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DESIGNING USER-FRIENDLY WEB SERVICE FOR ORGANIZING HOBBY GAME EVENTS

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## ABSTRACT

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Today, there are variety of entertainments available for people such as cinema, theater, computer games, shopping, etc. However, some people still love to play traditional hobby games. Sometimes it is hard for them to find like-minded people to play with, because not all friends prefer to play hobby games or have time to play.

Many hobby games are now available as video games, which can include the computer itself as one of the several players, or as a sole opponent. Some websites allow playing in real time, immediately showing the opponents' moves, while others use email to notify the players of each move. However, for many people board game is some kind of socialization and they would like to spend some time without their computer and meet with real people. Today there are a lot of event based social networks. However, none of them is good enough for organizing hobby game events. The purpose of this work is to create an optimal service for people that love to play hobby games to make it easy for them to meet in real life to play.

## РЕЗЮМЕ

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На сегодняшний день существует огромное разнообразие развлечений для людей: люди ходят в кино, театры, играют в компьютерные игры, ходят по магазинам и так далее. Однако некоторые люди все еще любят играть в традиционные настольные игры. Иногда им трудно найти компанию по интересам, потому что не все друзья предпочитают играть в настольные игры или у них нет времени..

Сегодня много настольных игр доступны в виде видеоигр, в которых компьютер может выступать одним из участников игры. Некоторые web-сайты предоставляют возможность играть в режиме реального времени и сразу показывают ходы противников, некоторые используют электронную почту, для уведомления игроков о каждом ходе. При всем удобстве игры за монитором компьютера, для многих людей настольные игры являются элементом социализации, и они хотели бы провести некоторое время вне своего дома и встретиться с настоящими людьми.

Идея проекта состоит в том, чтобы создать прототип приложения, для помощи людям в поиске компании для игры в настольные игры в районе их проживания. Пользователи смогут создавать, просматривать, искать и посещать игровые мероприятия. Для каждого события будет определен набор фильтров, такой как количество пользователей, общая продолжительность и другие. Пользователи смогут найти самые близкие мероприятия и иметь возможность встретиться с людьми по интересам, любящими настольные игры. Также сервис должен облегчить организаторам поиск людей для мероприятий, так как люди сами будут находить события в системе.

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**ABBREVIATIONS**

EBSN	Event-Based Social Network
LBSN	Location-Based Social Network
SNS	Social Networking services
RSVP	Process for a response from the invited person or people

## 1. INTRODUCTION

Today, there are variety of entertainments available for people such as cinema, theater, computer games, shopping, etc. However, some people still love to play traditional tabletop games. Sometimes it is hard for them to find like-minded people to play with, because not all friends prefer to play hobby games or have time to play. Unlike in video games, when it comes to hobby games it is pretty difficult to count the approximate number of people playing it, but judging by statistics of sales of popular games it is possible to assume that there are lots of people who love and play hobby games. Today hobby games do not lose the popularity but to the contrary, they have become more and more popular. According to the report in “ICv2’s Internal Correspondence #90” [1] sales of hobby games only, in the U.S. and Canada crossed \$1 billion in 2015, and reaching \$1.19 billion. Table 1 present this statistics.

**Table 1.** U.S. / Canada Hobby Games Sales - 2015 [1]

<b>U.S. / Canada Hobby Games Sales – 2015</b>	
<b>Category</b>	<b>Retail Sales (in millions)</b>
Collectible Games	\$625
Non-Collectible Miniature Games	\$175
Hobby Board games	\$250
Hobby card and dice games	\$105
Roleplaying games	\$35
Total Hobby games	\$1190

According to the research “Analysis of table games market in Russia” conducted by “DISCOVERY Research Group” released on 08.02.2016, the Russian hobby games market is about 7.6 billion rubles, which is according to exchange rate on 25.11.2015 is about \$118 million [2].

Many hobby games are now available as video games, which can include the computer itself as one of the several players, or as a sole opponent. Some websites allow playing in real time, immediately showing the opponents' moves, while others use email to notify the players of each

move. However, for many people board game is some kind of socialization and they would like to spend some time without their computer and meet with real people. In the article [3] author claims that face-to-face interactions tend to be more positive and perceived to be more credible than online conversations.

### **1.1. The research problem**

Today there are a lot of event based social networks. However, none of them is good enough for organizing hobby game events. The purpose of this work is to create an optimal service for people that love to play hobby games to make it easy for them to meet in real life to play.

Humans by their nature are social beings. In the article [4] Elizabeth Pennisi writes that social interactions form the basis of our families, our governments, and even our global economy. Thus, this master thesis project will contribute to addressing the well-being of the society to overcome loneliness and to promote human contact by introducing a way to contact people through board game events.

The idea of the project is to develop an app to assist people in finding company for playing board games in their living district. Users can create, view, search and attend game events with positioning on the map with each event determined by a special set of features like limited number of users, total duration and so on. Users can use their location in order to find closest events and always be able to connect with like-minded people through board games, wherever they are located. There will not be the necessity to look for relevant people: they will use searching system events in their local area, sign up for them and participate in them.

### **1.2. Research objectives and questions**

There are three research questions:

1. How can we design web-services for event organizations?
2. How can we categorize many possibilities in selection an event in a user-friendly manner?
3. How can we test the user experience?

The research tasks and objectives are:

1. To describe the importance of real meetings and the contribution of Event-Based Social Networks in it.
2. To collect relevant articles about hobby games, organizing events and Event-Based Social Networks.
3. To describe the popularity of hobby games, explaining its relevance to the topic.
4. To determine unique features of Event-Based Social Networks, comparing to traditional social networks and dating services.
5. To compare available solutions of services, that can be suitable for organizing hobby game events.
6. To determine the features that traditional Event-Based Social Networks do not have to perfectly fit for organizing hobby game events.
7. To create a questionnaire, asking people what features would they like to see in a service for organizing hobby games.
8. To analyze collected data, according to scientific articles, available solutions and people's responses to the questionnaire.
9. Based on the analysis determine the requirements for the service mostly suitable for organizing hobby game events.
10. To develop the design of web application, according to determined requirements.
11. To create questionnaire asking what color scheme is the most suitable in people's opinion for web service.
12. Developing the prototype of the web application, having all necessary features and color scheme, based on the questionnaire.
13. Testing the prototype.
14. Creating usability test.

### **1.3. Phases of the research and research method**

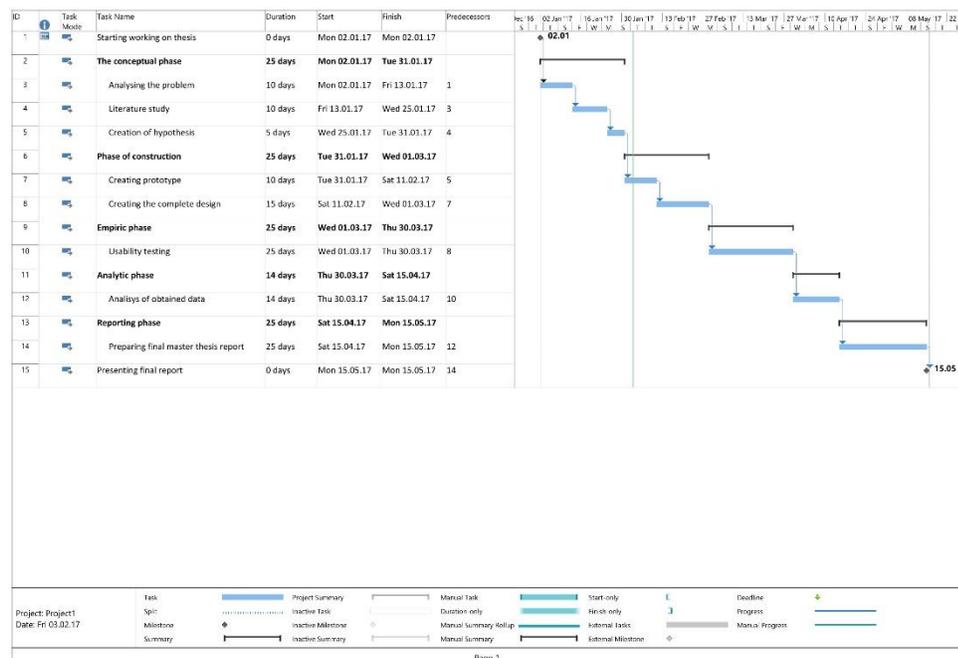
There are 6 phases of research:

1. Planning phase

2. The conceptual phase
3. Phase of construction
4. Empiric phase
5. Analytic phase
6. Reporting phase

### ***Planning phase***

During this phase, the tasks are identified and estimation is made of how much time the project will take. Figure 1 demonstrates the planning of the research in MS Project.



**Figure 1.** Planning of the research

### ***Phase of conception***

The phase of conception is the second phase of this research. This phase can be divided into following steps:

1. Analyzing the problem. (Formulation of research problem or research questions, determine the purpose of the study).

2. Literature study (Searching and review of literature relating to the research problem).
3. Creation of hypothesis which should be verified/disproved in future research

### ***Phase of construction***

The aim of this phase is to design a prototype and complete design of the service.

### ***Empiric phase***

In this phase, the testing of the product is conducted. The product is given to users. After or during the experience with the product they are given the survey, they should pass. The received data is collected.

### ***Analytic phase***

Once the data collection and surveying activities have finished, the complete analysis of user experience is done according to the obtained data.

### ***Reporting phase***

The job is not completed until the researcher communicates the result of the study to others who may find it useful. In this phase results of the research are presented as master thesis that contains a critical review of the implementation and conclusions.

## **1.4. Resources required**

### ***Project Resourcing***

Personal computer and software are available for the whole project.

### ***Staffing Plan***

There is one team member, no additional staff may be hired.

### ***Budget***

The possible budget is 5.00€ per month, 30€ total for a project. This money may be needed to pay for hosting and domain to test an app.

### **1.5. Outcomes of the research**

This research project has following outcomes by the end of the project.

1. Completed design of the application
2. Publication of report of the research project (master thesis)

## 2. LITERATURE REVIEW

Databases used to search for relevant articles: IEEE, ACM, Springer, Science direct and Emerald.

The keywords, used for the search: Board games, Organizing board games, Board games event organization, Board games event application UX, Organizing events, EBSNs, Event based social network, Event based social networks, Event organization, Gaming event organization, Event organization applications, Board game classification, Board games classification, Tabletop game classification, Hobby game classification, Table game classification, Game classification.

I have searched for the articles between years 2010 and 2017. Firstly, I started to search for the key phrase itself, then I narrowed down results, putting the key phrase in quotes, searching for the exact match. Then I tried to look for relevant articles. Tables 2 - 4 provide information about the number of articles on each key phrase in 5 different databases.

It is important to mention, that these tables only provide information about the quantity of articles. However, some databases do not have relevant articles for some key phrases, like for example; there are no scientific articles about board/tabletop/table/hobby game classification. Overall 40 articles were chosen, based on which the literature review was made.

**Table 2.** Articles in databases

Database name	“Board games”	“Organizing board games”	“Board games event organization”	“Board games event applications UX”	“EBSNs”	“Event Based Social Network”	“Event Based Social Networks”
<b>IEEE</b>	91	0	0	0	6	8	16
<b>ACM</b>	87	0	0	0	9	123232	123505
<b>Springer (last 6 months)</b>	696	765	1101	2211	0	3435	3459
<b>Science direct</b>	640	0	0	0	15	76607	76607
<b>Emerald</b>	3302	2817	1642	5	0	2358	2358

**Table 3.** Articles in databases

Database name	“Organizing events”	“Event organization”	“Gaming event organization”	“Event organization applications”	“Board game classification”	“Board games classification”
<b>IEEE</b>	10	8	0	0	0	0
<b>ACM</b>	11	29	0	0	0	0
<b>Springer (last 6 months)</b>	359	515	543	2071	1002	984
<b>Science direct</b>	580	589	0	0	0	0
<b>Emerald</b>	79	65	0	0	0	966

**Table 4.** Articles in databases

Database name	“Tabletop game classification”	“Hobby game classification”	“Table game classification”	“Game classification”
<b>IEEE</b>	0	0	0	5
<b>ACM</b>	0	0	0	8
<b>Springer (last 6 months)</b>	470	475	535	468
<b>Science direct</b>	0	0	0	24
<b>Emerald</b>	0	0	0	1

## 2.1. Event organization

Talking about hobby games event organization it is very important to look at event organization in general. How to organize the event, which rules should a person follow and which nuances are when offline events are organizing online, gathering people from the internet. The fast growth of social networking sites has changed the way people live and communicate. Today many researchers are interested in making research of different on-line groups. Existing works on on-line groups mostly focus on studying “cyber groups” (e.g., on-line communities, social media websites, and forums) where group members interact with each other and thus do not need to present themselves at a “physical location”. One special kind of groups largely

unexplored thus far is the ones that are formed through online portals but taking place off-line at a real physical location [5].

## **2.2. Importance of real meetings**

There are many researches on the topic about the importance of the real face-to-face meeting, compared to computer based. For example, Merrill E. Warkentin in his article: “Virtual Teams versus Face-to-Face Teams: An Exploratory Study of a Web-based Conference System [6]”. This research study used teams comprised of three members who completed an information-sharing task. Teams used either asynchronous CMCS (computer-mediated communication system) or face-to-face communications. A total of 13 virtual teams and 11 face-to-face teams participated in the study, comprised of 72 individual team members who completed the survey instrument. In this work, it was stated that while face-to-face teams reported greater satisfaction with the group interaction process, the exchange of information was no more effective than that in virtual teams. In other words, there was no statistically significant difference between the effectiveness of communication between computer based meeting with face-to-face (as measured by information exchange), but the traditional way of communication has more positive perceptions of the interactivity and the results. In the article “The quality of Online Social Relationship” [7] authors have the same point. They state that in one-to-one comparisons, an email message is not as useful as a phone call or a face-to-face meeting for developing and sustaining social relationships. People's relationships maintained primarily over the Internet are not as close and qualitative as those maintained by other means.

## **2.3. Social event organizations**

Keqian Li, Wei Lu, Smriti Bhagat, Laks V.S. Lakshmanan and Cong Yu write in their article “On Social Event Organization” [8] that tasks of organizing different social events share many common characteristics. They underline main ingredients for successful event organization: innate affinity, social affinity and cardinality constraints. *Innate affinity* is numeric measure that demonstrates a person's preference for the offered events. ”Innate affinities can be stated explicitly: e.g., a user can mark his preference for a game of chess as 9 out of 10. Or they can be categorically stated by the users and computed by the organizer: e.g., a user can list outdoor activities in her profile and the organizer can deduce that she/he will likely prefer hiking to

playing chess. Finally, they can be predicted by a recommender system based on the past events that the user has participated in.” *Social affinity* is the numeric measure, representing the social connection between users. People prefer to participate in the event if they go there with their friends or someone who they would like to be around with. This connection is often defined between a pair of users (pairwise social affinity). “Similar to *innate affinities*, *social affinities* can be stated explicitly by the users. For example, users on social networks explicitly provide their friendship connections. They can also be deduced based on users’ interests or past activities. For instance, two users who share lots of interests and past activities are more likely to enjoy each other’s company. The final factor is natural *cardinality constraints*. It represents some requirements for the event. “For example, most sports activities need a certain number of participants: two or four for tennis, two for chess, and two to nine for poker games”.

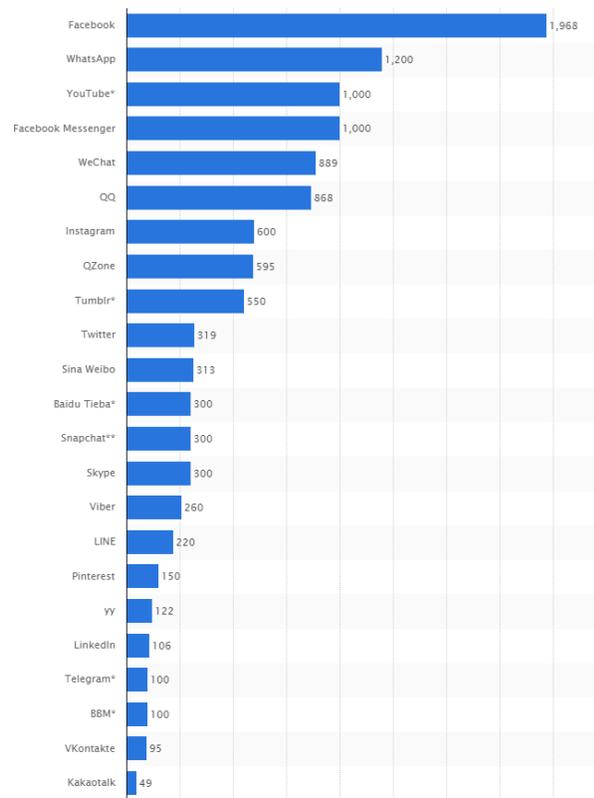
Ioannis Boutsis and Vana Kalogeraki made a research, which showed some of the main factors that have an impact on the user’s attendance on events organized online. Their analysis showed that users typically visit frequently only a few places, they announce their participation to events within 10-500km and that the type of event plays an important role in the success of the event, in terms of participation [9].

