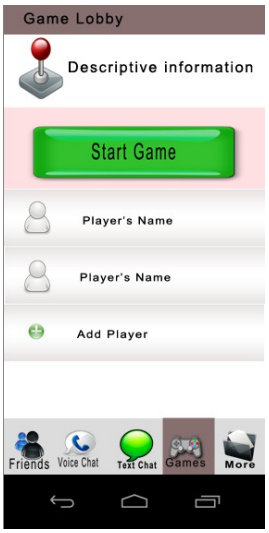

Figure 10

Figure 11

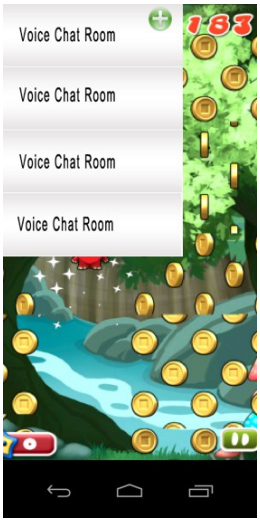

Figure 12

Figure 13

Games is also a main functionality. Figure 9 shows the game pages on top of which there is a window showing games that are recommended for the user. This could be games that friends have but not the user. This could also be new releases in the game store or suiting games for the user based on previous purchases. Under this window there is a button linking the user to the game store and a list of the user's games. By pressing a game the user enters a game lobby in which other players can be invited and the game is started (see figure 10). Figure 11 shows an example of the inside of a game and figure 12 shows what a paused game looks like in which there is possibility to invite other players, exit the game and start voice- or text chats.

Figure 13 shows the inside of the game store in which there is a top bar with four options; news, games, themes and items. The news option list all of the new releases, the games options lists all games, the theme option lists all themes and layouts of the application and the items option lists all items.

More

Figure 14

In the more bottom bar option there is possibility to visit the user's own profile, change settings, visit the game and item store or log out from the account. Inside of the profile page the user can change the profile picture or the description information. In the settings option username, password, theme and any privacy settings can be changed. It is also in setting the user can delete the account.

3.1.3 Non-Implemented Features

Figure 15

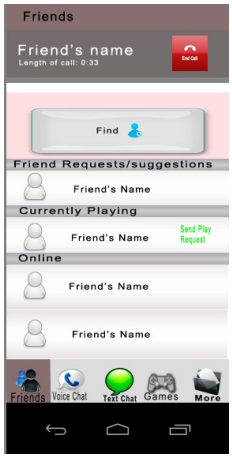

Figure 16

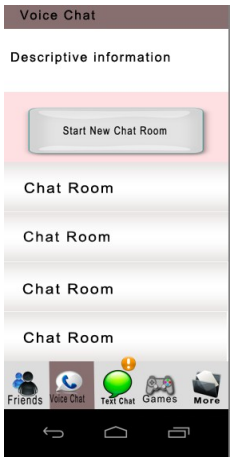

Figure 17

Non-implemented features are for example windows that pop up when certain events occur. This could be when the user is being called through a voice chat (see figure 15) or when a join game request is sent to a user currently playing a game.

When the user is in a voice chat with a friend the user should be able to do other things and multitask inside the application. For example the user should be able to choose a game and start a lobby with co-players while discussing it with a friend over the voice chat. That is why a top bar pops up during a voice chat informing the users of who they are talking to and provides a hang up button (see figure 16). By pressing the hang up button the chat ends and by pressing the friend's name the user is moved into the chat room.

The actions taken in a bottom bar options stay fixed if the user exits it. For example if a user creates a game lobby in the games bottom bar option and then go to the friends bottom bar option and then goes back again, the user will directly re-enter the game lobby previously created. This creates a feeling of consistency and helps the users use several functions simultaneously.

When new events occur there will be a notification occurring on top of the bottom bar option concerned with this event. Figure 17 shows an example of this when the user's friend has written something in the text chat while the user is inside the Voice chat bottom bar option. A notification occurs on the Text chat-option indicating something there has happened. When the user presses this bottom bar option the user will be transported directly into the text chat for fast communication.

3.1.2 Flow Charts

One flow chart has been made for each bottom bar option showing what actions are possible for each page (see figures 18-22). There is also one flow chart for the game store news page (see figure 23).

