Ancient Runes - Using Text Input for Interaction in Mobile Games

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ABSTRACT
Mobile phones are often carried in the pocket making them available for gaming any time. Mobile games typically rely on the joystick for input, but quality of the joystick is very different in the different devices. This paper presents Ancient Runes, a multiplayer mobile game that uses text input as the primary method for interacting with the game and other players. The players are required to type in the spells, such as “Quicksand” in order to cast the spells. We have evaluated the game with twenty players, and the results of our qualitative research suggest the game mechanism is very suitable for mobile gaming, and that the female audience might like this kind of a game.

Categories and Subject Descriptors
H.5.2 [User Interfaces], I.2.1 [Applications and Expert Systems], K.8.0 [General]

General Terms
Design, Experimentation, Human Factors.

Keywords
Mobile multiplayer gaming, text input, playability

1. INTRODUCTION
Mobile phones have many features that make them a viable platform for mobile gaming. The phone users usually carry their mobile phones everywhere with them. Mobile phones often have preinstalled games and new games can be downloaded over the air. There are some phones that are especially tailored for mobile gaming such as the Nokia N-Gage but basically all mobile phones are capable of running games. Most mobile games are designed to use the joystick, which work differently in different devices. Some of the joysticks are four-way while others are five-way, and furthermore they have a totally different feel to them depending on the device. It is difficult to design games that would be equally playable in all devices, due to these differences.

The mobile phones are mainly communication devices. The communicative nature of the mobile phones makes them ideal for multiplayer gaming. The phones have good capabilities for making phone calls and typing short messages (SMS). Technologies, such as T9 text input, have also improved the text input speed in mobile phones [1]. These methods could be essential components of mobile gaming as well, since most phones are optimized for speech communication and text input.

Voice communication is already used for player-to-player communication in many games with technologies such as TeamSpeak [2], and the microphone can be the primary method for interacting with the game mechanics, as in SingStar [3]. Text input has also been used in games, such as in The Typing of the Dead [4], where players fought monsters by typing in words.

This paper presents Ancient Runes, which is a multiplayer card-collecting game that uses text input as the primary method for player-to-player interaction. Players take the role of wizards and battle with each other by casting spells. The spells are cast by typing in the spell name, e.g. “Quicksand”. The players try to counterattack offensive spells with defensive spells and use power-ups to increase energy.

Ancient Runes has two key features. First, it uses the text input as the main game mechanics, and second, the players need to remember their own spells in order to cast them. This leads us to the three main research questions in this paper:

RQ1: is text-input a suitable and enjoyable game mechanism for a two player battle in mobile phones.

RQ2: Is it the challenge of memorizing fun in this kind of game

RQ3: In what kinds of situations the players would like to play this game.

The game was tested with 20 players of varying age. The game was played in two different tournaments. We had four male players playing the game in the first tournament (average age 32) and it was used as a reference test. The second tournament had 16 players and it was the main test event. In this testing, 31 % of participants were female, and 94% of participants were high school students who were between 15 and 17 years old. We
wanted to test the game with a young audience, as the most likely target group for the game consists of young players who type a lot of text messages. The players reported themselves writing more often text messages than playing mobile games. 80% of the participants used T9 text input for typing text. 74% of the players played mobile games never or less than once a week, and only 11% played every day or almost everyday.

The results suggested that the mobile phone keypad is very suitable for mobile gaming, and most participants wanted to play this game again, if it was available for them. One important finding related to the female audience. The female players liked the game a lot, and they played the game very well in the main tournament. This suggests that text-based input methods might be very suitable in gaming targeted at a female audience.

The paper is organized as follows: First, we look at previous work done in the field of mobile gaming, and interaction in games. After that, we present Ancient Runes in detail, followed by the experiments and analysis of them. Finally we conclude the work and discuss the future work still needed in the area.