For more than a decade of existence of social networks and services for offline event organizations, some rules and patterns appeared for organizing events. In the research “A pattern language for organizing events” [10] authors state some rules for event organizers to make a real event. These rules are helpful to understand what system should have to allow organizers do that. One of the main stages of event organizations is to name the event. “Title of the event is very important. The title itself shows the nature of the event. People may not have an idea of what the event is if the title is too vague. You have to name your event to approach your target population while on the other hand attracting people outside your target”. However, it is very important to give people a clear idea of what the main topic is, not choosing too broad names. The second important stage is to set up the outline of the event, such as date and location. “Once the date of your event is fixed, reservation of the space should be the first priority”. When the date and location are setup, then it is possible to go for more contents of the event. An organizer may want to consider a timetable of the event after date and location are scheduled. He or she may decide when to start and finish the event. Also, it is important to schedule short breaks in

the timetable. It is possible to make event created by each of participants by asking participants to play a role in the event operation and by creating an opportunity for them to do voluntary work in the event. It is important to prepare badges with names of participants before the meeting, since many participants do not know each other and it will be easier to start communication, knowing names of other participants. Authors claim that to have another event in future, you should be trustworthy as an event organizer. If an event had some commercial sides, an organizer must clearly inform people which amount of money do users need to pay and for what exactly, also reporting about all expenses afterwards. One of the key factors of trustworthiness is the reviewing system. There are several positives of the reviewing. “Firstly, organizer of the event has access to what participants felt in the event through online reviewing, and this will motivate him to have next event.” Anyone can access to online reviewing and this gives them a picture of what to expect from the future events. Also, online reviews motivate participants to write the review themselves. “Those online event reviews give more values on the event itself and will lead to the next event. For people who may have some negative reviews, inform the organizer’s e-mail address to feedback since they may hesitate to share negative reviews online.”

#### **2.4. Social networking services (SNSs)**

Today social networking is one of the most popular activities on the internet. By the data of the Comscore social networking accounted for nearly 1 in every 5 minutes spent online globally in October 2011 [11], ranking as the most engaging online activity worldwide. In one of their latest reports “2016 U.S. Cross-Platform Future in Focus” they also confirmed that statistics, social networks are still the most time-consuming activity on the internet. In one of the reports (08.06.2016) of Globalwebindex they claimed that social media captures 30% of online time [12]. The number of active users is huge. The Figure 2 demonstrates the chart prepared by Statista in April 2017. The chart on the Figure 2 illustrates the number of active users in different social networks [13]. It is clearly seen that the number of active users only in Facebook is about 1/4<sup>th</sup> of the whole world population and there are a lot of other SNSs that some other people can use, without having an account on Facebook, for example some local SNSs, such as QQ or VK.



**Figure 2.** Number of active users in millions [13]

Today there is a lot of researches comparing social relationships online and offline. In the article “The quality of online social relationship” authors found out that offline social relationship is more beneficial than online one [7]. They write: “Social relationships offline involve more communication than those developed online, and thus predicted psychological closeness”. It is important to note that authors do not say that, the online social relationship is not beneficial at all, they just consider that it loses in comparison with the offline relationship.

For more than a decade of existence of different social networks appeared some social networks focused on meeting offline, such as LBSNs (Location Based Social Networks) and EBSNs (Event-Based Social Networks).

## 2.5. Location-based social networks (LBSNs)

The most popular definition of Location-based social networks was given by Microsoft research managers: Yu Zheng and Xing Xie. In their article “Location-Based Social Networks” they

wrote: LBSN does not only mean adding a location to an existing social network so that people in the social structure can share location-embedded information, but also consists of the new social structure made up of individuals connected by the interdependency derived from their locations in the physical world as well as their location-tagged media content, such as photos, video, and texts [14]. Further, the interdependency includes not only that two persons co-occur in the same physical location or share similar location histories but also the knowledge, e.g., common interests, behavior, and activities, inferred from an individual's location (history) and location-tagged data [14]. In the article "Recommender Systems for Location Based social Networks" [15] authors define LBSN as the Special category of Social Network, having all its functions, but considers the location as the core object of its structure. This master project will use user's geolocation to make a map of users and live map.

## **2.6. Event-Based Social Network (EBSNs)**

Social networks that focus on offline events, are called EBSNs (Event-Based Social Networks). EBSNs link online and offline social worlds, providing not only typical online social networking services but also face to face offline communication by attending events [16]. The core goal of EBSNs is to gather neighbors (users located in the same city) together to do what they are commonly interested in. Among all the elements in EBSNs, the event is the most significant one which bridges the gap of online and offline interaction [17]. Due to the rapid growth and raised popularity of this type of services, this topic became interesting for many researchers. Today there is a lot of works on the topic of EBSNs.

One of the main features of EBSNs is that it differs from traditional Social Networks in such a way that traditional social networks are made mostly to be connected with people you already know, while the main aim of the EBSNs is to connect people, according to some interests to meet in real life [16].

In the article [18] authors put forward an assumption that in EBSNs all network changes are caused by events. They define all event participants as actors and say that new relationships may happen only after the event is finished. EBSNs can also be compared to some dating sites. Both are made to connect people that do not know each other before. According to the definition of EBSNs, dating services can be considered as some kind of EBSNs, where the main focus is to

connect people according to their interest of finding a couple. This way a man and a woman can be considered as actors and the date itself as an event. The second similarity to dating sites is that the connections in EBSNs are extremely local. In the research [19] authors found that 70.65% of Meetup online friends and 84.61% of Meetup offline friends live within 10 miles of each other. In the article “A Study of User Behavior on an Online Dating Site” it is said that geographic distance between two users plays an important role in dating considerations, and the volume of messages quickly decreases as users live farther apart [20].

Overall, EBSNs have some similarities with traditional social networks and dating sites. However, there are some features that are essential for EBSNs to have in order to provide good user experience.

### **2.7. Main features of EBSNs**

The main aim of any EBSNs is to gather people located in one area, according to their interests. Among all the elements in EBSNs, the event is the most significant one which bridges the gap of online and offline interaction [17].

According to Wei Zhangy and Jianyong Wang, formally, an event consists of four main elements. First one is content. It gives some information about the event theme. The second element is an organizer. He/she is responsible for the organization. The third one is location, the place where an event is going to be. The final element is the date and time when the event starts. As users always prefer to participate in the events nearby, many EBSNs divide events by cities and provide users with the events, which are located in the same city to attend [17]. Sometimes, there are too many events and it is hard to understand, which event fits him/her. This way personalized event recommendation is useful for avoiding the information overload problem [17].

Yogesh Jhamb and Yi Fang in their article also mention a term RSVP [21]. It is a French expression, which means ‘please respond’. For example, users have a possibility to show if they want to participate in the event, by answering “yes”, “maybe” or “no” and to share it with their followers, which may encourage some of them to participate too [10]. Yogesh et. al., in their article claim that the numbers of positive responses and negative responses differ a lot. The

reason for this is that many users just ignore RSVPs if they are not interested in attending the events [21]. According to this, it may be assumed that the ESBNs should have only positive response buttons like “yes” or “maybe”.

## **2.8. Hobby games**

There are a lot of hobby games that are possible to play online against the computer or real people online. This way a person does not need to search for someone to play with. The point of this application is to organize hobby game event.

Talking about real meetings, it is really important for people to meet according to certain common interests. If people have nothing in common there is no any point to meet with each other. There are many topics that can connect people and hobby games are one of them. It has a lot of advantages among other hobbies. First of all, almost every hobby game needs the constant interaction of players. A lot of people find this type of entertainment fun and engaging. In the paper “Promoting Health in Schools Through a Board Game [22]” Wally J. Bartfay and Emma Bartfay wrote: “By their very nature, games tend to involve the learner and increase motivation and interest”. Games may also help to promote equality, ethnic, generational or social barriers among different participants [23]. All that means that people will easily meet each other and start to communicate in a natural way.

## **2.9. Hobby games for education**

Hobby games, like any other game, was created with the aim to simplify experience sharing between people. This form is very good to give useful and important information to the young generation.

This way hobby games can be considered not only as a form of entertainment, but also for increasing mental, physical and creative abilities of a person during the free time and education [24]. Hobby games pretty often take part in the educational programs. Some kinds of hobby games such as quizzes and Olympiads are widespread in educational systems.

There are a lot of researches, showing that hobby games have a positive impact on education. The fun aspect, associated with gaming appears to be conducive to learning by generating joy

and excitement [22]. For example, in the research “More than mere games: a review of the card and hobby games for medical education” [25], conducted by Konrad Bochennek, Boris Wittekindt, Stefanie-Yvonne Zimmermann & Thomas Klingebiel, they wrote that games may simulate processes of decision-making and can enrich teaching strategies. Both card games and board games on medical topics are widely used for the medical teaching of both undergraduate and postgraduate students. More to say, in the article [26] author shows some boards of tabletop games, that CIA (The Central Intelligence Agency) uses to train their officers.

### **2.10. Importance of hobby games**

Some people may assume that computers with the internet, different game consoles will decrease the popularity of hobby games. However, Owen Duffy [27] points in his article that many industry figures claim that the internet is a key factor in the growth of tabletop gaming. There are several reasons for that. First reason is that having different gadgets, people have the possibility to try digital versions of hobby games, and some of them buy physical copies as well. Second reason is that online retailers have made hobby games more available than in the past, and far easier to purchase. A lot of gamers and designers say about another reason. In their opinion, hobby games became better than in the past, which led to the industry’s growth.

In the free time hobby games are a good way to spend time with benefits. One of the important factors of many hobby games is communication. Communication itself is valuable and important for any person, no matter how old he/she is. Some games encourage people to meet each other again and again. For example, Monopoly or Settlers of Catan became very popular and people have spent many days playing it. Former Parker Brothers executive Philip Orbanes explains in his history of the game, "Monopoly became a magnet drawing in friends and family to the homes of those who owned it"[28].

One of the benefits of hobby games for parents is that it can fight with their children’s computer addiction. They may show and explain to their kids that hobby games can be more interesting than video games, cause, it gives not only emotions but also engages you to communicate with other people in real life which is vital for the development of many different skills, such as thinking, logic, communication skills and other. Peter Gray writes in his article: “Free play is

the means by which children learn to make friends, overcome their fears, solve their own problems, and generally take control of their own lives” [29].

However, some people can find some disadvantages in this activity. One controversial disadvantage of hobby games is the issue of competition. Some individuals contend that there is already too much competition in our society whereas others argue that it is a necessary component of all games. Competition, by itself involves winning and losing. Although winning can serve as a stimulus to increase motivation and positive feelings, losing may contribute to negative feelings [30]. For instance, we can take the game “Diplomacy”, which was described as “the game that ruins friendships” in the article [31]. Melamed [23] argues that a certain degree of tension or competition is required to maintain interest.

Nevertheless, hobby games stay very popular type of entertainment. It engages people, helps them to meet each other, communicate and just have fun.

### **2.11. Hobby games classification**

One of the biggest works on board game classification was made by Piet Notebaert and Hendrik Cornilly [32]. In their work, they went through the existing hobby games classification systems: the classification, that game companies use, “Deutsches Spiele-Archiv” and websites, dedicated to hobby games.

In their opinion, a classification that some companies use is too simple. They looked at some companies, such as Hasbro, Jumbo, Ravensburger, Amigo Spiele and others. As authors say: “It’s obvious that game companies are not the place to find a clever classification system.”

Most of the web-sites they went through did not contain classification into different categories, having instead a list of hobby games in alphabetic order. However, there were few exceptions. For instance, BoardGameGeek, one of the most popular websites, dedicated to hobby games, has a simple system, categorizing games, helping to find similar ones. The problem is that a particular game can be related to different categories and this system does not allow to put a game into different categories at the same time. Some websites divided games by genre and by theme. Some databases use keywords.

The Deutsches Spiele-Archiv has a very detailed system of hobby games classification, with different groups and subcategories. As authors say, it is very useful for those who want to know how to classify games. However, to find the game, that a user is interested in, he/she needs to look in different categories, one of which contain this game. The problem is similar to one that “BoardGameGeek” has: this system does not take into account that one game can be present in different categories.

Another, not official board game classification is proposed on a website “BoardGameGeek” by the user David F. He showed 3 ways to classify games, deeply explaining what each of them means [33]:

1. By game formats (Competitive, Cooperative, Coordinative, Semi-Cooperative, Teams/Partnerships, 2v2)
2. By Genres (Predominantly Abstract Strategy, Predominantly Euro/Strategy/Family, Predominantly Thematic/Ameritrash, Card Games, Wargames, Predominantly Party/Social Games)
3. Mechanisms (Spatial Actions, Non-Spatial Actions, Other Non-Spatial Actions, Auctions, Cards-Related, Dice-Related, Game Systems, Social)

In the article “Classification of Games” an author, Bruce Whitehill, shows 3 systems used to classify games [34]:

- The historical model,
- “Company model”
- Players’ system of classification

Also, he proposes 7 categories of table games:

- Board games
- Card games
- Word games
- Dexterity games
- Tile-Laying Games

- Memory games

The author points out that some games may refer to different genres. “One cannot expect a classification of games to be without considerable overlapping and many exceptions”. Game classification is a pretty complex task and it will always be approximate.

The Wikipedia proposed 2 types of classification [35]:

- Classification according to equipment used
  - Adventure games
  - Board games
  - Card games
  - Dice games
  - Paper and pencil games
  - Role-playing games
  - Strategy games
  - Tile-based games
- Classification according to elements of chance
  - Deterministic
  - Stochastic

Overall, there is no unanimity when it comes to board game classification. The game classification is a complex task and it has a lot of different solutions.

## 2.12. Available solutions

***Meetin*** [<http://meetin.org/>]

This service also is made to make friends in the real world. It is run by volunteers and it is completely free. It has a list of different cities, clicking on them it is possible to see the events there. If some city is not included it is possible to write to the administrator, which is not very comfortable. Overall this is one of the sites that allow people to meet according to different interests. The main disadvantages are very bad usability and design. The site does not look very good and is not comfortable to use. Figure 3 shows the screenshot of the main page of Meetin.



Figure 3. Meetin

**WITHME** [<https://itunes.apple.com/ru/app/withme-soberi-svou-komandu!/id994102307>]

WITHME is an application designed for mobile platforms. The main idea is to find company for leisure, sports or hobby. The main advantage is a unique feature for this kind of application is an opportunity to find the path by car or walk to the meeting place. There are some disadvantages. For example, it does not allow to filter out users by any options, the application is limited to the meeting for the event. Also, some users complain about bugs and so on. Figure 4 shows the screens of this service.

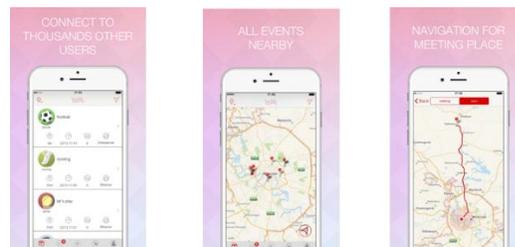
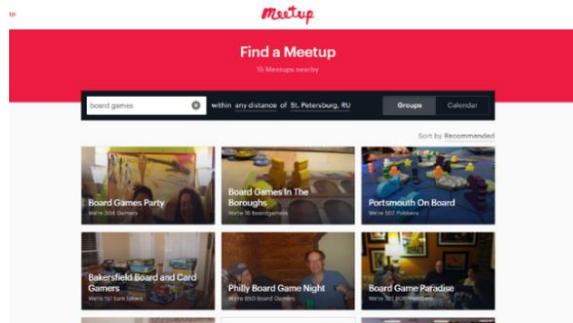


Figure 4. WITHME

**Meetup** [<https://www.meetup.com/>]

Multiplatform application, like the previous one designed to find company for leisure. The main advantage is that there is a lot of different activities you can find and register for. Also, one of the strong features of the app is the possibility for users to sign for not existing events, just becoming interested in it and then someone can become an organizer. The main disadvantage is that when it comes to hobby there are no filters at all. An app shows all events in the local area. Figure 5 presents one of the screens of Meetup service.



**Figure 5.** Meetup

**Meetme** [<https://www.meetme.com/>]

Multiplatform application. The description of this app says that it helps you find new people nearby who share your interests and want to chat now. However, it looks very similar to the dating app. It has filters for discussion, you can choose topic and find people's post about it. Overall to find people by interest is theoretically possible but it is very hard and uncomfortable. Also, there is no possibility to create and participate in events. Figure 6 shows the screenshot of the main page of Meetme.



**Figure 6.** Meetme

**Smacktive** [<http://www.smacktive.com/>]

This is an app for iOS and Android. It helps to find friends in the local area. The scope of interests is limited to sports activities, such as gym or volley, for example. It is good and comfortable to use, but not every hobby game can be considered a sport. This way, in case a person aims to find some hobby game event, he/she might not find one there. Figure 7 shows the screens of the Smacktive application.