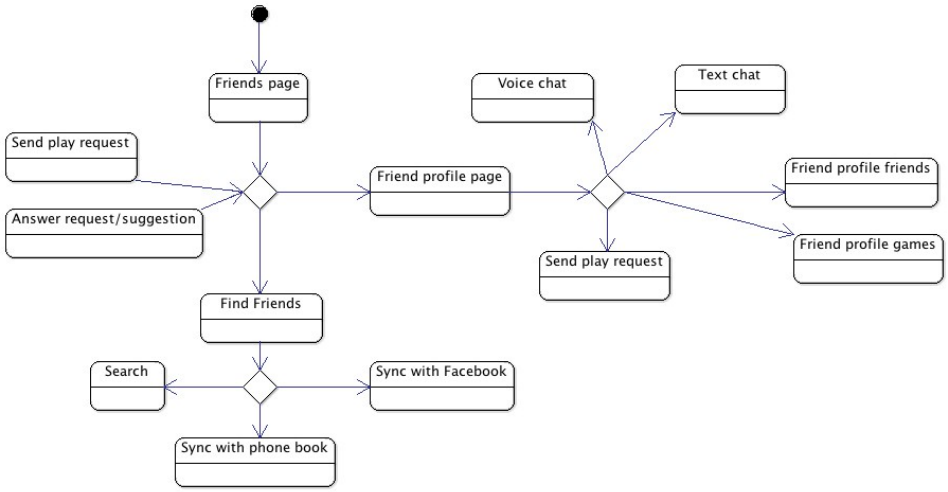

Figure 18, Friends Page

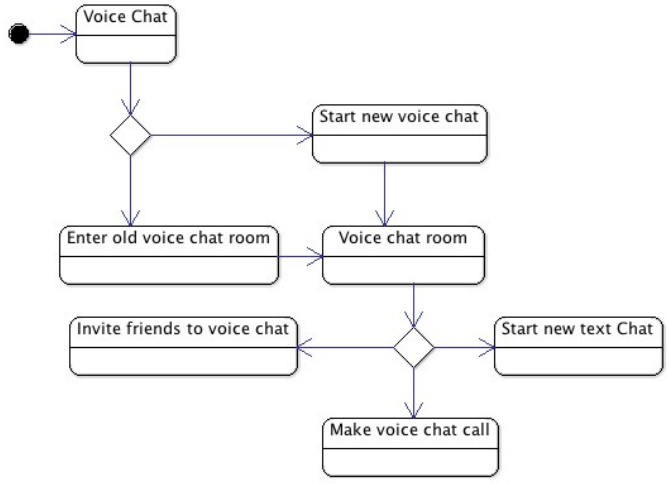

Figure 19, Voice Chat Page

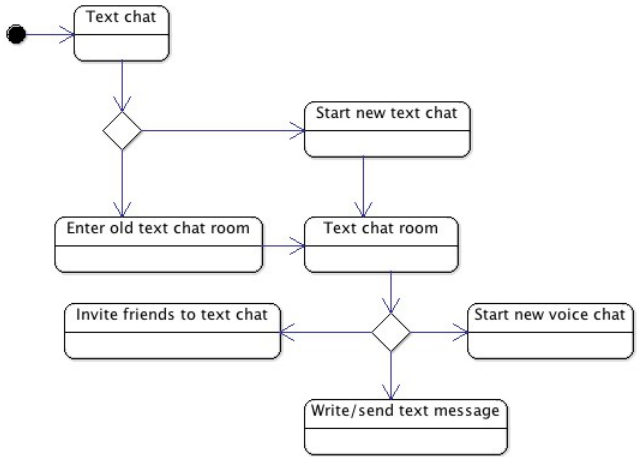

Figure 20, Text Chat Page

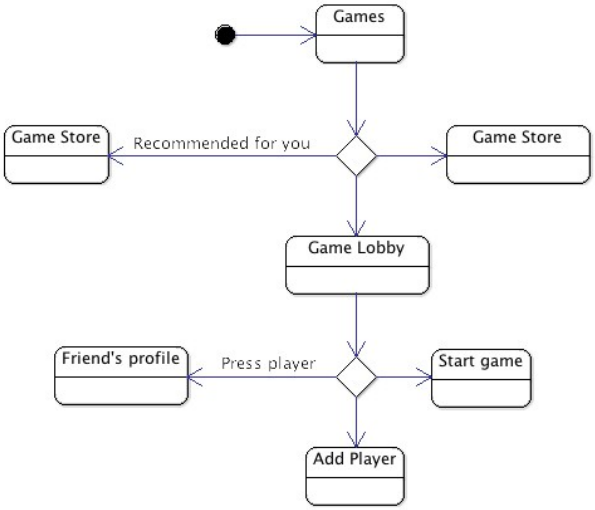

Figure 21, Games

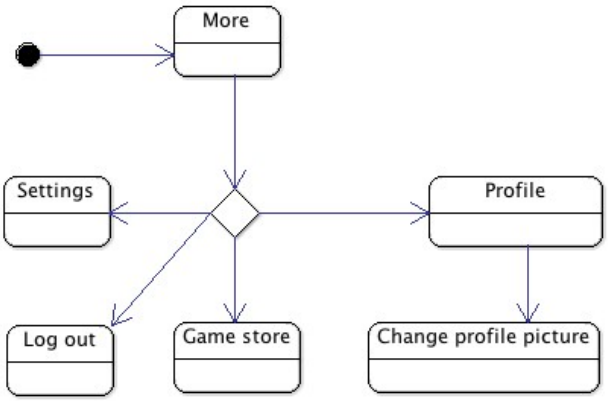

Figure 22, Games

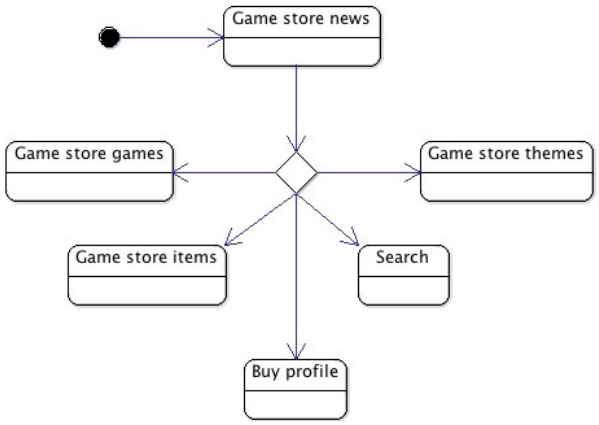

Figure 23, Game Store News Page

3.2 Case Studies

For this project cooperative evaluations and heuristic expert evaluations has been carried out to test the application. Six adult participants of varying ages have been tested in the cooperative evaluations and one expert has been tested in the heuristic expert evaluation. The evaluator sat with the participants and documented the interactions and difficulties without helping them except when they got stuck. The testers were asked to explain their interaction steps and why they took them. After the evaluation they were asked questions on what they thought of the design.

The point with the evaluations was to see if the users intuitively could find their way through the application, what different paths they took when trying to complete a task and what were the most common problems with the design were.

3.2.1 Cooperative Evaluation Question Sheet

Purpose of Evaluation:

You will try out an application combining a game portal with chat functions for Android phones.

Instructions:

In this evaluation please explore the application as much as you need possible. Also try to explain why you are taking the actions you are when solving an assignment. Remember that this is not a complete prototype so all functionality is not in place. If something is not clickable, please try to ignore it. Also remember that some of the go-back buttons sometimes link to the wrong page, if that happens simply use the go-back buttons in the web browser. The instructor will usually not help you or give you any hints about your assignment, but if you get do not understand a question or get stuck ask for instructions.

Assignments:

- You are a new user of this application, please an log in.
- You want to have some new friends for the application, go about and add some any way you like.
- Try to start a voice chat room and a text chat room.

- You will also need some games to play, get a couple of new games.
- After the games are bought you feel like playing one together with one of your friend's, Contact this friend to decide what game to play and start the chosen game with both users as players.
- While you are playing the game you want to call one of your other friends and ask him to join the game. Try to do this while still inside of the game.
- The friend wanted to join, invite him to your game.
- After a while your friends need to leave so the game is exited. But you are still in the mood of playing a game together with friends. Go and see if any of your other friends are currently playing any game and if so, send a request to ask if you can join that game.
- While you wait for an answer, change your profile picture.
- You remember that a friend of yours named Lars is also a user of this application but you have not added him as your friend yet. You happen to know that one of your friends in your friends list have Lars as friend. Try to find Lars through your friend's profile and send a friend request.
- Lars accepted your request, send him a text message.
- Lars lets you know that you can change the theme of your application. You become curious and want to try this out. Without Lars telling you how it is done, please try to change your theme.
- You are now done with the test, please log out.