2. PREVIOUS WORK

Gaming with mobile phones has traditionally focused on the use of the four-way joystick. Most mobile games copy the game mechanics found in the PC and console games. The mobile phone, however, is a much richer device. Almost all phones have many more keys than the joystick, most new phones have a camera, and many devices have various sensors, such as Bluetooth. These technologies enable new interaction mechanisms for mobile games.

Mobile devices are used in varying use conditions, and context-aware gaming has been a popular research topic. Pirates! [5] was one of the early games using the real world as the gaming arena, and since then, many mobile games in mobile phones have studied various context-aware features. BotFighters [6] is a location-based game, as is Mogi [7]. These games use location in their game mechanism, but the main interaction still uses traditional point and click methods. Sotamaa [8] has written an analysis on how to use the real world as the game arena in location-based gaming.

Portable game console Nintendo DS [9] offers a wide range of unique and new interaction styles for portable gaming devices. The DS contains games that use the microphone in various ways, and tilt sensors to offer new ways of interacting. Eyetoy [10] is another game worth mentioning in the console world, as it uses camera as the main interaction mechanism.

Text input, and especially SMSes are already used in many games. There are multiple games played in television, where the participants can take part by sending SMSes. One such system and its possibilities are discussed in [11]. Habbo Dreams is a game for mobile phones, where the players need to type in words to keep bad dreams away [12]. Although it is not a multiplayer game, it uses text input as the game mechanism.

There are many innovative interaction styles available, but many of them have yet to make their way to mobile phone games. This work studies how the mobile phone keyboard fits to being the main interaction mechanism in mobile games.

3. THE GAME

The Ancient Runes is implemented with the Multi-User Publishing Environment (MUPE) [13]. MUPE uses a client-server architecture, where the clients are connected to the game server, which contains all application functionality and synchronizes all communications.

Ancient Runes is a complete card collection game where the players can buy cards, handle their deck, practice spell casting, and socialize with other players in the lobby. In this paper, we concentrate on the battle system only. We do not test the card related actions such as trading and buying or player to player communications.

3.1 Ancient Runes Battle Rules

In Ancient Runes, each player is a wizard, who tries to defeat other players in head-to-head battles using spells. Players have a deck, which contains all the spells that they have, and the deck is unique for each player. There are three kinds of spells: attack, defense, and power up spells. Of these, attack and defense are divided into Air, Water, Earth, and Fire element spells.

Spells are cast by placing the spell runes using text input. For example, spell Napalm requires runes NAPAL#, which you cast by pressing 62725# on the phone keyboard. The last rune of the spell represents the spell element: 1 - Air, * - Water, 0 - Earth, and # - Fire. Casting spells is similar to T9 text input, although in Ancient Runes there are no conflicts in words, i.e. one combination of letters (i.e. runes) always corresponds to a single spell.

When the rune combination is correct, the player presses a key to cast the spell. Every rune costs a small amount of player’s energy, exponentially more based on the length of the spell. If a player runs out of energy, the energy required for the runes is taken from their health instead. This may lead to a suicide defeat and also prevents stagnation, which could occur if both players would run out of energy. If the players try to cast a combination of runes that doesn’t match to any spells they have, the spell fails and the energy is wasted. Figure 1 shows the Ancient Runes key configuration.
configuration on the mobile phone keyboard.

Attacking the opponent is simple: a player types in the combination for the spell and presses Cast (left soft key). The player can also cast a defensive shield. The shield spells work just like the attack spells, but instead of damaging the opponent, they produce a shield that completely protects the player from opponent spells of one element (earth, fire, water, or air) up to a certain spell level. So, if the player sees the opponent constantly repeating a fire spell, casting a fire shield can make him immune to those spells, forcing the opponent to change tactics. Shield spells last for 30-50 seconds. The User Interface (UI) of the battle can be seen in Figure 2. The players see themselves (You) and the opponents (John in the Figure). Players see their own and the opponents shields, as well as what both players are casting. Both players’ energy is shown below the player pictures, and three lines of text show the battle information in written form. At the top of the UI the players can browse spells in their deck.