**Figure 7.** Smacktive

**GroupSpaces** [<http://groupspaces.com/>]

Like in Meetup it is possible to search for nearby groups using specific category or keyword. This app goes further than Meetup and provides a home for many other kinds of groups. It offers many options for individuals who already belong to a community, such as a college or church, but want to find groups within that specific community. For example, it can have groups affiliated with the Lappeenranta University of Technology. A student of LUT would have an easy tool to find events of his/her university. One of the disadvantages is the pricing plans. It has a free account but it allows to create maximum 2 member lists with maximum 50 members, which is not suitable for some events. They have different plans. The most popular one costs \$19.99 /month. Another drawback is that like in other apps there is no special filters for hobby games. Overall, this is one of the best apps, allowing people to meet by interests. Figure 8 shows the main page of Groupspaces.



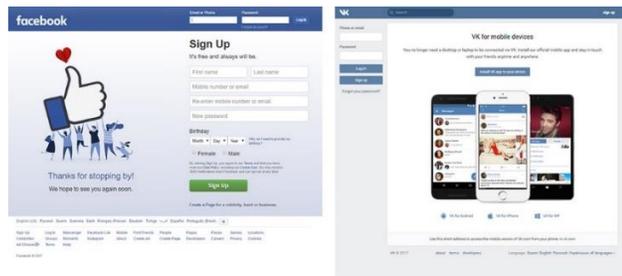
**Figure 8.** Groupspaces

**Facebook** [<https://www.facebook.com/>] & **VK** [<https://vk.com/>]

Talking about services to connect people by the interest it is worth mentioning 2 social networks that a lot of people use actively to create events. Facebook is the biggest social network in the world, having about 1.8 billion users. VK is the largest European social network, based in St. Petersburg, having about 410 million users.

These social networks are primarily aimed at people that already know each other. However, they both have specific features, allowing users to create events and to participate in it. The biggest drawback is that there is no any filters or categories at all. There is no possibility to search for an upcoming event, which is a big drawback. The advantage of this service is a big auditory, and it is very likely that almost all of the person's friends are registered there and will receive an invitation.

Using these services is comfortable to create events with people that you already know, but in any other case, it will be way less comfortable than other services. Figure 9 illustrates the screenshot of the main pages of Facebook and VK.



**Figure 9.** Facebook & VK

Overall, there are many different services allowing users to meet each other by interest. Each of them has some strong features and some drawbacks. Table 5 provides a comparative analysis of these services for some important features.

Also, there are no event organizing services, created especially for hobby games, so none of these services has specific filters for hobby games events.

**Table 5.** Comparing event organizing service

Characteristics	WITHE	Meetme	Meetup	Groupspaces	Meetin	Smacktive	Facebook & VK
<b>Specific filters</b>	+	+	+	+	-	-	-
<b>Categories</b>	-	-	+	+	-	+	-
<b>Fully free</b>	+	+	+	-	+	+	+
<b>Possibility to create event</b>	+	-	+	+	+	+	+
<b>Possibility to attend event</b>	+	-	+	+	+	+	+
<b>Member list management</b>	-	-	+	+	-	-	+
<b>Stability</b>	-	+	+	+	+	+	+
<b>Usability design</b>	+	-	+	+	-	+	+

### 3. USER-FRIENDLY WEB SERVICE FOR HOBBY GAMES EVENT ORGANIZATION

This section provides information about each step of creating the web-service, from determining the requirements to its implementation.

#### 3.1. Requirements

In order to make a complete picture of the service functionality, the questionnaire was made.

##### *The questionnaire*

The web service, made for the master thesis should allow members to find and join groups unified by a common interest of playing hobby games. The idea is that organizer creates an event explaining what this event is about and the user decides whether he/she attends it or not. The questionnaire is made for users of this service, to understand what features would they like to see in it to comfortably use it and for organizers to understand what features do they need to create events. The potential participants of the service are young people. They must be at least 18 years old to be free to decide to go for the events without parent's permission. More probably they are students because they have more free time than working people. The service is focused on Russian students and the participants of this survey are Russian students aged between 21 to 24 years old.

The screenshots of questionnaire with the statistics of answers are located in the Appendix A on the Figures A – 1 and A – 2 provide the screenshots of the questionnaire with the statistics of answers.

##### *Analyzing questionnaire results.*

Looking on the answers it is clearly seen that for the majority of people, choosing the hobby games events it is important to have the location, type of the game and exact date and time when the event happens. These answers got 71.4%, 85.7% and 71.4% respectively. Also, most of the people (85.7%) voted for using google maps for looking for the nearby events and almost everyone (95.2%) voted for using keywords searching for the event. Answering on the question what information would give the complete picture of the event 90.5% have chosen date, time and location. 61.9% also added the event fee and type of hobby game. Limit of people was

important for just 38.1% and organizer for 28.6%. Only 4.8% have chosen icon. Analyzing this statistics it is possible to assume that the most important fields, that events should have are Date and Time, Location, Fee and Type of hobby games events. Talking about filters to search for the event, 85.7% of people would use the “type of the game”, 71.4% would input the exact name of hobby game and 38.1% would use location and keywords to narrow down the search results. 85.7 of people voted that they would like to have report system to inform administration if they would not like something. Organizing the event, most of the people (66.7%) would definitely like to see people, registered for the events, 14.3% responded maybe. 76.2% of people would definitely like to comment on the event and see comments if they organizing it, 19% said maybe. About 62% decided that RSVP (a reply, whether a person accepts, declines, interested in the event) is important, 33.3% chosed maybe option. Finally, 61.9% of people said that they would like to have the end date of registration organizing the event, 28.6% responded maybe. This way if they organize event and want to set a deadline after which users will not be able to register for the event, they will have this possibility.

### ***Final requirements***

Taking into account features that existing services have, review of the articles, and answers to the questionnaire the final requirements for the system were made.

The event organizer is one of the key figures of the system because he/she is the one who organizes the event and makes it possible for people to meet each other. However, there is no need to create a special account for event organizer, because at the same time he/she might want to attend some other event without having to create another account for this. Instead of it, any user can be an organizer. To do this he/she just has to create an event. Anyone who creates an event automatically becomes an event organizer. This way users have the possibility to organize one event and to be an attendee in the other.

To organize an event the system must provide the following features: an event title, start and end date of the event, description, keywords, type of hobby game event (hobby game types will be created, based on “Board games classification” chapter 2), location, contact details, fee and limit of users. Also, there should be an option to allow organizers to put an end date of registration: the time and date when registration for the event stops. Also, the organizer has to have the possibility to see people, registered for the event and RSVP.

For event attendees, the system must provide comfortable search function of the events using keywords with the possibility of adding filters, such as event dates, region, and type of hobby game to narrow down interested results. Users also have to be able to comment on the event and report if they find something inappropriate. Also, the system must allow them to see events on the map. Table 6 and Table 7 present all the features that systems should have. Table 6 shows features for event organizers and Table 7 shows features for event attendees.

**Table 6.** Features for event organizers

Features for event organizers	Obligatory	Recommended
Event title	X	
Start and end date	X	
Description	X	
Keywords	X	
Type of hobby game event	X	
Location	X	
Contact details		X
Fee		X
Limit of users	X	
End date of registration		X
See people registered for the event		X
RSVP	X	

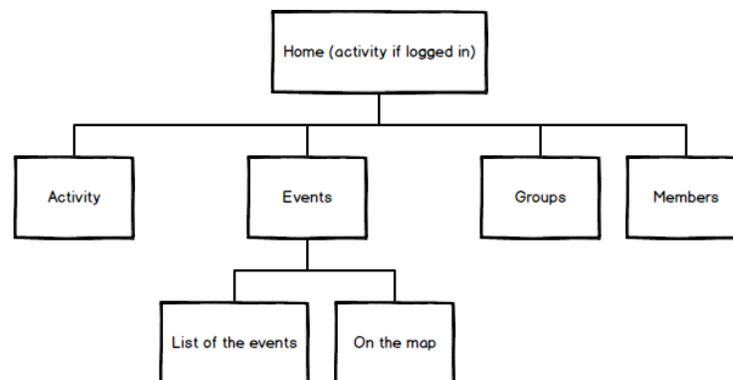
**Table 7.** Features for event attendees

Features for event attendees	Obligatory	Recommended
Search field with keyword	X	
Search filters (event dates)	X	
Search filters (type of hobby game)	X	
Search filters (region)	X	
Possibility to comment on the event		X
Report button	X	
Possibility to look for the interested event on google map		X

### 3.2. Application design

#### *Designing an application structure*

When creating a web application structure it is important to keep in mind that users will not always start the site navigation with the main page. Search engines very often lead to a second or even third page of website structure. This way it is vital to make possible for the user to get to the main page, no matter where he/she starts. Moreover, it is important for the usability. The level of a page in a web service is defined by the number of clicks, the user needs to do in order to get to the wanted page from the main page. It is very important to make it as less as possible because the user will be frustrated if he/she would have to navigate through a lot of nested menus. Figure 10 presents the site map of the thesis project.



**Figure 10.** Service structure

#### *The site screens*

This section contains screens of the developing prototype. All screens were made using Balsamiq Mockups application [<https://balsamiq.com/products/mockups/>]. In this chapter only one of the screens presented, all the other screenshots are located in Appendix B.

The main menu consists of four links: activity, events, groups and service members. The very first page for not registered users is site registration, shown on the Figure 11. It requires from user to input name, address, username, password and repeat password. After that, a user should push register button and confirm registration on the email.

**Figure 11.** Register page prototype

The first link in the web-service menu is activity (Appendix B, Figure B – 1). It gives users picture of the latest news and has two tabs. The first one provides information of user activity. The second tab shows user his/her friends’ activity.

Clicking on the events, user gets to the event list (Appendix B, Figure B – 2), where he/she can see all upcoming events. It is possible to narrow down the search results by inputting the key phrase in the search of the events.

The user will have a possibility to click on “advanced search” button. After that he/she should be able to choose the period of time when does he/she want to find interesting hobby game event, region and game type. Game type will consist of the following categories: Adventure games, Board games, Card games, Dice games, Paper and pencil games, Role-playing games, Strategy games and Tile-based games. Figure 16 shows The screenshot of advanced settings is demonstrated in the Appendix B, Figure B – 3.

If a user just wants to find interesting board game on a map, it is possible to do that clicking on the tab “on the map”, where he/she can find events near his/her location (Appendix B, Figure B – 4). Clicking on any event person can see the detailed information about it and have a possibility to register for it. Figure B – 4 in the Appendix B shows the image of the screen prototype “events on map”.

Figure B – 5 in Appendix B illustrates an example of event screen. On the left side it has information about this event and on the right, it has a logo if the organizer has uploaded it. Below the main information, there is a button RSVP that allows users to register for the event. Also, there is text area where users can comment on the event.

Every user can become an organizer of hobby game event, clicking on the “New event” button. Then it will lead him/her to the screen with four tabs (Appendix B, Figure B – 6): profile, location, registration, and extra. First of all, he/she has to input start and end date of hobby game event. On the profile, tab organizer is required to input annotation of hobby games event, full description, keywords and event icon. Also, he/she can choose who can see the event: public (everyone on the web can see that), only logged in users, friends or private (nobody can see the event).

On the second tab (Appendix B, Figure B – 7), it is possible to choose the location of the event and organizer contacts. An organizer can choose the venue: a place where the event takes place, location, contact details, and website. After clicking on the location field a window with google map should open, where organizer inputs address and save this place on the map. After that, an event will be possible to find on the map tab for the user.

The third tab (Appendix B, Figure B – 8) is “registration”. On this tab, an organizer should input event fee (the money, an attendee should pay to participate in the event), the quantity of attendees (how many people can register for the event). Also, it is possible to input a person or organization who organizes an event and end date of registration (the date after which the registration for the event is over).

One of the key features of many social networks is gathering people into groups. EBSNs should guide the same principles. Groups are an important part to keep people together and meet in real life on a constant basis. That is why the third link in the application menu is groups. The main screen of groups’ section is illustrated on the Figure B – 9 in Appendix B. It provides the list of groups with filters, which a person can activate, clicking on the relevant tab. On the sidebar, there are some other filters, such as all groups, my groups, and groups I own.

### *Main search on the website*

Throughout the whole service, there is a search input where a user can search for interested key phrases throughout the whole site and exclamation mark: the button any user can push anywhere on the site to report about something.

### *Possibility to report*

One of the important things for users is a possibility to report about something. On the right side of the screen, there will be a button, clicking on which a modal window will open asking if there is anything the user wants to report about. The modal window, shown on the Figure B – 10 in Appendix B, will contain three fields. First one is Title that will give an administrator idea what is an issue about. Second is the location of reported item: the link to the page which user finds inappropriate or found some technical issues on it. It fills out automatically with the link of the page, where the user clicked the report button. Last text area is the detailed explanation of why the user has decided to report it.

## **3.3. Prototype**

This section describes the implementation of the prototype of the system. Section 3.3.1 gives the technical overview of the system. The software development process of this project used the waterfall model. It started with a set of requirements as described in chapter 3.1. The overall system and software were designed based on these requirements. The system was then implemented and each program or part of the system was individually tested. The system was then handed over to the users for usability testing. The designing part was described in a previous chapter.

### *Technical details*

To create an application Elgg framework was chosen [<https://elgg.org/>]. It is open source software that has some features, needed for developing the system. One of the important reasons to choose Elgg is its modular structure. It can have a lot of modules, enhancing some functionality or service appearance without changing the core of the framework. This way it becomes easy to update the app core when the new version is released and add new functionality

without being afraid of breaking the system. It makes Elgg highly customizable and on the stable.

It was decided to get hosting with a domain name. There were several reasons for this. First of all, an application needs testing in a real environment. Also, after an application was developed on the local computer, it might be given to several people for testing. This way the service must be put on some external server, connected to the internet. Looking for the hosting companies and their ratings [<http://www.hostingadvice.com/reviews/>] the three hosting providers were considered: Bluehost [<http://ru.bluehost.com/>], Siteground [<https://www.siteground.com/>] and A2 hosting [<https://www.a2hosting.com/>]. Among them, it is decided to use Siteground, for the reasons that it uses SSD servers, instead of HDD ones, which should work faster and also in author's opinion Siteground has better customer service.

Some social networks, messengers, and browsers do not trust unknown links with strange automatically generated domain names, preventing users from getting on the website. The domain name, purchased for the service is "hobbygamez.com".

When creating a web service, it is really important to take into account that its server's location should be closer to potential users in order to provide a faster connection. It was decided to choose Amsterdam because it is the second Internet Exchange Point by size in the world [[https://en.wikipedia.org/wiki/List\\_of\\_Internet\\_exchange\\_points\\_by\\_size](https://en.wikipedia.org/wiki/List_of_Internet_exchange_points_by_size)] that will guarantee more stable work of the system.

### ***Overall structure***

At the highest level, the system contains:

- A source directory (with the source files and development infrastructure),
- Data directory (which contains all the data, the system has to save, such as uploaded files, images, etc.).
- index.html (the home page which enables the users to start using an application).

### ***Design decisions***

It was decided to create a web interface because it is a familiar interface for everybody. One of the other benefits is that the web application is cross-platform, which means that it will easily

open on any device, connected to the internet. Creating an application for each platform is a longer and more expensive process, considering the fact that for the major auditory at least 3 operational systems should be taken into account: Android and iOS for mobile devices and Windows for desktops. Moreover, not everyone would like to spend their time installing an application, preferring instead of it to go to the website. Modern browsers are secure for users and prevent them from getting most of the viruses by accident unless they install something themselves from an unknown source. This way people feel safer using the web application. The design of the screens was created according to the requirements in the previous chapter. Creating a service it is also important to choose the necessary color theme because it may affect the way users will interact with it and as a consequence the usability of the system.

### *Color theme*

Figures 12 – 14 present the questionnaire, made to choose the color theme. 42 respondents took part in the questionnaire. All of them are Russian students aged between 20 to 24 years old. The questionnaire has 2 questions: on the first one people are proposed to choose one of the created beforehand screens, having different main theme colors. If they did not like any of them there was an option: “none of the presented”.