Questions:

- What was the best thing about this application?
- What was the worst thing about this application?
- What is in the most need of improvements?
- Were the assignments realistic and understandable?
- Do you think this application would fit younger children?

3.2.2 Cooperative Evaluation Results

Common interaction paths

When moving through the application most of the participants found their way quickly and without complications. In some scenarios they had to look around inside the application for a while to understand how the assignments were to be solved.

On top of most of the main pages and profile pages there was a text indicating the location and describing the page. Many participants found this unnecessary and redundant.

The purpose of the list listing all of the user's friends currently playing some game on the Friends page was not obvious enough leading to many participants using it when they were asked to start up a game with a friend. This is a correct way to join a game, but since the task was to decide what game to play together with that friend before playing it, this was not the correct way to solve the task. It was not clear if the participants simply did not understand that part of the assignment and

did not care what game to play or if they misunderstood the list's functionality. After doing this the participants were asked to decide a game with a friend and then start it. They either went through a friend's profile to find a game to play or they went to the games-page and started up a game from there.

Several participants thought there should be possibility to start game lobbies from inside of text chats or voice chats.

When asked to invite more players into a game some participants invited them inside the paused game while other participant exited the game and invited the friend from the inside of the game lobby.

It should be more obvious when inviting inside of chats or games if the friends are online.

All of the participants tried pressing settings inside of the more-option when they were asked to change profile picture or theme on the application.

Not a lot of participants understood that the profile picture on the profile page could be changed by pressing the picture.

Participants' comments

When pressing the “recommended for you”-window on the games page the user should be moved to a list of recommended games. When starting a voice chat or a text chat the user should first choose who to chat with.

Answer to questions after test

What was the best thing about this application?

The icons in the application were intuitive.

The amount of different icons were good.

It was good to have both pictures and text for the icons.

It was easy to find your way to a destination.

There was good familiarity in the application.

It was not a lot of button, which were good.

Returning back to the Friends page/Start page after most functions were used was a good feature.

It was nice that you could see who were playing games.

It was good that the user can go to the text chat or voice chat through a friend's profile.

It was modern and thought had been put into it when designing.

It was easy and simple.

All the functionality needed was also implemented.

Good that theme could be changed and the application could be made more personal.

What was the worst thing about this application?

Needed to click around for a while to learn the application.

That the menu bar in the game and item store was at the top.

The text chat and the voice chat should be merged into one chat function.

There should be possibility to look up information on how to use the application.

The pause button inside of games was not intuitive enough. Exit could be pressed by mistake when the user really want to resume with the game.

It was not obvious what functionality was under the pause button inside games.

What is in the most need of improvements?

One button for text chat and voice chat.

Be able to see if friends are playing games from inside their profiles.

Show which games are free in game and item store.

Were the assignments realistic and understandable?

Yes.

It was good that the assignments was not too clear sometimes so the participants get to figure things out.

Do you think this application would fit younger children?

Yes, if they are used to using technology.

Make it harder to delete things so that children do not do so by mistake.

Come up with some system for how children can purchase games and items in a way that is usable for children and so that the parents can keep track of how much the children can spend.

3.2.3 Heuristic Expert Evaluation Question Sheet

Purpose of Evaluation:

You will try out an application combining a game portal with chat functions for Android phones.

Examine:

- Visibility
- Consistency
- Familiarity
- Affordance
- Navigation
- Control
- Feedback
- Recovery

- Constraints
- Flexibility
- Style
- Conviviality

3.2.4 Heuristic Expert Evaluation Results

Expert's comments

Make the currently playing friends list on the Friends page stick out from the rest of the page. This makes this function seem special and users will therefore notice it more and not click it by mistake.

There are many lists on the friends page which could make the page very long. Make lists not should all of their content and if the user wants to see more the list can be pressed and the rest of the list is shown. To see how many elements there is in the list put a number on it specifying that.