Figure 3. The Ancient Runes battle UI

The third type of spells is power-up spells. They do not belong to any of the four elements, and their only purpose is to replenish your energy. It costs a little bit of energy to cast a power up spell as well, but it produces more energy in return. Replenishing energy is very important, as losing health instead of energy is very dangerous.

3.2 The platform: MUPE

Multi-User Publishing Environment (MUPE) is an application platform for mobile multi-user context-aware applications [13]. The platform aims to make game and application development quick and easy, and it emphasizes the use of new technologies found in mobile phones, such as cameras, Bluetooth, and sensors (e.g. GPS).

MUPE is designed for end-user generated content. Mobile phone users can create objects into the application server from their mobile phones. Ancient Runes uses this feature to create photos of the players, and uses them in battle to identify the opponent, as seen in the Figure 2. The players in the Figure 2 have chosen not to use their own photos, so they are using the system’s default player icon.

The platform has been used to create various games that utilize the various features that are available in the mobile phones. The platform is available under an open source license. The platform and games - including Ancient Runes - can be downloaded from the MUPE website (http://www.mupe.net).

3.3 Implementation: Collectible Card Game Engine

Ancient Runes was built in two parts. It consists of two parts: a reusable generic engine for collectible card games, and the actual game built on top of the engine. The engine’s features include purchasing new cards, containing the deck, viewing them and trading them between the players. The Collectable Card Game (CCG) Engine lies between the MUPE platform, and the implementation of the Ancient Runes game, as seen in Figure 3.

Figure 3. Ancient Runes built on top of CCG Engine and MUPE.

Purchasing new cards is implemented in the game engine using virtual money to buy different types of decks, which are then added into players’ card collections. As purchasing new cards is common to all collectible card games, this feature was build into the engine.

Asynchronous and synchronous trading of cards between players is a very complex situation. It is necessary to consider every situation the other player might be in, and adjust the new trade offer User Interface (UI) to this. For example, if the player is currently in a duel with another wizard, no trade offers should be shown at this time, but they should be stored and shown later. The engine creates a framework for handling these situations.

3.4 Implementation: Ancient Runes

Ancient Runes includes all the game specific functionality that is not offered by the CCG Engine. The main feature is the wizard duel, and in addition there is a lot of customization such as overriding all the UIs to match the game style. There is lot more information to show about players and their cards that’s unique to Ancient Runes, so that functionality is overridden as well.
The main part of the Ancient Runes is the duel, where the players cast spells using T9 input method and rely on their own memory and skills, rather than virtual skills of a virtual character. Ancient Runes is a card game, but the battle system relies on the memory, tactics, and text input speed of the players.

MUPE is a client-server architecture which determines how the players’ actions are synchronized. The players connect to the IP network with their mobile phones using 3G, GPRS, or any other available connection method. All the players use mobile phones for playing the game, so the latency of the mobile network is the deciding factor in the UI. The round-trip time in the cellular network is typically between 1.5-2.5 seconds with GPRS, and usually shorter with 3G phones.

The latency is used as an advantage in the game design. Although each keystroke is shown on the opponents screen as seen in Figure 2, the players do not see in real time what the opponent is typing due to latency. Every player should have some advantage over the other, so delaying the information a few seconds gives the caster a slight advantage. With the experiments, we tried also to find if the players try using this information to predict what spell the opponent is casting.

4. EXPERIMENT: TOURNAMENTS

We have evaluated the Ancient Runes with two tournaments. Although the Ancient Runes is a complete game with deck collection and handling, we only focused on the battle system. We wanted to find out whether a game based on text-input was suitable for mobile multiplayer gaming, and how suitable was the battle system, and in what kinds of situations the players would like to play this kind of game, as stated in the research questions.