Which of the following screens in your opinion better suits for the web service for organizing hobby game events? \*

Choose the screen number (screen number is located on the left side from each screen's header)

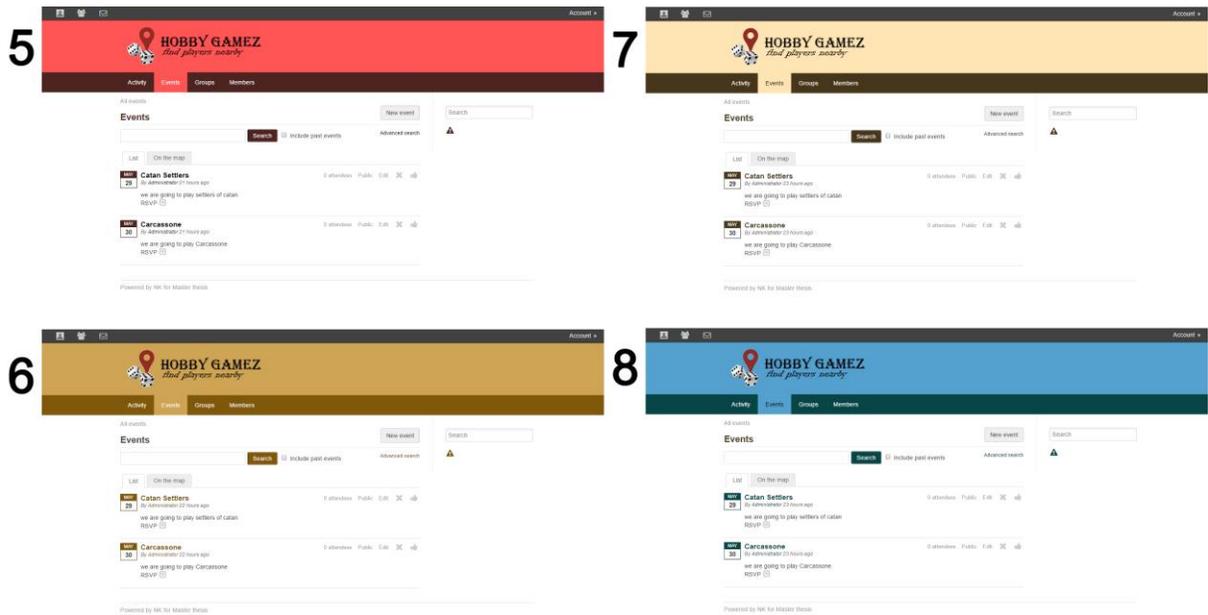
1

2

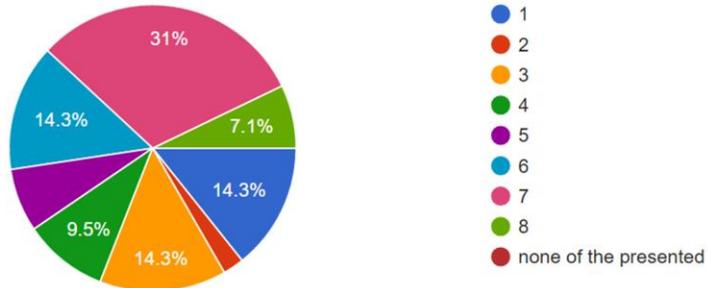
3

4

**Figure 12.** The color theme for the service



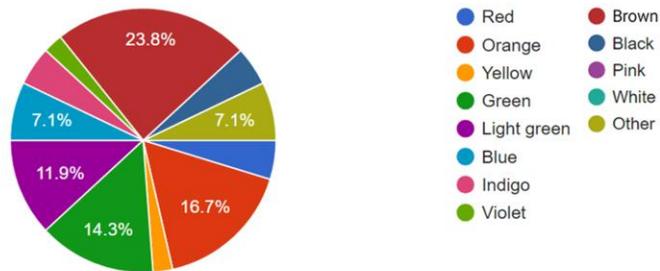
42 responses



**Figure 13.** The color theme for the service. Statistics

Figure illustrates the statistics. Here it is clearly seen that the majority of people, 31% have chosen the 7<sup>th</sup> screen, which has a light brown theme. The 6<sup>th</sup> screen, which has also a brown theme, but a little bit darker, has 14.3%.

The second question (Figure 28) is made to understand which color people associate most with hobby games. The respondents were proposed to choose one of the 12 given colors with miniatures, which on their opinion better fits for the service-oriented on hobby games. If there was no wanted color, they had an option to write it down.



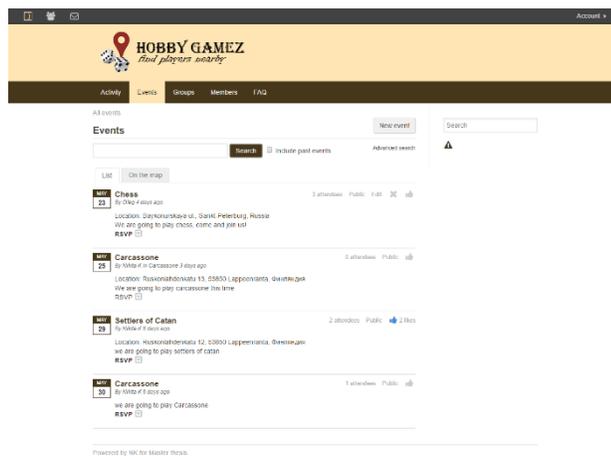
**Figure 14.** Associated colors statistics

The statistics (Figures 12 – 14) show that the majority of people, 23.8% have chosen brown color, as the most associated with hobby games. One person has written light brown. To sum up there is no unanimity in opinions when it comes to choosing the theme color, however the number of people which associate hobby games with brown color is twice bigger than any other color. The 7<sup>th</sup> screen from the first question better suits for the web service, the majority of students has chosen it and it has the light brown theme, which, according to the statistics, is well associated with hobby games.

## Screenshots

This section provides the screenshots of the application, developed for master thesis. Figure illustrates one of the screenshots of the application, the screenshots of other screens are located in the Appendix C. The application is tested and optimized for mobile devices. Screenshots for smartphones and tablets are provided in the Appendix C. The application is available on the following link: <https://hobbygamez.com/>.

The main link in the main menu is Events (Figure 15). It shows all upcoming events on it, if a person wants to see some previous events, he/she can click on “include previous events” button. The user can search for the interesting event in the search field.



**Figure 15.** Events

The user can click on “Advanced settings” button to open advanced settings (Figure C – 1, Appendix C). There he/she will be able to choose dates, when do events occur, the region, where the event takes place and type of hobby game event. Also, the user can narrow down the results, to ones he/she is attending, his/her friends are attending or to the events that user has created.

Users have a possibility to see all the events on the map, clicking on the tab “on the map”. After that they will see the map with pins (Figure C – 2, Appendix C), showing all the upcoming events. There are 3 possible colors of pins: yellow pins show events, that user created, blue pins show events that user attends and red pins show all other events. Clicking on the pin, the user can see a short description of the event and register for it (RSVP button). Figure 34 shows events on map.

Figure C – 3 in Appendix C illustrates the event page. This page provides information about chosen event such as venue (the exact spot where the event takes place, ex. Number of office and floor), location, when does even start and end, organizer, spots left, description, contact details, fee, region and type of the event. It is also possible to upload some files if needed. In the event list on Picture and on the event description page Picture it is seen the RSVP button under the information about the event. The user can click on it and choose “attending” to reserve the spot, after that he will appear in event attendees list, below RSVP button on a Picture and the number of spots left in event description will decrease by one. The user can also choose “interested”, “presenting” or “organizing” in RSVP list if the event creator has allowed that options. Under the event attendees there are all user’s comments on this event and bellow comments there is a text area to write a new comment. Users have also a possibility to like the event or other user’s comments.

Activity page (Figure C – 4, Appendix C) shows all existing news user has. It has 2 tabs, first one is user’s news, second shows his/her friend’s news. On the right side, there is a filter button which allows the user to narrow down the results. There are such options as show all, show users, show comments, discussion topics, events, and groups.

The members link in the main menu leads to the list of the site users (Figure C – 5, Appendix C). The order may be changed according to some filters, such as newest, alphabetical, popular users or users online. It is also possible to search for some user by his/her name in the search field in a sidebar. Members section also has 2 tabs: map of members and live map.

Map of members, illustrated on Figure C – 6 in Appendix C, contains the map with site user’s avatars on it. It helps people to find the company easier in their region. The information about user’s location is taken from their account if they have filled the location field. Users may also see the interested members in the location, they need. For this, they must input the location where do they want to search for the site members, radius, and keyword.

Sometimes, some people may want to show other users their location at the moment. An application asks them for the permission to use their geolocation, if the user accepts it he/she will appear on a live map and other users will be able to see where exactly he/she is at the moment. Figure C – 7 in Appendix C shows a screenshot of the live map with users on it.

The service provides a possibility to create the groups. The main purpose of the groups is to connect people having the common interests. For instance, people may like to meet and play some board game on a weekly basis. Instead of just creating an event each week, they can organize a group, where they can make their group events and participate in discussions. The Groups section (Figure C – 8, Appendix C) has a list of the groups. The order of the groups may also be changed according to some filters, such as newest, alphabetical, popular or featured. It is also possible to see the latest discussions in the groups.

The map of groups tab contains a map with all groups that have provided their location (Figure C – 9, Appendix C). Clicking on the miniature of the group it is possible to see the short description of the group. Users may also see the interested groups in the location, they need. For this, they must input the location where do they want to search for the interesting groups, radius, and keyword.

The page of a particular group (Figure C – 10, Appendix C) consists of the main information of group (on the top of a screenshot), group discussions, group activity, group events and group members on the map. Every part of the group is customizable and it is possible to remove some section if needed by the group administrator.

If users have a necessity to report about something they have a button with an exclamation mark on it throughout the whole site. They can report a bug, abusing, inappropriate content or anything that, in their opinion, is needed to be reported. Report modal window (Figure C – 11, Appendix C) consists of 3 input fields. First one is a title of the report that should give the service administrator an idea of the issue. The second field is the location of the reported item. Users should input the link here, to make it possible to find the reported item. This field fills out automatically with the page where the report button was pressed, but a user can change it anytime if needed. The third field is the text of the report. Here a user must explain in detail an issue. After the 3 fields are filled, the user may press “report this” to send the report (after that the site administrator will be able to see the report) or “Cancel” button to delete the report without sending it.

## 4. TESTING AND EVALUATION

This section contains information about service usability testing: comparative analysis with other services, literature review on this topic and final usability testing.

### 4.1. Comparative analysis

Table 8 provides comparison of different characteristics of the developed service with available services, presented in the in the 2<sup>nd</sup> chapter, literature review, subchapter “available solutions”. Overall, the service, developed for master thesis has all the features, necessary for organizing and attending hobby game events. It has specific filters, there is a possibility to create and attend an event. It has member list management. It works stable and has tested design. Finally, it is completely free to use. It actually does not have categories, because it is focused only on hobby games and its goal is to be as comfortable as possible for this purpose.

**Table 8.** Comparative analysis of services

Characteristics	WITHME	Meetme	Meetup	Groupspaces	Meetin	Smacktive	Facebook & VK	Hobbygamez (thesis project)
Specific filters	+	+	+	+	-	-	-	+
Categories	-	-	+	+	-	+	-	-
Fully free	+	+	+	-	+	+	+	+
Possibility to create event	+	-	+	+	+	+	+	+
Possibility to attend event	+	-	+	+	+	+	+	+
Member list management	-	-	+	+	-	-	+	+
Stability	-	+	+	+	+	+	+	+
Usability design	-	+	+	+	-	+	+	+

## 4.2. User experience testing

One of the main attributes of the service for good user experience is its usability, how easy and intuitive is the system to use. In ISO 9241–11 usability is defined as the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. [<https://www.iso.org/standard/16883.html>]

The usability testing is any experiment, directed to measurement of quality of the interface or search of specific problems in it.

Testing allows:

- To understand, how badly or well the interface works. It can encourage to improve it, or if it is already good enough, to calm down.
- To compare the quality of old and new interfaces and change it or implement if needed.
- To find and identify problematic fragments of the interface.

At the same time the usability testing cannot make a good product of a bad one, it only does a product better.

The main indicators of service efficiency are the speed of work of the user, speed of training and quantity of human mistakes.

### *How to make usability testing*

The number of the measured characteristics in the specific test can be quite high, but they often can be viewed as 5 basic characteristics: the speed of user's work, number of mistakes, the learnability of the system (how easy it is to learn), the user's satisfaction of the system and retention of learned skills.

There are two ways to measure user's satisfaction. First one is just asking a respondent how does he/she like the system. Second is observing the user's reactions, while he/she is interacting with the system. The second method is very relative, it becomes valuable only if the aim is to compare a new interface with the old one or with competitor's interface.

There are five things, necessary for good UX testing:

- Respondents
- Testing method
- Test scenarios
- Workplace for the test and the method of recording of material
- The checked test

### ***Respondents***

First, it is vital to define the general requirements to respondents, and then to select respondents from the target audience, using the created requirements.

### ***How many users to test***

In 1992 Robert Virzi has assumed that for the test there are enough five respondents. [36] A year after this research was accepted by Jacob Nielsen and Thomas Landauer in the article: “A mathematical model of the finding of usability problems”, in which they claimed that 5 respondents are enough to catch 70% of problems and 8 are necessary to raise effectiveness to 85% [37].

However in the articles “Why and when five test users aren’t enough”[38] and “Eight is Not Enough” [39] authors critique this assumption, expressing concern that many usability problems may be missed with only 5 or 8 participants of UX testing.

In the article “The "Magic Number 5": Is It Enough for Web Testing?”[40] authors argue with this statement. There are 6 authors, each of them has a different opinion on this topic. It is worth mentioning that one of the authors of this article is Jacob Nielsen. In his opinion, the only situation, where more than 5 persons needed, would be a design with below-average usability personnel and bad project management.

Gilbert Cockton [40] points out that usability is about risk management. Risks diminish as we test more users. The break even on cost-benefit is product specific. For some projects, one user is enough, for others, even 100 will be too few.

Denis Wixon [40] says that the number of participants in usability tests is the wrong problem to study. He explains that the aim of most commercial projects is to develop a product in the

shortest time and at the lowest possible cost. Design and usability teams should fix interface problems as fast as possible, continuing testing and fixing until time runs out or a usability metric is achieved.

Carol Barnum [40] states that 5 people are enough for web testing, only if the following rules are followed:

- The original discount model for testing is followed
- The results of testing are understood and clearly communicated
- There is close cooperation between the Client/Sponsor and the test team
- The results are used for diagnostic purposes and Team learning
- When the expected result is insight, not validation.

Jared Spool [40] sums up the paper saying that design teams are limited by both time and resources, so they'll test as many users as they can within their constraints. They'll be done when they are done. For whatever number of participants they choose, this number of users will always be better than zero.

Laura Faulkner in the article “Beyond the five-user assumption: Benefits of increased sample sizes in usability testing” [41] also doubts that 5 users are always enough for UX testing. She says that depends on different factors. The only clear answer to valid usability testing is that the test users must be representative of the target population.

In the article [42] H. Kanis present the same point of view as Denis Wixon, saying that this is out of the question, the number of participants in a testing will always be limited, because of time and budget constraints. The author of the article [43] also says that when inviting users to participate in a user test, the aim is to find the most design flaws in a user interface, at the lowest cost. The question of how many users is enough for the UX testing has been studied since the nineties and has not found a final answer yet.

### ***Usability testing methods***

In the article [44] Jennifer Romano proposes four main methods of UX testing:

- Concurrent think aloud

- Retrospective Think Aloud
- Concurrent Probing
- Retrospective Probing

In concurrent think aloud the goal is to encourage the person to keep talking while interacting with product. This method is perfect to get real-time feedback and emotional responses. The disadvantage of this method is that, it is quite hard for a person to test a program and talk. That is why it can impact negatively on the time on task and accuracy.

In retrospective think aloud person explains each step of interaction with the program, after the session is completed. The respondent performs test tasks, his actions are analyzed that allows to find problems, and to measure ergonomic characteristics of the interface. Unlike in previous method, in retrospective think aloud person, does not need to do 2 tasks at a time, which will impact positively on his/her accuracy. This method is perfect to get objective usability metrics, such as time on tasks.

In concurrent probing after each action of the respondent the experimenter asks him/her why the respondent acts quite so; on each screen, the experimenter asks, how exactly the respondent understands assignment and functions of this screen. This method is closer to the focused interview than to actually testing, the method can be used even without test scenarios. The only interface for discussion is needed. The only problem of the active interference is that it is impossible to get any measurements. However, the volume of the obtained qualitative data is quite big.

In retrospective probing tester waits for the session to be completed and after that asks questions. Researches often use this method together with one of previous ones. For example, when a person makes comments, tester makes notes and follows up with additional questions.

### ***Test task and scenarios.***

One of the important parts of usability testing is to define the necessary tasks to test. For the master thesis project it is decided to test the task, users do with the product. Once the tasks are made, it is important to think how to present those tasks to the participants, or in other words to create test scenarios. Scenarios are made to tell users what users are supposed to do during the

test. The scenario makes the task more realistic, in a scenario you give the goal to the user, without giving him/her exact steps to do it. The point of the test is to see if the typical user will figure out the steps that this product requires [45]. The good scenario must be short and unambiguous so that all participants would understand it.

### ***Usability test implementation***

It was decided to use concurrent probing for usability test. Concurrent think aloud may distract user from the tasks even when it is not necessary, while in concurrent probing tester can ask questions only when user performs unexpected actions. Retrospective think aloud and probing, in authors opinion also do not fit. Considering the fact that there are 12 scenarios, user has to perform, it is very possible that he/she may forget some things and actions after the test is done. This way concurrent probing can give maximum qualitative data. User satisfaction will be measured afterwards with the questionnaire. There were 10 people participating in the concurrent probing and filling up the questionnaire to test the user's satisfaction afterwards. All of them are students from 22 to 24 years old.