The Find Friends button on the friends page should be at the bottom of the page so that it does not take up a lot of space once the users has all the friend they need.

The voice chat option in the bottom bar seemed redundant. If it stays it should be used for group chats.

3.3 Updates on the Design

After the evaluations there were some last updates on the design on some of the most frequently commented problems.

Friends-page and Friend Profile-page

Figure 24

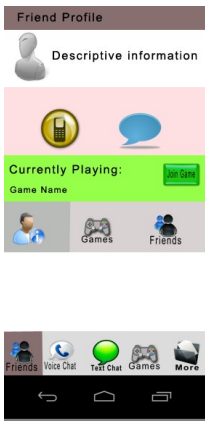

Figure 25

Figure 24 shows an updated friends-page with lists that are made smaller when they contain a lot of elements and get larger when they are pressed. There is a number on each list indicating how many elements the list contains. The find-button is now at the bottom of the page so it will not take up a lot of the space when the user has most of the friends needed. The list with currently playing friends has now a button on it labeled 'Join Game'. If this button is pressed a join game request is sent, and it the friend's name is pressed the user will be moved into that friend's profile. Figure 25 shows what that friend's profile look like. There is a bar showing what game the friend is currently playing as well as an other join game button.

One Chat

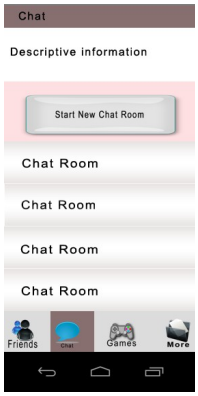

Figure 26

Figure 27

The other update was made on the chat functions. The two chats in the previous design, the text chat and the voice chat, has been merged into one (see figure 26). In this design the bottom bar only contains four options; friends, chat, games and more. Figure 27 shows the inside a chat room in which the user can make both voice chats and send text messages.

4 Discussion

4.1 The design process

During this project a variety of problems have been encountered which have been solved in steps resulting in a range of various designs. Each time a design was created it was also tested to see if it met the criteria set out for it. If the design proved to be not good enough it was redesigned. This process resulted in a total of five different design over time, and one last update after the partition-based evaluations.

The first design included a start page with some of the most important functions and a roll down menu listing other important pages. This designed proved however to be too hard to navigate in and was thus re-designed now containing a bottom bar including the most important pages of the application, namely; profile, friends, games, chat room and game lobby. But there were several problems with this design. The profile page was the start page for this design which made the application less effective since this page did not contain commonly used or important functions. It was just an uninteresting page that the user had to visit each time the application was started. Making both games and game lobby a bottom bar option each made the design too redundant and also seemed to be the problem with dividing friends and chat room into a bottom bar option each.

The third design included a four option bottom bar containing the options; home, friends, games and more. The new start page was now the home page, a page dedicated to offer the user the most important functions and information. The game lobby had been removed from the bottom bar options and was made into a sub-function of games. The same thing had been done with the chat room option that was now a sub-function of friends. The new more option handled functions and pages that did not belong anywhere else but where still important,such as profile, settings and log out.

In the forth design there was a four option bottom bar containing; home, voice chat, text chat and games. The more option was removed from the previous bottom bar and made into a sub function of the home page. Since there was no obvious location of where the chat functions where located the Friends option was changed into a voice chat option and a text chat option. In this design the three main functions of the application; games, voice chat and text chat were represented in the bottom bar and therefore quicker to access.

The fifth design resulted in a five option bottom bar consisting of; friends, voice chat, text chat, games and more. The friends option was brought back since the previous design did not have any obvious location for the friends list. Also all of the main functions in the home page could easily be transferred into a friends page. The more page did not fit well as a sub-function to this new start page and needed to be once again made into a bottom bar option.

4.2 Further Discussion

The design created in this project was a conceptual design, a design that focuses on what information and functions should be included for the system to achieve its purpose, but not how they will be distributed or what the look and feel of the application should be. The background studies for this project was used when making the design. First of all it was important that the user can navigate properly through the system. This was achieved by creating the bottom bar list and some directional signs so the user could move efficiently through the system. The user should feel like moving through similar pages and where particular functions are located should be realized intuitively. In some parts of the design I wanted to create the feeling of moving from one room to another for better navigation because too much similarity between different pages can cause

confusion. Mainly I wanted to create this feeling when moving into and out of the game store so for example the bottom bar was changed into a top bar including the functions of the game store.