The tournaments were played in a single continuous session, and the participants were asked to discuss the game while they were playing it, so the observers could write down the comments. The sessions were also video taped. Before starting to play, a background data sheet was filled, and after the game, a questionnaire was filled. Our study is quantitative but we also used the questionnaires to get some statistical data of the results to support our findings.

4.1 Demographics

Four players played the game in the first tournament and sixteen in the second one. The first tournament was organized at our office, where we tested the game with colleagues. The second one was organized with fifteen high-school students and one person who was not a student. There were 5 female players (25%), and 15 male players (75%). The average age in the tournaments was between fifteen and seventeen years old. The players sent SMS messages much more often than they played mobile games. 80% of the participants used T9 text input for writing text with a mobile phone.

4.1.1 First Tournament

The first tournament was played with a small group to verify the setting. We had four male participants (ages 23, 24, 31, 50, average 32) competing against each other. One of the players was a native English speaker, whereas three spoke Finnish as their mother’s tongue. Everyone said that they understand everything, or almost everything that is said in games.

75% of the participants wrote SMSes almost every day or everyday, and 75% used T9. One person used a phone with full QWERTY keyboard (the one who did not use T9).

The tournament consisted of two rounds: the qualifiers and finals/bronze medal. Each round was played with the “best of three” method, so two wins ensured a winning the round. In this tournament, eleven games were played (the bronze final only consisted of two games).

The first tournament was much shorter than the second one, as only four players participated, but otherwise the situation and setup was similar to the second tournament. Each player also played fewer games in the first tournament than in the second one since there were fewer players.

4.1.2 Second Tournament

16 players participated in the second tournament. Fifteen players were between fifteen and seventeen years old and one was thirty-eight years old. There were five females (31%) and eleven males (69%). Fourteen players were native Finnish speakers, and two spoke English as their mother’s tongue. One of the participants said that he only understands a little that is said in the games. The rest of the players understood everything, or almost everything that typically is said in games.

50% of the participants wrote SMSes almost every day or everyday, and 81% used T9 for typing. There was no difference between males and female players, when considering this issue.

This tournament was run in two separate instances, both with 8 players. Each player played three rounds where each round consisted of three separate games. Again, two wins allowed the player to advance to the next round. The winners of both instances then met in the final, where the winner needed three wins (“best of five”).

In this tournament, a total of seventy-six games were played. Each player played nine battles in the first three rounds. The finalists in the first instance only played two games as other finalist had already won both matches they had no motivation for the final game, and thus only seventy-one games instead of seventy-two was played. Five games were played in the finals.

4.2 The equipment

All games were played with Nokia 6600 phones. The 6600 model was chosen as the keys are fairly large and symmetrically placed, as seen in Figure 5. The game used GPRS for data transfer between the server and game client.

![Figure 4. The Nokia 6600 model used in the tournaments, and the keyboard layout.](image-url)
The devices were not the players own devices, and they all had the game preinstalled, and a selection of the cards were bought for the players before the start of the game. Each player had a different set of cards that was randomly given by the system. This was done to mimic the real playing situation where the players would typically have different sets of cards.

4.3 Before the game
In the beginning of the tournament, the players were asked to fill in a background data form. The form contained questions on the age, gender, phone usage, games, and language skills. Ancient Runes supports only one language, English, and we needed to know how well the participants understood English.

After this, instructions on how to play the game were given. The instructions were almost identical to the rules described in section 3.1. Players were given instructions for the battle system because the focus of our study was the tournament, not other parts of the game. We were not studying the usability of the user interface so we did not study how quickly the players would have learned to play the game without instructing them.

![Figure 5. The players of our reference test group practicing playing the game](image)

After the instructions were given, a practice game (Figure 5) was played. In this game, the players were told to:

1. Browse the spells. The players were told to browse the available spells, and try to memorize them if possible.
2. Cast a defensive spell. This allowed players to see the level of their own and opponent’s defensive shield, and the school of magic it uses.
3. Cast an offensive spell.
4. Cast a power-up spell.
5. Play the practice game until the end.