The following tasks were made for user experience testing:

- To check registration
- To change profile settings
- To find interested event
- To see the information of the event
- To register for the event
- To find nearby events
- To find a group, related to the event
- To find a member, that likes to play some hobby game
- To report about something

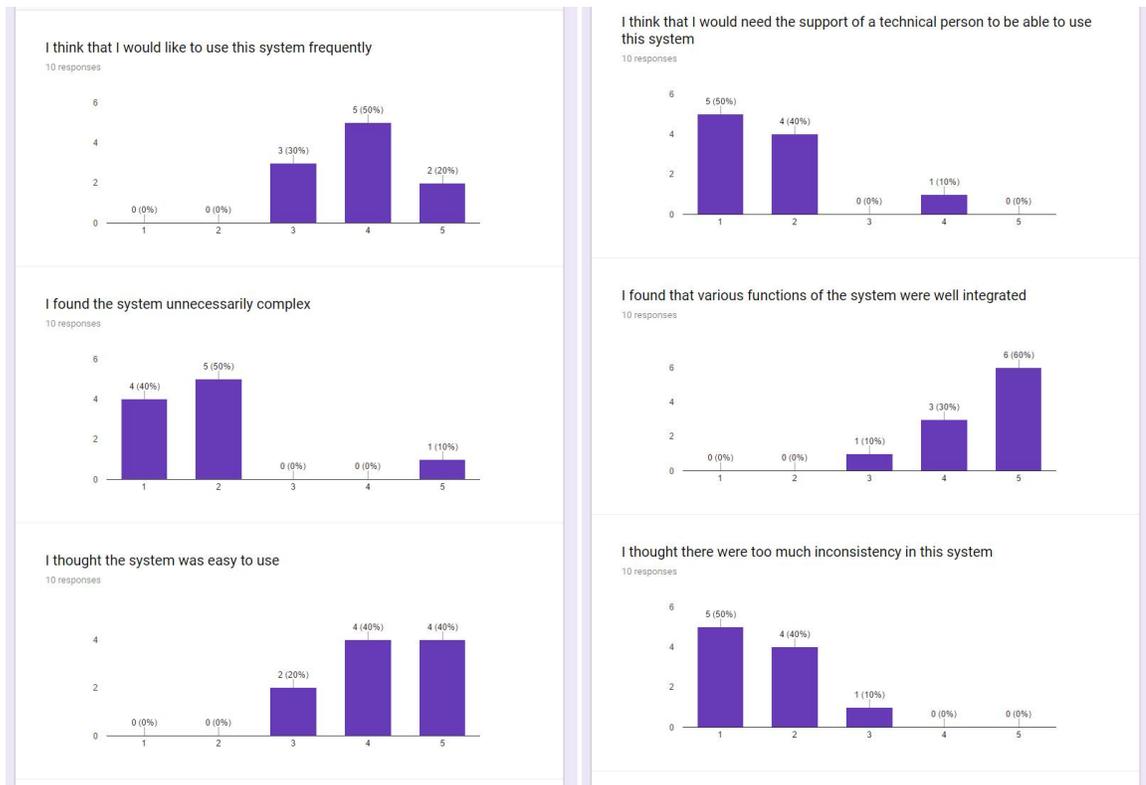
The following scenarios were proposed to the users to test the service:

1. Register in the service and then log in.
2. Change your avatar (profile picture)

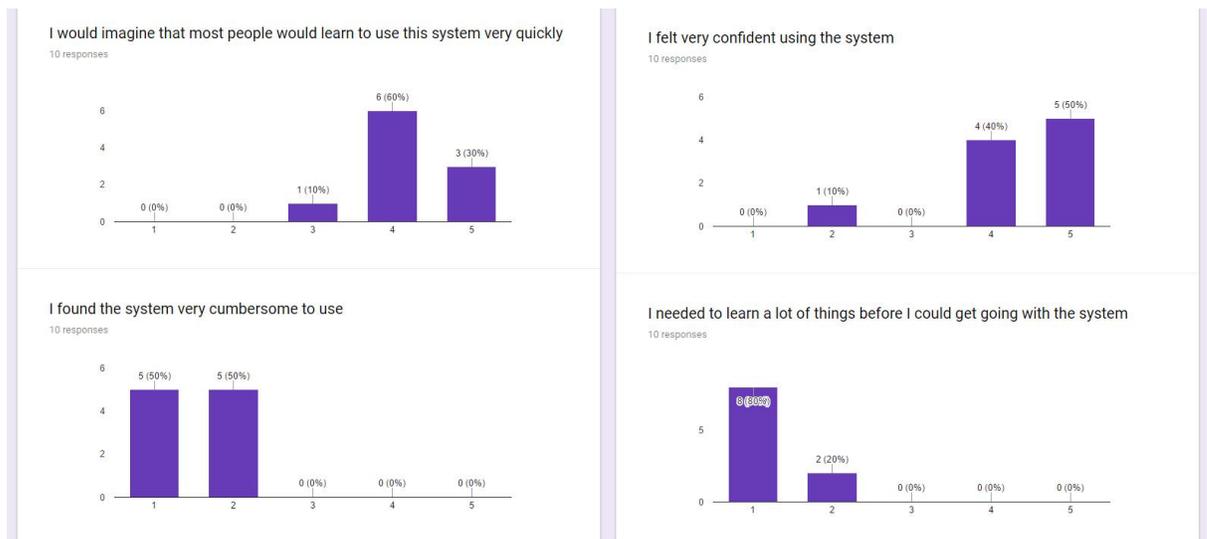
3. Briefly fill up your profile
4. You go to Saint Petersburg for a couple of days between 25th and 30th of May and you want to play some hobby game. You are a fan of Settlers of Catan that is why you want to find some events related to Settlers of Catan. Unfortunately, there are too many events, so you need to filter them to the necessary ones and find among them the one that fits to you.
5. You are visiting a Moscow in august and you want to play some role play games there. Find all relevant events and register for one of them.
6. You are visiting Rostov-on-Don for the summer and you want to find some interesting card game events there. Input necessary filters to find relevant events and look at them on the map. Open one of these events, find Organizer's name in the description.
7. You are organizing an event to play Carcassonne 26th of May in Saint Petersburg, so you need to create an event to find people to play with. This game is for four people, so not more than 4 people needed for this event. You are going to organize this at your home. Your home address is Bogatirskiy prospect, 2, ap. 34. Just let people know that you are living on the third floor, so it would be easier for them to find you. Create an event providing all necessary information for users to find you.
8. Find people in your living district to play with. Add one of them to friends and write him/her a message.
9. Today you are in Finland in Lappeenranta and right now you want to find someone to play any board game with you. Find some people near you, say their names.
10. You want to regularly meet people and play some hobby game. You are living in Vyborg. Find some group of people nearby and join this group.
11. Create a group about Civilization game to meet on a weekly basis. You are living in Saint Petersburg and the address of the place you want to play is Nevskiy prospect, 84. You should allow any user to join this group, participate in discussions and create their own events related to this game.
12. You do not like some user's account and you find information on it abusive (for example this user smokes on a photo). Report him/her.

Overall everyone managed to complete these scenarios without any problems. Some things could be done several ways and people have completed it one way or another. During the test, however, several issues were found and fixed. For instance, “New event” and “New group” buttons were difficult to find due to it’s faded colors, so it was slightly changed. Option RSVP for register was not understood by many people that is why it was renamed to “register”.

To understand the user’s satisfaction of the service, they were given the questionnaire. It was decided to use SUS (The System Usability Scale) questionnaire, because it is short and is easy to understand. Considering, that the majority of issues was identified during the concurrent probing, in author’s opinion it was the best choice. The SUS questionnaire has 10 questions, each of them has Likert scale, from 1 (strongly disagree) to 5 (strongly agree). Also it has a quick scoring algorithm, giving extremely reliable overall usability score for the product on scale of 0 to 100. [46]. As was mentioned before there were 10 people, 22-24 years old, participating in the survey, the ones that was tested during the concurrent probing. Figures 16 – 17 present the statistics of this survey.



**Figure 16.** System Usability Scale statistics



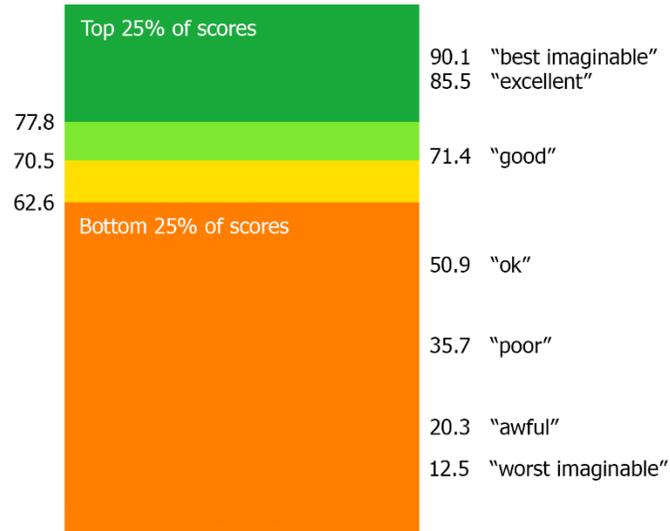
**Figure 17.** System Usability Scale statistics

The scoring of system is counted the following way [47]:

- For each of the odd numbered questions, subtract 1 from the score.
- For each of the even numbered questions, subtract their value from 5.
- Take these new values which you have found, and add up the total score. Then multiply this by 2.5.

The final score for the master thesis was counted the following way. First, the SUS score was counted for each user's response in particular. The scores were 65, 85, 90, 97.5, 82.5, 72.5, 80, 85, 87.5 and 85. Then all these scores were added up and the arithmetic mean was counted, which was 91.5.

According to the [48] based on the research, a SUS score above 68 would be considered above average and anything below 68 is below average. The article [46] provides more detailed interpreting of System usability scale results, illustrated on the Figure 18. According to this graph every service that gets the score between 62.6 and 77.8 is considered to have a good usability, and the score of the master thesis project is even bigger.



**Figure 18.** Interpreting the System Usability Scale results

Overall, the service developed for the project was tested using 2 different techniques: the concurrent probing, to identify the main issues and the questionnaire to test the users' satisfaction of the service. The application has shown very good results in both tests and has proved that it is comfortable to use.

## 5. CONCLUSION

This section gives an overview of the whole thesis, shortly answering all research question, showing risks, that author has faced during the project, the work limitations and possibilities for future research on this topic.

### *How can we design web-services for event organizations?*

The first research question was to understand how to design web services for hobby game event organizations. Answering this question, author had to make literature review of the topic and analyze it. First of all, it was decided to gather articles about event organization in general to understand which things are the most important when organizing the event, what are the main factors that impact user's attendance on the event and what are the rules and patterns for organizing events. Then author has searched the articles on the topic of social networks and in particular, social networks that refer to the topic of this thesis. They are called EBSNs and LBSNs. There are a lot of scientific articles about them. Exploring these articles, author determined the main features, which they should have and main characteristics that differ them from traditional social networks. Event-based social network, developed for the master thesis is made exactly for people who like to play hobby games. Looking at the available solutions and analyzing them, author found out that today there is no good enough service to match people's needs of organizing hobby games events. Some services had usability issues, some of them was not free and some of them had very week functionality for organizing events. Finally, none of these services had specific filters for choosing interested hobby games. In author's opinion, to be comfortable to use, the service must take the best from existing EBSNs, adding missing features, like for instance the filters to search for interested hobby game.

Final step to make the requirements for developing system was to create a questionnaire, asking people what do they want to see in EBSN, oriented on hobby game events. The complete survey with the statistics is located in the Appendix A. Considering that master project service is oriented on Russian auditory, the participants of this survey were Russian students, 21 – 24 years old. Based on the obtained results, literature review and available solutions, final requirements were made. Table 6 and Table 7 in Chapter 3 demonstrate the main features that

hobby games should have, showing which characteristics are obligatory for the system and which are recommended.

Taking in consideration all the requirements, author created the site map, defining, what sections should the service have and prototype the future service, all the steps and mockups are completely described in chapter 3.2 Application design. Then, once the prototypes were ready, the implementation of the service has started. All the steps of service implementation and technical details are described in the chapter 3.3. The final step of creating the service was to choose the color theme. To choose the theme and colors the questionnaire was made. The participants of the questionnaire were Russian students 20 – 24 years old. The whole questionnaire with the statistics is presented on Figures 12 – 15 in chapter 3. In the chapter 3, subchapter “Screenshots” there is the complete description of the main service screens, explaining in detail the features that service has. All explained screens are presented in Appendix C. Screenshots for tablets and mobile devices are presented in Appendices D and E respectively.

***How can we categorize many possibilities in selection an event in a user-friendly manner?***

Answering the second research question, to understand how we can categorize many possibilities in selection an event in a user-friendly manner, author started to look for relevant articles. Unfortunately, there were no any scientific articles on the topic of hobby game classification that is why author had to look for information about it from other trusted sources. There were several types of hobby games classification and author chose one of them that in his opinion was detailed enough, but not too difficult to understand for the user. The final service has the classification of hobby games according equipment used, having 8 options in total: adventure games, board games, card games, dice games, paper and pencil games, role-playing games, strategy games and tile-based games.

***How can we test the user experience?***

Once the service was ready, it should be tested. The third research question was “how can we test the user experience”. To answer this question, the literature review on this topic was made, giving the picture of how to make usability test, how many participants should be and what

methods are used for testing. After that, the testing was made. The section “Usability test implementation” in chapter 4.2 describes all the steps made to implement usability testing, explaining the reason why exactly that methods were used. First part of testing was concurrent probing, after which most of the issues were detected. Finally, the system usability scale questionnaire was made to measure user’s satisfaction of the service. The complete questionnaire with the statistics of answers is shown on the Figures 17 and 18. The answers on SUS (system usability scale) questionnaire were counted according to the formulas described in chapter 4.2 and the final score of 91.5 was got, which according to the statistics, presented on Figure 19 is above average, meaning that the service has a good usability.

In this study it was identified which features the users want in event-based social network, oriented on hobby games events. Based on the literature review, available services and people’s opinions in the questionnaire, final requirements were made. According to the requirements an optimal service was created for people that love to play hobby games, having all the necessary features for them to organize and participate in these events. Then, based on users’ choices in the questionnaire the theme for the service was chosen. After the testing it was identified that this system has good usability and is comfortable to use.

### **5.1. Identified risks**

During the master thesis project, the author has faced several risks. This section gives a quick review about them.

#### ***Planning issues***

The first difficulty was the planning. The reason for this was that project manager, designer, developer, and tester were all the same person. It was difficult to estimate how much time it would take, taking into account that new technologies have been used.

#### ***Risk to exceed time and budget***

There was a problem with server compatibility with a software. As a developer author did not have enough skills to customize a server properly to work with chosen framework. This was a reason why some features did not work. The risk was to exceed the budget if the author would

have to hire an administrator to do that or exceed the time frame because the author would spend some time studying the subject and solving the problem, and it would be hard to estimate how much time would it take. The author had to contact customer service, explaining in detail what does not work and what faults the browser console shows and the problem was solved.

## **5.2. Limitations**

Although the research has reached its aims, there were some slight limitations, considered in this chapter.

### ***Limited generations have been tested.***

This system was tested for students from 20 to 24 years old. However, some age groups might be also interested in this service and the statistics might change.

### ***There is no different categories***

The second limitation is that this system, considering itself as event-based social network does not have any categories. The point for this is that it is made exactly for people who like to play hobby games. It has all necessary filters for this purpose and does not require any categories, because technically there is only one category: hobby games.

### ***It is not possible to download an application***

Presented prototype has only a web version and can be opened from browsers. Users do not have a possibility to download an application in order to save internet traffic.

### ***Application is made for Russian people***

Finally, the project is oriented to Russian community. There is a possibility to make an event everywhere in the world, but there might be some inconvenience. For instance, the service has only Russian cities in region filters, and it might be confusing for international people, when they would not find their regions in the list.

### **5.3. Future work**

While this thesis has demonstrated the potential of efficiently creating web-service for organizing hobby games events, some opportunities for extending the scope of this thesis remain.

#### ***Testing for different age groups***

The project for this master thesis work can be further developed by testing this application for different age groups to figure out if the service is interesting for them and if it is, to identify which features do they want to see there.

#### ***Adapt the application for international audience***

Also, it could be tested with international audience, to find out if there are some nuances in functionality and design of the service that should be taken into account while developing it.

#### ***Make the application completely multiplatform***

The prototype can be developed for mobile platforms, such as iOS, Android and Windows 10. It could help people to save internet traffic.