I also wanted to make the design feel familiar to the user by using language and symbols the user probably knows. This was implemented for example when designing the bottom bar where common symbols to represent the different options where chosen. All functionality for each bottom bar option should be available or reachable from each of their pages. Because I wanted to give the user a sense of control the application always shows who is in charge, user or device, and instantly presents what result a specific action has.

Because I wanted to provide the user with a good experience when using the system the user was enabled to change theme or background of the application so it could be better identified with. I tried to create a good flow inside the application by moving the user smoothly from one page to another and when needed have pages in between explaining what result a specific action had. For example when sending a join game request on the friends-page there was a pop up window confirming the request had been sent. This application is suppose to enhance the user's socio-pleasure, and by being able to participate in social activities and communicate with friends the users have the opportunity to improve their relationships with each other.

Since this is an application for children I wanted to adjust interactions for them. According to the background studies children like fantasy and creative and constructive activities. This should be enhanced to give children meaning to their interactions. Since this is only a conceptual design these needs were not considered as much, but the users were enabled to construct groups, chat rooms and set up game lobbies. Because children easily loose their patience most functionality was made reachable within a few clicks and the user was therefore able to start up a game with friends or start a chat quickly. The level of challenge should be tuned right to maximize the child's experience. The level of difficulty was tuned in a way that makes the application not too hard to use but also allows the user to use different kind of functionality in different ways to not make it too easy.

Most of the pages in the application consisted of buttons and lists. They have been ordered in a way so that the user easily could find them and intuitively understand what they will be used for. The buttons were made big enough for the user to be able to hit them even in challenging environments and each element in the lists contained a picture and some explaining text for identification. The most important information and functions were quick and easy to reach and were placed in the front of the application, while less important information and functionality were buried deeper inside the application. For example currently playing friends was important information and was thus placed on the start page, while the user's profile was less important in was buried inside the more-page.

4.3 Conclusion

In the beginning of this project a specification was made for the application, and according to it the user should be able to buy and play games as well as interact socially with other users through text chats, voice chats or multiplay in games. All of these requirements were included in the final design. The goal was to allow simultaneous usage of functions and to encourage the users to use the application as much as possible, interact socially with their friends and buy games and items in the game store.

The bottom bar and re-enterable pages was implemented to provide the user the possibility to use several functions simultaneously. To reach the goal of users being encouraged to purchase games and interact socially functions were implemented to allow the user to easily find and move into the game store, which made purchasing more accessible and easy. To encourage users to interact socially function allowing users to multiplay and chat were implemented and located in the front of the application to make them easy to find and quick to reach.

During the case studies users usually found what they were looking for easily but did appreciate the division of the voice chat and text chat functions. It is hard to tell if this application would work well on children since there has been no child participants in the evaluations, but the feedback on the case studies showed that participants thought that this design would fit well for children as well assuming they are already used to technology.

My hypothesis was that humans need the right amount of stimulation and challenge to be encouraged to use a system. This stimulation and challenge can sometimes differ between children and adults. So to create a suiting interactive system for children these differences need to be in focus.

To achieve the right amount of stimulation and challenge high usability of the system was created and experience design was focused on. It was not trivial to define what good usability nor good experience design is since it in many cases is a question of personal preferences. By understanding the human psyche there was some conclusions that could be drawn of what humans usually want. This was for example the ability to navigate in an intuitively way, to have the functions and information needed within a reasonable range and to be provided with the functions and information necessary in a fun and stimulating way. This becomes even more important to focus on when designing for mobile devices considering the screen space is smaller and they will usually be used for a shorter amount of time.

5 Future Work

After this project the work on this application will carry on and eventually be implemented as an iPhone and Android application and launched as a finished product on the market of South Korea.

There should be more development on how the users handle voice chat when they are not inside a voice chat room.

Since this design will be implemented as an application for both Android phones and iPhones and because the interface for Android phones differ from iPhones, the design need to be modified when implementing for iPhones. The participants for the case studies in this project have only been adults and because the target group is children there should be more case studies with child participants as well.

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