After the practice game, we started the actual tournament, and the tournament always followed the same pattern. First, we asked the players how many spells they remember. After that, we asked them to play the game until the end.

4.4 Gathering the data
There were two researchers observing the players while they played the game. After playing the games, the players were asked to fill in a questionnaire. There were 26 multi-choice questions and each question were answered with a range of 1 (Definitely no) to 5 (Definitely yes), or “I do not know”. The amount of players who tried out the game (20) was too small to draw solid statistical conclusions, but we used the data as supporting material for our qualitative study. The players were also interviewed in two focus group discussions afterwards. Seven players participated in the both discussion groups.

4.5 Results from the tournaments
The observations, discussions, and questionnaires provided a large amount of data on the game, the input mechanism, and the battle system. Our study is qualitative and we use observations from the test situations and the discussions with the players as the main source of data. We also use the data gathered with the questionnaires as supporting material, however, 20 players is not quite enough to draw solid statistical conclusions.

Looking at the data another way, there were a total of 87 separate games played in the tournaments. This is a much larger set that can tell us much more about the battle system itself.

4.5.1 Text input as the battle system
Our first research question for this work was to study if text-input is a suitable and enjoyable game mechanism for a two player battle. Our study gave very positive results on this.

In the focus group discussions, the players were asked to state what made the game fun to play and what was the most annoying in the game. Almost all, except four players, stated spontaneously the text input mechanism makes the game fun to play. In many players’ answers the writing and skill needed for remembering spells were combined together, for instance, one player answering when asked this question: “In general, the idea that winning depends on skill and writing.”

When typing the words, the players see only the numbers that they are pressing, not the words, like in T9. This caused a mixed reaction, but most of the players thought that it would be better to see the words, not the numbers. There were a few reasons for this. Firstly, the latency made typing hard enough anyway and it was even harder when the players could not see the word that they were typing. Secondly, in the Ancient Runes, the players can see what spell the opponent is trying to cast. When this information was also displayed as numbers, it was very difficult to predict what spell the opponent was casting and create strategies based on that information. One of the players put the problem with displaying the characters as numbers quite nicely: “I liked the typing, but it was not nice just to see the numbers. I don’t like if I do something and then get something completely different out of it.”

The questionnaire probed, among other things, the player’s response to the battle system. The most important questions regarding the battle system got high averages: “Considering only the battle system, I would play this game again” had an average response of 3.95, and “I like the way the spells are made in the game (typing)” had an average of 3.70. These suggest that this would be a very fun interaction mechanism in games.
There were not enough participants to make statistical analysis out of the questions. Purely speculating, these questions had very low correlations when compared to background questionnaires “I play mobile games”, and “I use T9 text input”. The maximum correlation of all combinations was 0.35, but these results are only speculation.

Another question “The battle system was too challenging for me” suggests that the battle system was very intuitive and easy to learn, as players did not consider the battle system to be too challenging in average (1.75, meaning “Disagree”).

In the focus group discussions, we also found that one of the players had learned the number series, not the words for the spells. He seemed to be an exception and most players were thinking about the worlds when casting spells. Two players noted that they actually also learned the movement patterns for the spells. The players also pointed out that the challenge in the text input was more about not making typos than typing very fast.

4.5.2 Remembering spells

The game is very dependant on remembering spells. We wanted to test whether it is fun and easy to remember game-related spells (words). Remembering spells is an important aspect of the game, and we wanted to see if it is too big or simply uninteresting challenge.

When asked about what was most fun in the game, the second most common answer was it is nice that the players needed skill to win a game. One of the players said in the focus groups that it was first annoying that the player needs to remember the spells, but generally the need for remembering things in the game was considered as a positive or very positive aspect of the game.

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4.5.3 Male vs. Female Player Performance

Our questionnaire included questions that were related to remembering spells. The answers to these questions got high averages: “The words corresponding to spells were easy to remember” (3.75) and “Remembering spells offered a good challenge in the game” (4.2). This suggests that the spells were a well-liked play mechanism.