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APPENDICES

Appendix A: Questionnaire for requirements gathering



Figure A - 1. Questionnaire about functionality for event attendees

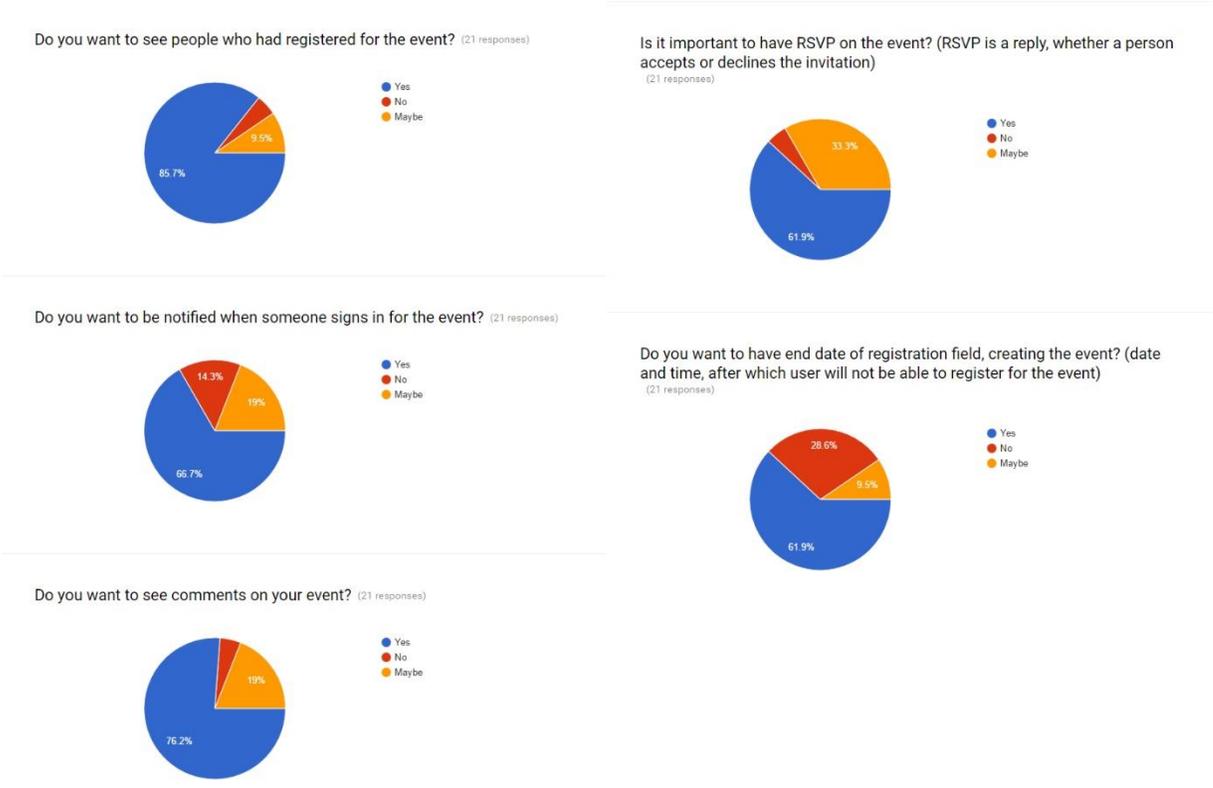


Figure A - 2. Questionnaire about functionality for event organizers

### Appendix B: Screen mockups

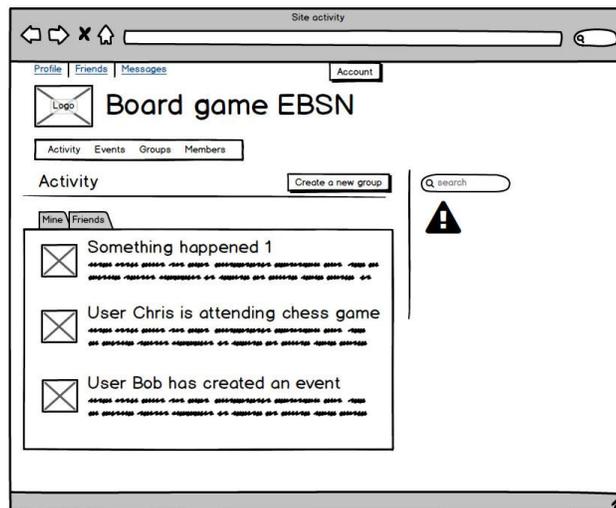


Figure B - 1. Activity page prototype

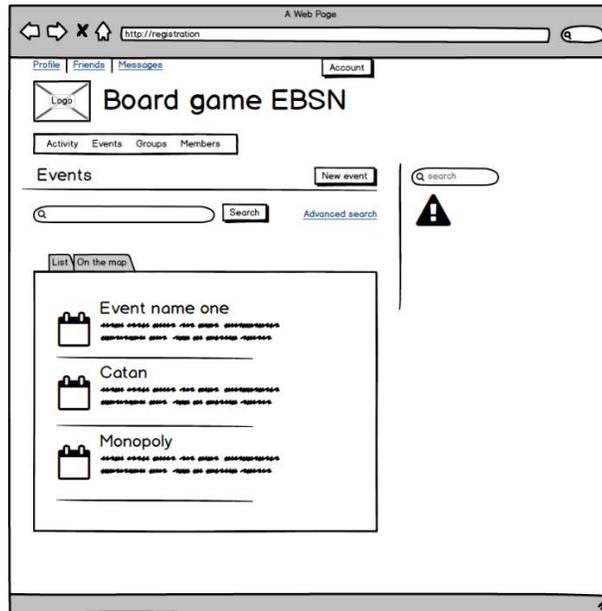


Figure B - 2. Events page prototype

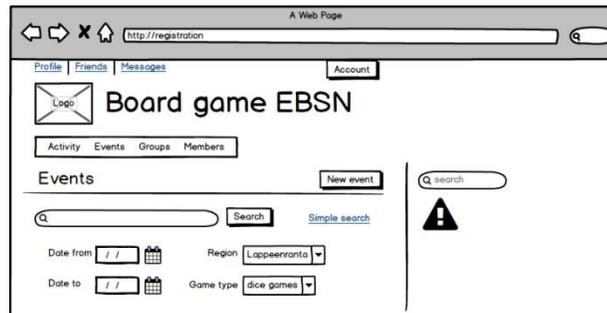


Figure B - 3. Advanced search prototype



Figure B - 4. Events on the map page prototype

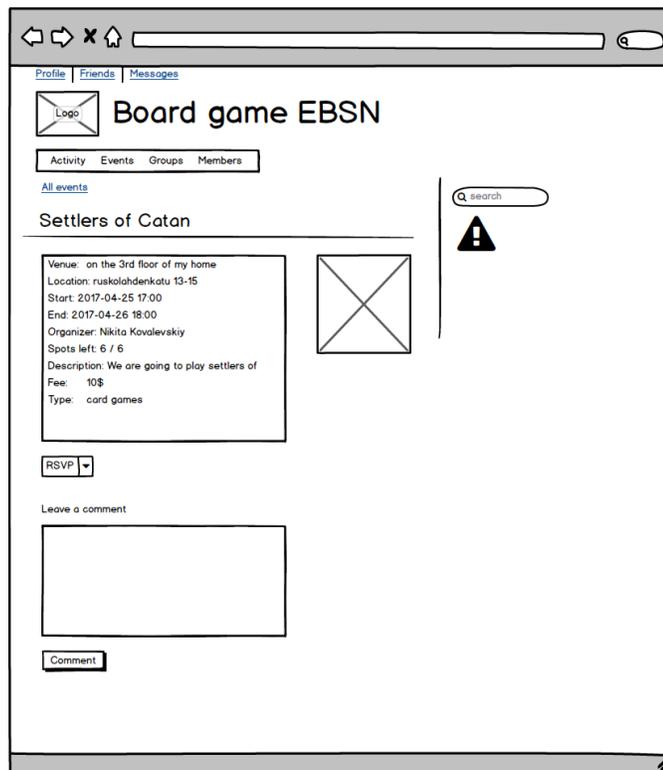


Figure B - 5. Event page prototype

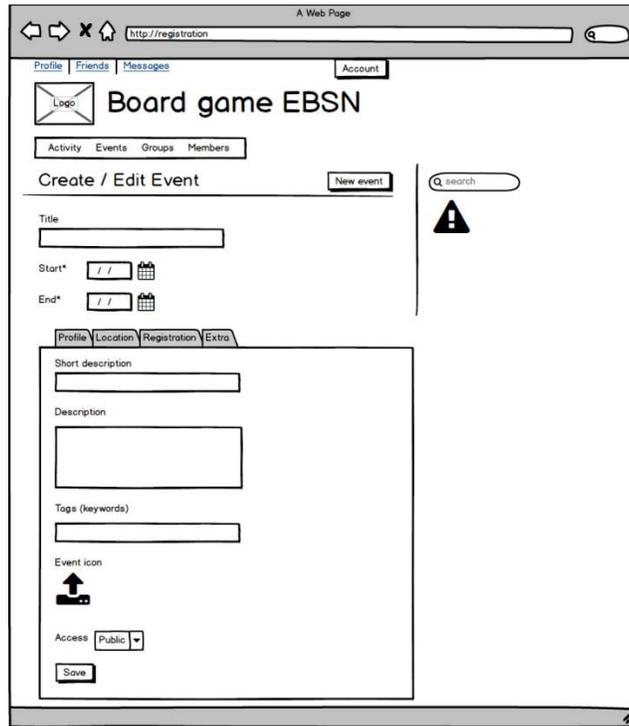


Figure B - 6. Create event page prototype

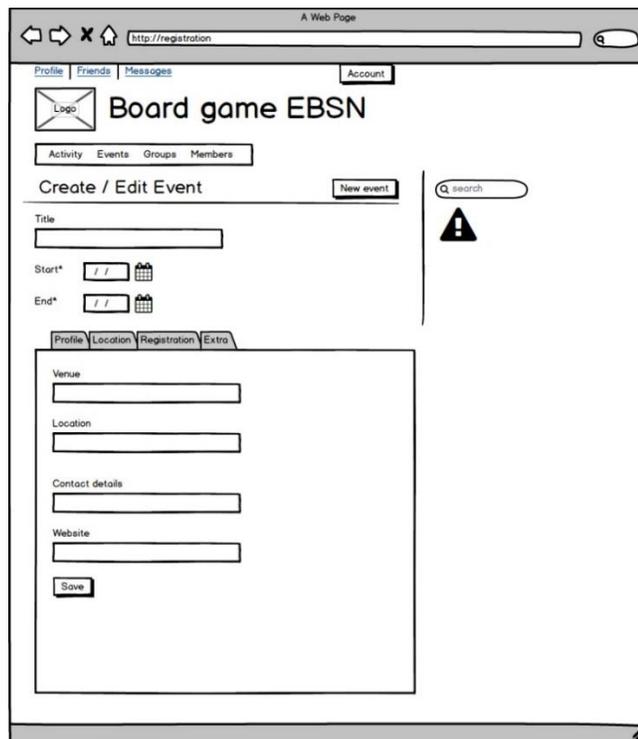


Figure B - 7. Create event page prototype

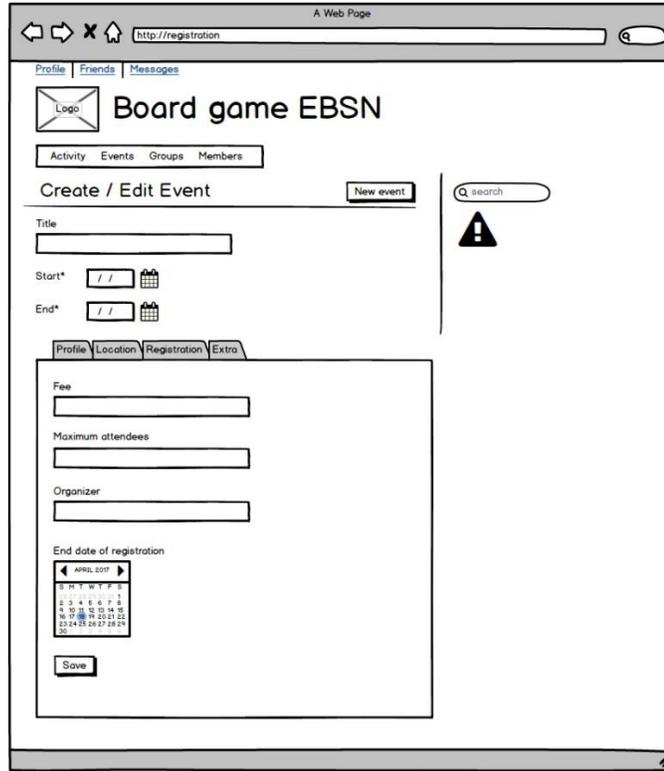


Figure B - 8. Create event page prototype

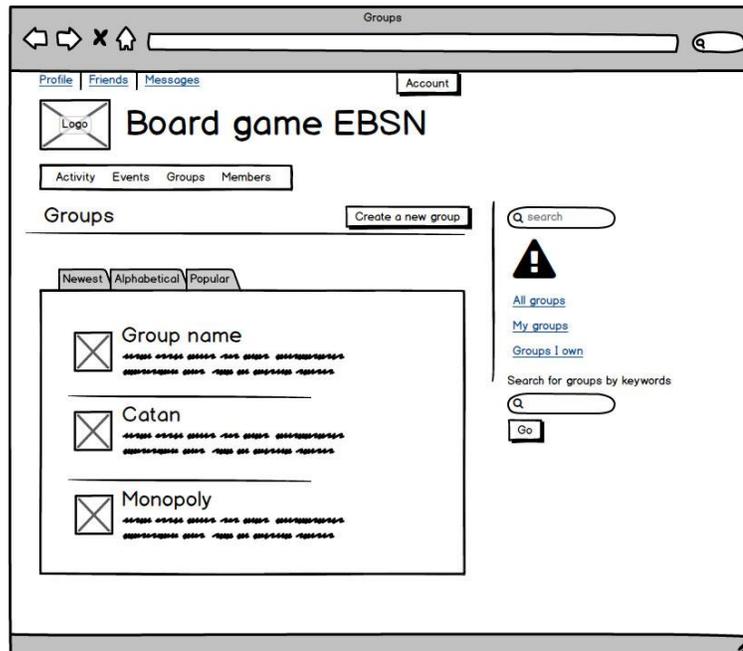


Figure B - 9. Groups' page prototype

The image shows a rectangular form with a black border. Inside the form, there are four main sections. The first section is labeled "Title" and contains a single-line text input field. The second section is labeled "Location of the item" and contains a single-line text input field with the text "https://hobbygamez.com/someview" entered. The third section is labeled "Why are you reporting this?" and contains a larger, empty rectangular text area. At the bottom of the form, there are two buttons: "Report this" on the left and "Cancel" on the right.

**Figure B - 10.** Report page prototype

### Appendix C: Application screenshots

The image shows a search and filter interface. At the top left is a large, empty search input field. To its right, the text "Simple search" is displayed. Below the search field, there are two rows of filters. The first row has "Date from:" followed by a date input field, "Region:" followed by a dropdown menu showing "-", and a checkbox labeled "Show events I'm attending". The second row has "Date to:" followed by a date input field, "Type:" followed by a dropdown menu showing "-", and a checkbox labeled "Show events I created". Below these filters, there is a third checkbox labeled "Show events my friends are attending". At the bottom left, there is a dark brown button with the text "Search" in white.

**Figure C - 1.** Advanced settings

The screenshot shows the HOBBY GAMEZ website interface. At the top, there is a navigation bar with the logo and the tagline "find players nearby". Below the navigation bar, there are tabs for "Activity", "Events", "Groups", "Members", and "FAQ". The main content area is titled "Events" and includes a search bar, a "New event" button, and a "Search" button. There is also a checkbox for "Include past events" and a link for "Advanced search". Below the search bar, there are two tabs: "List" and "On the map". The "On the map" tab is active, displaying a map of the Baltic region. The map shows several red location pins, indicating events. The legend below the map identifies the pins: a yellow pin for "Your events", a blue pin for "Attending events", and a red pin for "Other events". The map includes labels for countries like Sweden, Finland, Estonia, Latvia, Lithuania, Poland, and Belarus, as well as cities like Stockholm, Helsinki, Tallinn, Riga, Vilnius, Minsk, and Moscow. The map data is attributed to Google and is dated 2017.

Figure C - 2. Events on the map

**HOBBY GAMEZ**  
*And players nearby*

Activity Events Groups Members FAQ

All events

### Chess

By Oleg 5 days ago 3 attendees Public

**Venue:** My home  
**Location:** Baykonorskaya ul., Sankt-Peterburg, Russia  
**Start:** 2017-05-23 19:00  
**End:** 2017-05-23 20:00  
**Organizer:** Oleg  
**Spots left:** 3 / 6

**Description:** Chess is a two-player strategy board game played on a chessboard, a checkered gameboard with 64 squares arranged in an 8x8 grid. The game is played by millions of people worldwide. Each player begins with 16 pieces: one king, one queen, two rooks, two knights, two bishops, and eight pawns. Each of the six piece types moves differently, with the most powerful being the queen and the least powerful the pawn. The objective is to checkmate the opponent's king by placing it under an inescapable threat of capture. To this end, a player's pieces are used to attack and capture the opponent's pieces, while supporting each other. In addition to checkmate, the game can be won by voluntary resignation of the opponent, which typically occurs when too much material is lost, or checkmate appears unavoidable. A game can also in several ways end in a draw.