Both tournaments’ learning curves follow the same pattern as seen in Figure 6, although the second tournament starts with much higher starting values. We can draw no conclusions on what causes this.

In the second tournament, the winners of the two eight-player game instances met in the finals battles between the two best players. The finals were played until one of the two most successful players had won three times. The other one of these players was female and the other male. The female player won the whole tournament.

The background data did not suggest that the female player would have won the game. In the background data, she stated that she wrote SMS messages less than once a week, did not use T9 for typing, and never played mobile games. In addition, in the English language skills she answered: “I understand only a little that is spoken in games”. This suggests, that the game mechanism is intuitive to learn, and does not require the players to be experienced SMS typists. Also, the UI tells what letters are required for each spell, it is not necessary to know the language, only to remember the spells. However, it must be noted that in our testing situation the players received help to get started with playing the game.

In the finals of the two game instances, there were two female players out of the 4 players, which suggests the females and males compete equally with this fighting system. The females win-lose ratio was exactly 0.50 (twenty-five wins total vs. twenty-five loses) without the finals, and with the finals, it was slightly over 0.5 (twenty-eight vs. twenty-seven). Three female participants (60%) had a winning record after the games (more victories than loses). This further suggests that the female players can perform equally well in this game compared to the male players.

If we do a bit of speculation, and do not count the female player who did not like the battle mechanism, we will get interesting results. One female won only one out of the eight games, and she
was the sole player who answered “I like the way the spells are made in the game (typing)” with a 1 (She did not like the way the spells were made at all). Without her, the female players would have a win ratio of 0.58 (twenty-seven wins vs. nineteen losses). We could speculate that females who liked the battle system did extremely well in the game.

4.5.4 The player with the best memory does not win
In the total 76 battles fought, we also tested whether the player with the better memory always wins. If the sole strategy in the game is based on remembering, then the player with the best memory always wins. This would make it irrelevant whether the players are good typists or not, but the results did not support this.

Figure 6 shows the dataset of second tournament only. This is due to the fact, that the first tournament only consisted of six rounds, and it is difficult to make conclusions from so few rounds. In Figure 6, the first round battles are the first 8 samples, the second round are the next eight and so on. This allows us to monitor how the difference changes over time. The Figure 6 has one interesting feature. Looking at the trend line, we see that it is steadily rising. This suggests that as the players learn the game, they need to remember more spells to win games.

If we look at this same problem from another perspective, and see how many times in the first four rounds (total of thirty-two battles) the winner remembered more spells than the loser, we get equal changes. That is, as often as the winner remembered more spells, the loser remembered more spells. In the last five rounds (total of thirty-nine battles), we see a totally different situation. Only in 28% of the battles the winner remembered less spells than the opponent and in 69% of the battles the winner remembered more (in only one battle the winner and loser remembered equal amounts of spells). This suggests that in the long run the number of spells in the memory becomes important.

In the second tournament, fifteen rounds ended with a 2-1 score, and the remaining nine rounds only had one winner (sweep). However, the first round had one sweep, the second had two sweeps, and the final rounds had six sweeps. This further indicates that the good players are getting better towards the end.

One player in the second tournament remembered thirty-five spells at the end of the tournament. There is a lot of overlapping in spells, such as “Element of Air”, “... of Earth” etc. Only this player reported noticing this at the end of the tournament, which suggests that the players can have very different learning strategies. This player won his last five rounds after winning only one of first four. At the last five rounds, the number of memorized spells was 19, 20, 35, 35, and 35. No other player advanced past fifteen memorized spells. This player’s games are clearly visible in Figure 6. Without this subject, the curves in Figure 6 change their height, but not their shape.

4.5.5 Play situations
The last of our research questions was that in what kinds of situations the players would like to play this game. This question was particularly addressed in the focus group discussions. We discussed with the players with whom and in what kinds of situations they would like to play this kind of game. It seems that the appeal of the Ancient Runes is based largely on the social features. The players had a lot of fun when playing the game with friends in the same location. This was not only mentioned when the moderator of the focus groups brought up the subject but also twice when the players were asked if they would like to buy this kind of game. The players commented that they would like to buy if their friends would be playing the game as well. In this kind of game, it could be a good idea if the player would only need to buy the game for hosting the game sessions, but playing would be free for any player who wishes to join the game.

A few of the players would have liked to play the game online with strangers as well. They were not that worried about the possible lack of communication during the battles, since there is not that much time to communicate anyway. However, they would have liked to chat or send a message after a battle to the other player. Even if some of the players would have been interested in playing this game online, they were worried about the costs of using the mobile networks to play the game and this was also stated as a reason why not to play online mobile games in general. Another issue that the players were worried about in playing online mobile games was the latency in the mobile networks.

The questionnaire also supported the idea that the game was very social. “Competing with others was social” (3.58) and “It was fun to battle with others” (4.3) had high averages in the questionnaire.

One of our findings was that two of the players were worried of what happens if they go online and then lose immediately because the other players just happen to be so skilled. However, this is a common problem in the multi-player games and the players should usually be matched with players who have similar skills or the players should be able to see how skilled the opponent is before joining a battle.

4.5.6 Other results
In addition to remembering and typing, we also analyzed the other aspects of the battle system. Even if the players liked the battle, they suggested that there could be more strategies. In the current version, the spells were mainly just of different elements (which affected what kinds of shields could be used against them) and of different strength. The next version of this game could use orthogonal unit differentiation. This term is coined by Harvey Smith [9] and it means that the different objects or units in the game should not only be just stronger or weaker, but also have different kinds of functionalities. For instance, let us think about a hypothetical game where the players can use arrows that make three points of damage and six points of damage. If the game would use orthogonal unit differentiation, it could have arrows that make six points of damage and poison arrows that make one point of initial damage plus then more damage over the time to make the game more compelling by providing more interesting strategies.

There seemed also to be dominating strategies in the game. A dominating strategy is a strategy that is superior in every situation. It is not good if a game has dominating strategies because it reduces the possibility space of different choices that can be made in the game. It also means that some strategies are useless from the winning point of view. The shields were not much used because they were not seen by the players as a good strategy. In the focus groups, it was noted that the player should remember too many different shields of all of the elements to make them really useful. Many of the players just used “brute force”, memorized the two strongest spells of each element, and used only those.

The players considered the game a very fun game to play, which was noted in the focus group discussions and in the
The players were interested in playing the game again, however, according to our focus group discussions, only few of them would have been interested in buying it. The main reason for this that was stated in the focus groups was that the players were not used to paying for other games either.

4.5.7 Other relevant issues that were not covered in our study
It would have been interesting to see if the text input as a control mechanism for mobile games would have been feasible from the ergonomics point of view. None of our test subjects complained about stress in fingers or hands, however, the playing time was quite short. It would have also been interesting to see how playable the game would have been if the players used different phone models. It could be that using some phone models with certain kinds of key pads could give the players a too big advantage. These are potential topics for further studies.

In our study, we found that the game was very social and more likely to be played in face-to-face situations than online. The video streaming technologies are coming to the mobile phones and it is very likely that they can in near future be used simultaneously with playing games. It would have been interesting to see if the game would have stayed as social and fun if the players would have played the game online but using simultaneous video conferencing instead of being physically present.

4.6 Technical performance: the latency
During the tests, we logged all network traffic that was created during the tournaments. This was done to measure how much there is latency when the players are playing Ancient Runes. The network response time should stay the same most of the time to guarantee a similar gaming experience. All results in this section are from the second tournament.

A total of 21420 client-to-server messages were sent in the 76 games played in the second tournament. There were only twenty-two samples with latency over ten seconds and eleven over twenty seconds (peak 30375 ms). Large latencies usually occur when the mobile phone changes the network cell, the radio connection gets a timeout, or the phone receives a call or SMS.