**Contact Details:** oleg@oleg.com  
**Fee:** no fee  
**Region:** Saint Petersburg

RSVP

**Attendees (3)**

Ivan 4 days ago  
Great! I will definitely come. This is awesome!!

Oleg 4 days ago  
Glad that you like it! see you there!! :)

Leave a comment HTML

**Comment**

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Figure C - 3. Event page

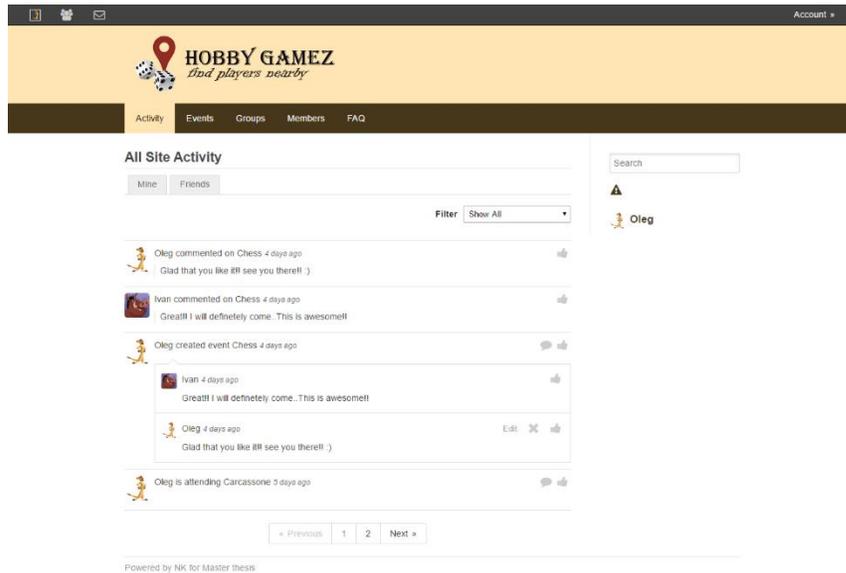


Figure C - 4. Activity

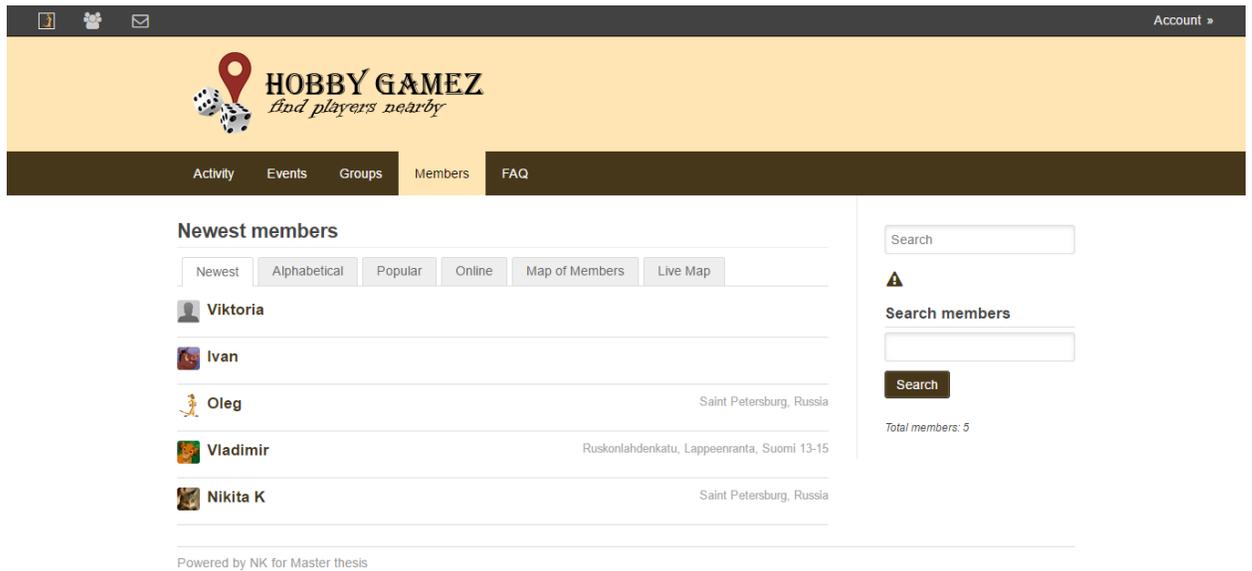


Figure C - 5. Members

Members

### Map of Members

location  radius (meter)  keyword

My location  Show search area

Map data ©2017 Google. Terms of Use Report a map error

Powered by NK for Master thesis

**Figure C - 6.** Map of members

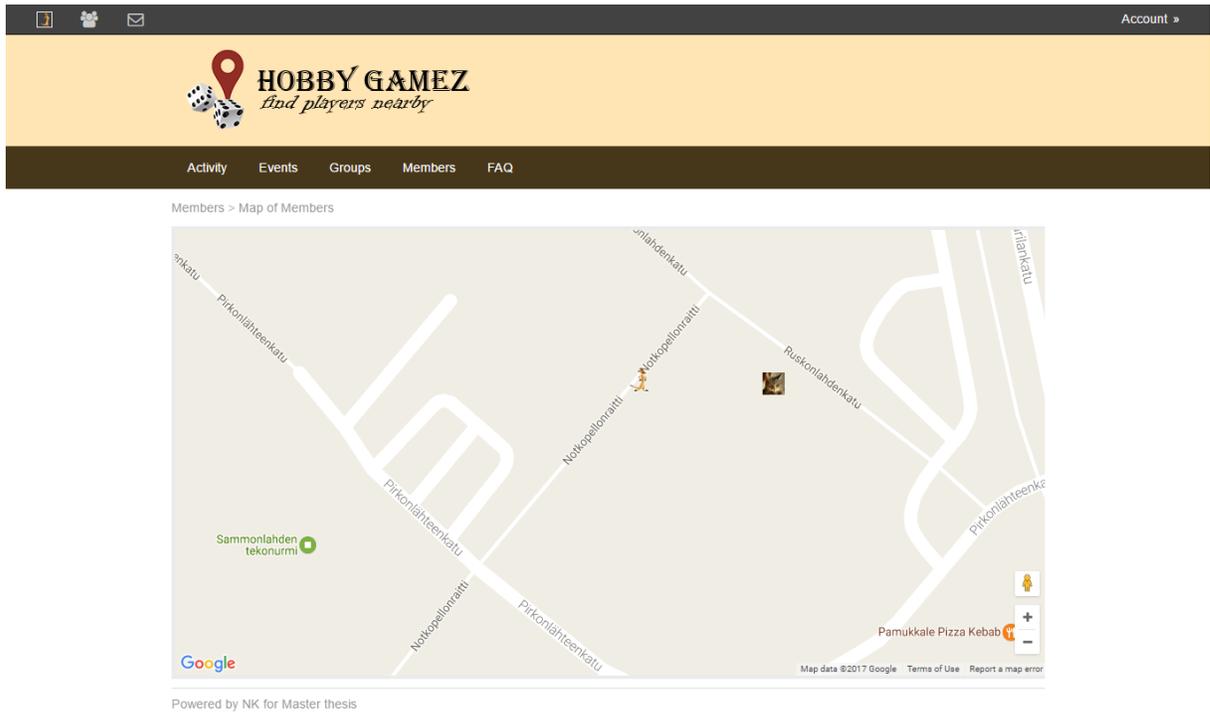


Figure C - 7. Live map

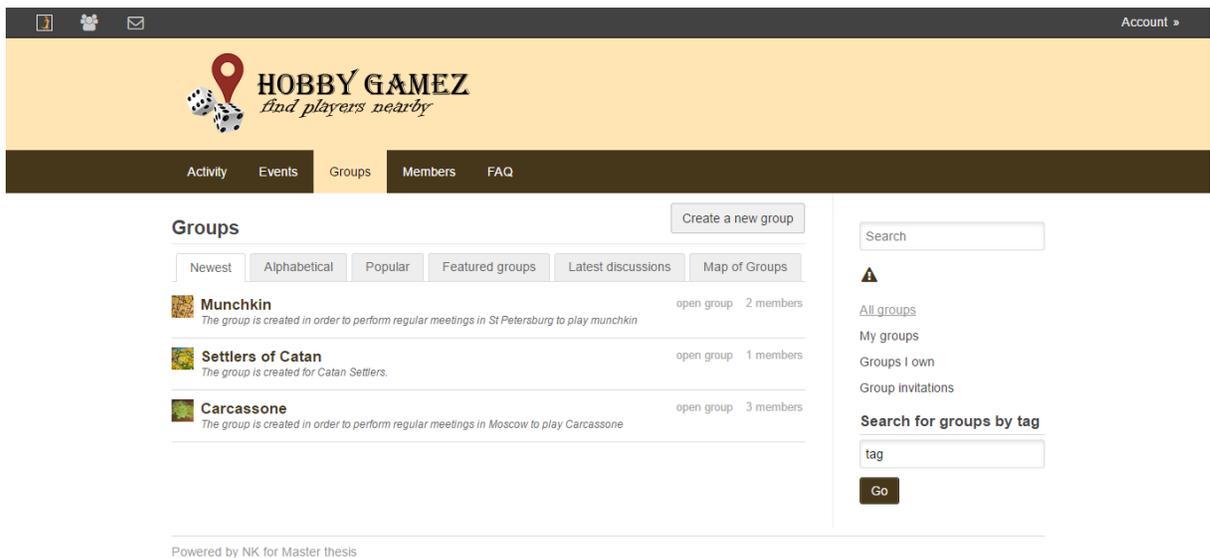


Figure C - 8. Groups

Account »

**HOBBY GAMEZ**  
*find players nearby*

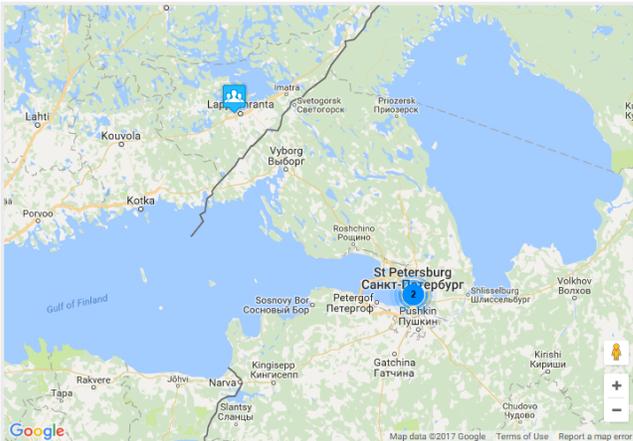
Activity Events Groups Members FAQ

Groups

### Map of Groups

location radius (meter) keyword Search

My location  Show search area



Search

**A**

- Munchkin  
Saint Petersburg, Russia
- Settlers of Catan  
Ruskonlahdenkatu 13-15,  
Lappeenranta, Suomi
- Carcassone  
Moscow, Russia

Powered by NK for Master thesis

**Figure C - 9.** Map of groups

Account »



# HOBBY GAMEZ

find players nearby

Activity Events Groups Members FAQ

---

Groups

Leave group

## Carcassonne



**Owner:** Nikita K  
Group members: 3

**Description:**  
**Carcassonne** is a tile-based German-style board game for two to five players, designed by Klaus-Jürgen Wrede and published in 2000 by Hans im Glück in German and by Rio Grande Games (until 2012) and Z-Man Games (currently) [1] in English.[2] It received the Spiel des Jahres and the Deutscher Spiele Preis awards in 2001.  
 It is named after the medieval fortified town of Carcassonne in southern France, famed for its city walls. The game has spawned many expansions and spin-offs, and several PC, console and mobile versions. A new edition, with updated artwork on the tiles and the box, was released in 2014.

**Brief description:** The group is created in order to perform regular meetings in Moscow to play Carcassonne

**Tags:**  
carcassonne

**Location:** Moscow, Russia

**Group discussions** View all

**Choosing a place to play!!**  
By Nikita K 3 days ago Replies (2)  
Last reply by Oleg 3 days ago

What do you think, guys about meeting on the nature and play carcassonne? I propose to choose some park.

Add a topic

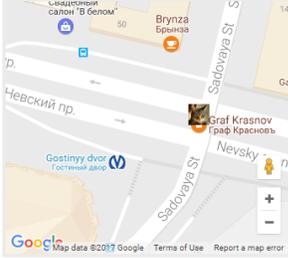
**Group activity** View all

Nikita K created event Carcassonne 3 days ago

Oleg replied on the discussion topic Choosing a place to play!! 3 days ago  
Totally agree! view reply

Ivan replied on the discussion topic Choosing a place to play!! 3 days ago  
Yes, It would be great!!! view reply

**Group Members on Map**



**Group events** View all

**MAY 25 Carcassonne**  
RSVP | 0 attendees

New event

**Carcassonne**  
The group is created in order to perform regular meetings in Moscow to play Carcassonne

Group activity  
 Group discussions  
 Group events

**Search in this group**

Go

**Group members**  
View all members

**My status**  
 Group notifications are off  
 You are in this group

Powered by NK for Master thesis

**Figure C - 10.** Group page

**Title**  
Newest members : Hobby Gamez

**Location of the item**  
<https://hobbygamez.com/members>

**Why are you reporting this?**

Close

**Figure C - 11.** Report page

### Appendix D: Tablet screenshots

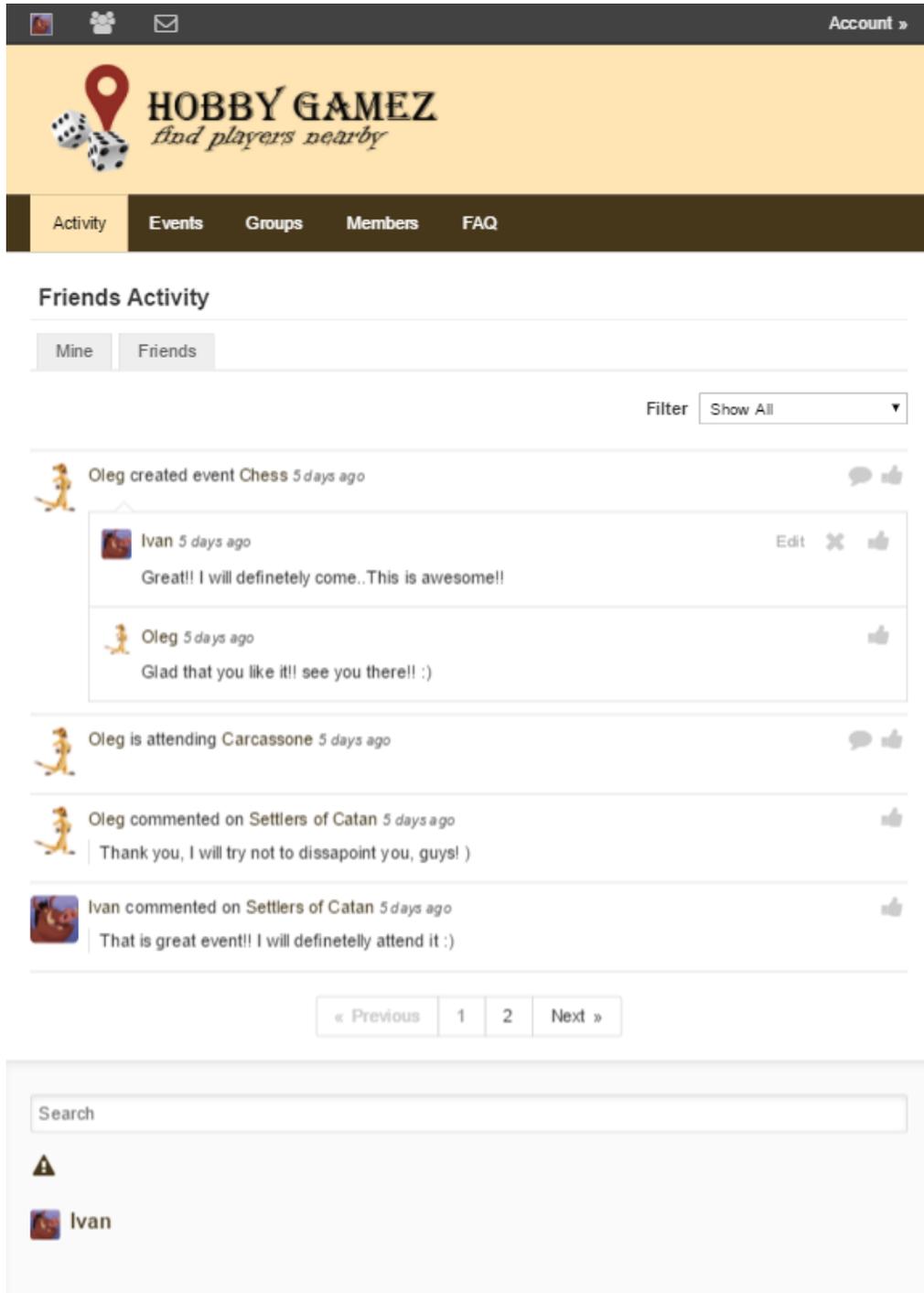


Figure D - 1. Activity

The screenshot shows the Hobby Gamez website interface. At the top, there is a navigation bar with icons for home, search, and account, and the text "Account »". Below this is a header banner with the logo "HOBBY GAMEZ" and the tagline "find players nearby". A secondary navigation bar contains links for "Activity", "Events", "Groups", "Members", and "FAQ".