The average or median response times cannot be calculated, as many messages in Ancient Runes are one way, i.e. they do not expect a return message. Ancient Runes notifies the server of user key presses, and receives push messages on all battle related events, such as enemy actions. When a message with a reply is sent, typical latencies fall between 1.5 and 2.5 seconds.

The players brought up the topic of latency repeatedly in the focus groups, even if the moderator did not encourage the players to talk about this topic. The latency was constantly mentioned as the most annoying thing in the game and the players mentioned various problems in the gameplay that were related with the latency.

Phone calls and text messages are standard phone operations, and should not affect the gameplay. In the Ancient Runes, the person receiving a phone call has a disadvantage, which cannot be overcome. The latency and potential problems with using simultaneously standard phone functionalities and GPRS suggests that peer-to-peer operations over Bluetooth would be a much more suitable solution for the implementation. However, in the case of online multi-player tournaments, it is more secure to have all the players’ actions to be sent and confirmed to the game server. In the online games, not trusting the client application and having all the game functionality in the server side is a common practice because of the risk of cheating [13]. Playing a game with friends, however, usually reduces the risk of cheating.

5. CONCLUSIONS
This paper presented Ancient Runes – a multiplayer game using text input as the main game interaction method in the game. The game was implemented as a client-server system. It was tested with two tournaments, where players who had not played the game before took part.

For this work, we set three research questions. First, we wanted to find out is text input a suitable and enjoyable game mechanism for a two player battle in mobile phones, second, is it easy and fun to try to remember the game related spells (words), and third, what kinds of play situations are suitable for this kind of game.

We organized two tournaments with twenty participants to find answers to the questions. Players were asked to fill questionnaires and during the tests we monitored players and observed how well they remembered spells. With the questionnaires, observing the players while they were playing, and monitoring the number of spells remembered we managed to answer these questions. Two focus groups were arranged to gain a better understanding of the playing experience.

Ancient Runes was found to be a fun game. Players who played the game thought that it was fun to battle with others, and concerning the battle system, they would play the game again. Players in general liked the way that the spells were cast in the game (typing). The players also liked the fact that the spells sometimes were abbreviations and the length of the spell was proportional to its power.

According to the background data sheets, the players who participated in our test sessions sent SMS messages much more often than they played mobile games. This suggests that the current mobile games might not be appealing to everyone, and messaging offers a more interesting pastime. Ancient Runes combines the two, and it was well liked by the players. This suggests that game mechanisms that are close to mobile phone standard operations might be appealing to a large audience.

Players thought that remembering the spells offered a good challenge and the spells were easy to remember for the players. The number of spells remembered also increased over time, and at the end, it was more probable that the player who remembered more spells won a game.

The players liked the fact that the game was played in a face-to-face situation. Some were interested in a possibility to play the game online against strangers, but there were many considerations about playing the game online, namely: the latency, cost, potential problems with communication, and problems that may occur when players with very different skill levels compete with each other. Also, playing with strangers is not necessarily as fun as playing with friends; many of the players stated that they would like to play this game with friends.
Ancient Runes was equally well played by males and females, although, it could be argued that females did better in this game. The females, who liked the battle system, won 58% of their games. This suggests, that new interaction styles, and the normal usage of mobile phones (the game mechanism is close to typing text messages) could be a good way to create games that are suitable for male and female players alike.

6. FUTURE WORK
The initial results are very encouraging. Ancient Runes seems to be a game that is equally well played by females and males, and the battle system is fun and intuitive to learn. A further long-term study is needed to confirm these results. Much more players are needed, and they need to play for more than nine rounds, in order to make more conclusions.

The battle system would also benefit a lot from faster communications. The runes are cast in real time, and a peer-to-peer implementation using Bluetooth might be much more suitable for this kind of a game.

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8. REFERENCES