The main content area is titled "All events" and "Events". It includes a search bar with a "Search" button, a checkbox for "Include past events", and a link for "Advanced search". There are also tabs for "List" and "On the map".

The events list contains four entries:

- Chess** (May 23): By Oleg 5 days ago. 3 attendees. Public. Location: Baykonurskaya ul., Sankt-Peterburg, Russia. We are going to play chess, come and join us! RSVP.
- Carcassone** (May 25): By Nikita K in Carcassone 3 days ago. 0 attendees. Public. Location: Ruskonlahdenkatu 13, 53850 Lappeenranta, Финляндия. We are going to play carcassone this time. RSVP.
- Settlers of Catan** (May 29): By Nikita K 8 days ago. 2 attendees. Public. 2 likes. Location: Ruskonlahdenkatu 12, 53850 Lappeenranta, Финляндия. we are going to play settlers of catan. RSVP.
- Carcassone** (May 30): By Nikita K 8 days ago. 1 attendees. Public. we are going to play Carcassone. RSVP.

At the bottom of the page, there is a search bar with a warning icon and the text "Powered by NK for Master thesis".

Figure D - 2. Events list

The screenshot shows the Hobby Gamez website interface. At the top, there is a navigation bar with icons for home, search, and account, and the text "Account >". Below this is the Hobby Gamez logo with the tagline "find players nearby". A secondary navigation bar contains links for "Activity", "Events", "Groups", "Members", and "FAQ".

The main content area is titled "All events" and features a "Chess" event listing. A "Add to Calendar" button is visible. The event is organized by "Oleg" 5 days ago, has 3 attendees, and is public. The venue is "My home" at "Baykonurskaya ul., Sankt-Peterburg, Russia". The event dates are from 2017-05-23 19:00 to 2017-05-23 20:00. There are 3 spots left out of 6. A small image of chess pieces is shown.

The description states: "Chess is a two-player strategy board game played on a chessboard, a checkered gameboard with 64 squares arranged in an 8x8 grid. The game is played by millions of people worldwide. Each player begins with 16 pieces: one king, one queen, two rooks, two knights, two bishops, and eight pawns. Each of the six piece types moves differently, with the most powerful being the queen and the least powerful the pawn. The objective is to checkmate the opponent's king by placing it under an inescapable threat of capture. To this end, a player's pieces are used to attack and capture the opponent's pieces, while supporting each other. In addition to checkmate, the game can be won by voluntary resignation of the opponent, which typically occurs when too much material is lost, or checkmate appears unavoidable. A game can also in several ways end in a draw."

Contact details: oleg@oleg.com, no fee, Saint Petersburg. An RSVP button is also present.

The "Attendees (3)" section shows three profile pictures. Below this, two comments are visible: one from Ivan saying "Great! I will definitely come..This is awesome!!" and one from Oleg saying "Glad that you like it!! see you there!! :)".

A "Leave a comment" section includes a rich text editor with various formatting options (bold, italic, underline, strikethrough, link, unlink, bulleted list, numbered list, indent, outdent, undo, redo, insert image, insert video, insert link, insert unlink) and a "Comment" button.

At the bottom, there is a search bar and a list of users, including "Oleg".

Footer text: "Powered by NK for Master thesis"

Figure D - 3. Event page

The screenshot shows the Hobby Gamez website interface. At the top, there is a navigation bar with icons for home, user profile, and mail, and an 'Account' link. Below this is the site logo 'HOBBY GAMEZ find players nearby' with a red location pin icon. A dark navigation bar contains links for 'Activity', 'Events', 'Groups', 'Members', and 'FAQ'. The main content area is titled 'All events' and features a 'New event' button. A search bar is present with a 'Search' button and a checkbox for 'Include past events'. Below the search bar are 'List' and 'On the map' tabs. The 'On the map' tab is active, displaying a Google Map of Europe with a red location pin in St. Petersburg, Russia. A pop-up window for the event 'Chess (2017-05-23)' is open, showing the address 'Daykonurskaya ul. Sankt-Peterburg, Russia', a photo of chess pieces, and '13 attendees'. Below the map, there are icons for 'Your events', 'Attending events', and 'Other events'. At the bottom, there is a search bar and a warning icon. The footer text reads 'Powered by NK for Master thesis'.

Figure D - 4. Events on the map

Account »

**HOBBY GAMEZ**  
*find players nearby*

Activity Events Groups **Members** FAQ

### Newest members

Newest Alphabetical Popular Online Map of Members Live Map

Viktoria

Ivan

Oleg Saint Petersburg, Russia

Vladimir Ruskonlahdenkatu, Lappeenranta, Suomi 13-15

Nikita K Saint Petersburg, Russia

Search

Search members

Search

Total members: 5

Powered by NK for Master thesis

Figure D - 5. Members

Account »

 **HOBBY GAMEZ**  
*find players nearby*

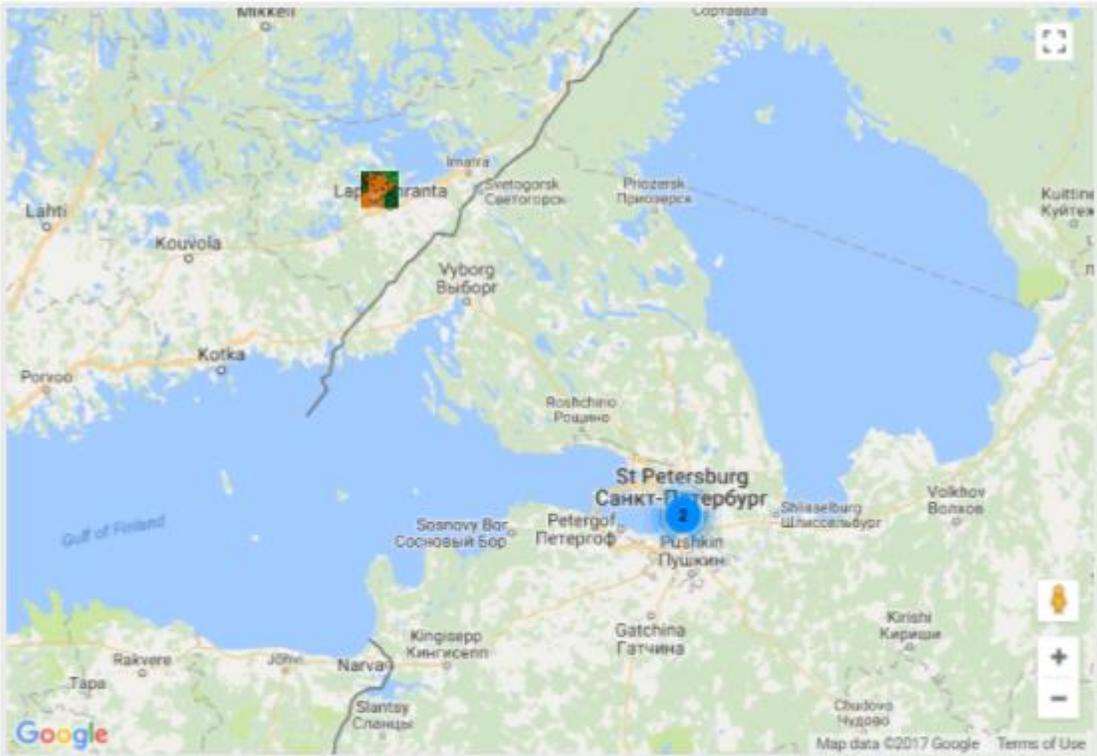
Activity Events Groups Members FAQ

Members

### Map of Members

location radius (meter) keyword **Search**

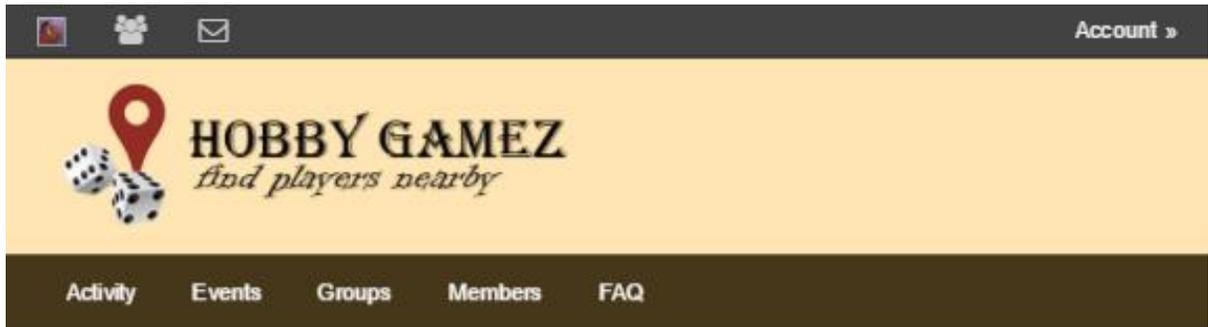
Show search area



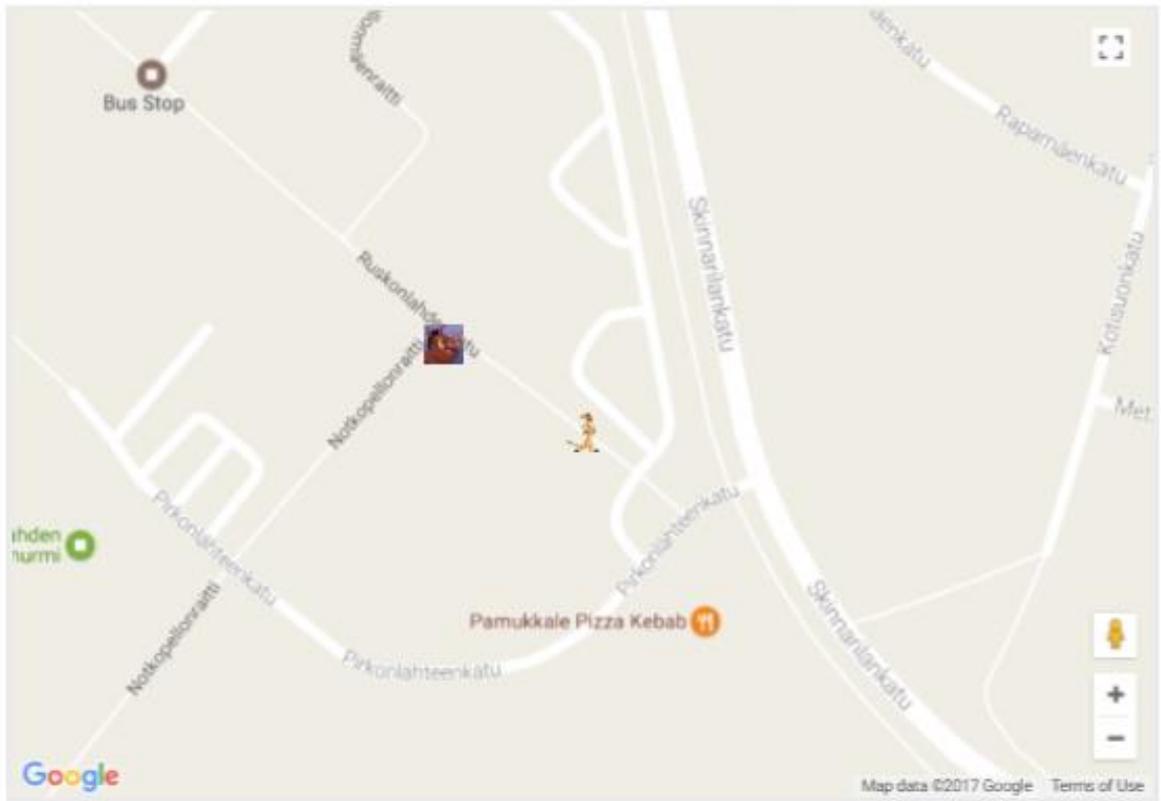
Google Map data ©2017 Google Terms of Use

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Figure D - 6. Members on map



Members > Map of Members



Powered by NK for Master thesis

Figure D - 7. Live map

The screenshot shows the Hobby Gamez website interface. At the top, there is a navigation bar with icons for home, user profile, and mail, and an 'Account' link. Below this is a yellow banner with the logo 'HOBBY GAMEZ' and the tagline 'find players nearby'. A dark navigation bar contains links for 'Activity', 'Events', 'Groups' (which is highlighted), 'Members', and 'FAQ'. The main content area is titled 'Groups' and includes a 'Create a new group' button. Below the title are several filter tabs: 'Newest', 'Alphabetical', 'Popular', 'Featured groups', 'Latest discussions', and 'Map of Groups'. A list of three groups is displayed:

- Munchkin**: The group is created in order to perform regular meetings in St Petersburg to play munchkin. open group 2 members
- Settlers of Catan**: The group is created for Catan Settlers. open group 1 members
- Carcassone**: The group is created in order to perform regular meetings in Moscow to play Carcassone. open group 3 members

Below the group list is a search section with a search input field. Underneath is a warning icon and a list of filters: 'All groups', 'My groups', 'Groups I own', and 'Group invitations'. Below this is a section titled 'Search for groups by tag' with a 'tag' input field and a 'Go' button.

Powered by NK for Master thesis

**Figure D - 8.** Groups list

The screenshot shows the HOBBY GAMEZ website interface. At the top, there is a navigation bar with icons for home, a gear, and an envelope, along with an 'Account' link. The main header features the HOBBY GAMEZ logo with the tagline 'find players nearby'. Below this is a secondary navigation bar with links for 'Activity', 'Events', 'Groups', 'Members', and 'FAQ'. The main content area is titled 'Groups' and contains a 'Map of Groups' section. This section includes search filters for 'location', 'radius (meter)', and 'keyword', with a 'Search' button. A 'Show search area' checkbox is also present. The map displays a geographical area with several group locations marked by icons. A tooltip for 'Carcassone' is visible, providing its location in Moscow, Russia, and a brief description of the game. Below the map, a search results list is shown, containing three entries: 'Munchkin' in Saint Petersburg, Russia; 'Settlers of Catan' in Ruskonlahdenkatu 13-15, Lappeenranta, Suomi; and 'Carcassone' in Moscow, Russia. At the bottom of the page, it is noted that the site is 'Powered by NK for Master thesis'.

Figure D - 9. Groups list

Account



## HOBBY GAMEZ

find players nearby

Activity
Events
Groups
Members
FAQ

Groups Leave group

### Carcassonne



Owner: Nikita K  
Group members: 3

**Description:**  
*Carcassonne* is a tile-based German-style board game for two to five players, designed by Klaus-Jürgen Wrede and published in 2000 by Hans im Glück in German and by Rio Grande Games (until 2012) and Z-Man Games (currently) [1] in English.[2] It received the Spiel des Jahres and the Deutscher Spiele Preis awards in 2001.  
 It is named after the medieval fortified town of Carcassonne in southern France, famed for its city walls. The game has spawned many expansions and spin-offs, and several PC, console and mobile versions. A new edition, with updated artwork on the tiles and the box, was released in 2014.

**Brief description:** The group is created in order to perform regular meetings in Moscow to play Carcassonne

**Tags:**  
 carcassonne

**location:** Moscow, Russia

**Group discussions** View all

**Choosing a place to play!!**  
 By Nikita K 3 days ago Replies (2)  
 carcassonne Last reply by Oleg 3 days ago

What do you think, guys about meeting on the nature and play carcassonne? I propose to choose some park.

Add a topic

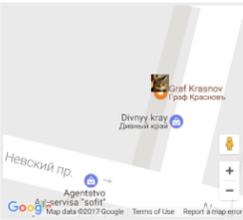
**Group activity** View all

Nikita K created event Carcassonne 3 days ago

Oleg replied on the discussion topic Choosing a place to play!! 3 days ago  
 Totally agree! [view reply](#)

Ivan replied on the discussion topic Choosing a place to play!! 3 days ago  
 Yes, It would be great!!! [view reply](#)

**Group Members on Map**



**Group events** View all

**MAY 25** Carcassonne  
 RSVP  | 0 attendees

New event

**Carcassonne**  
*The group is created in order to perform regular meetings in Moscow to play Carcassonne*

Group activity

Group discussions

Group events

Search in this group

**Go**

Group members View all members

**My status**

Group notifications are off

You are in this group

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Figure D - 10. Group page

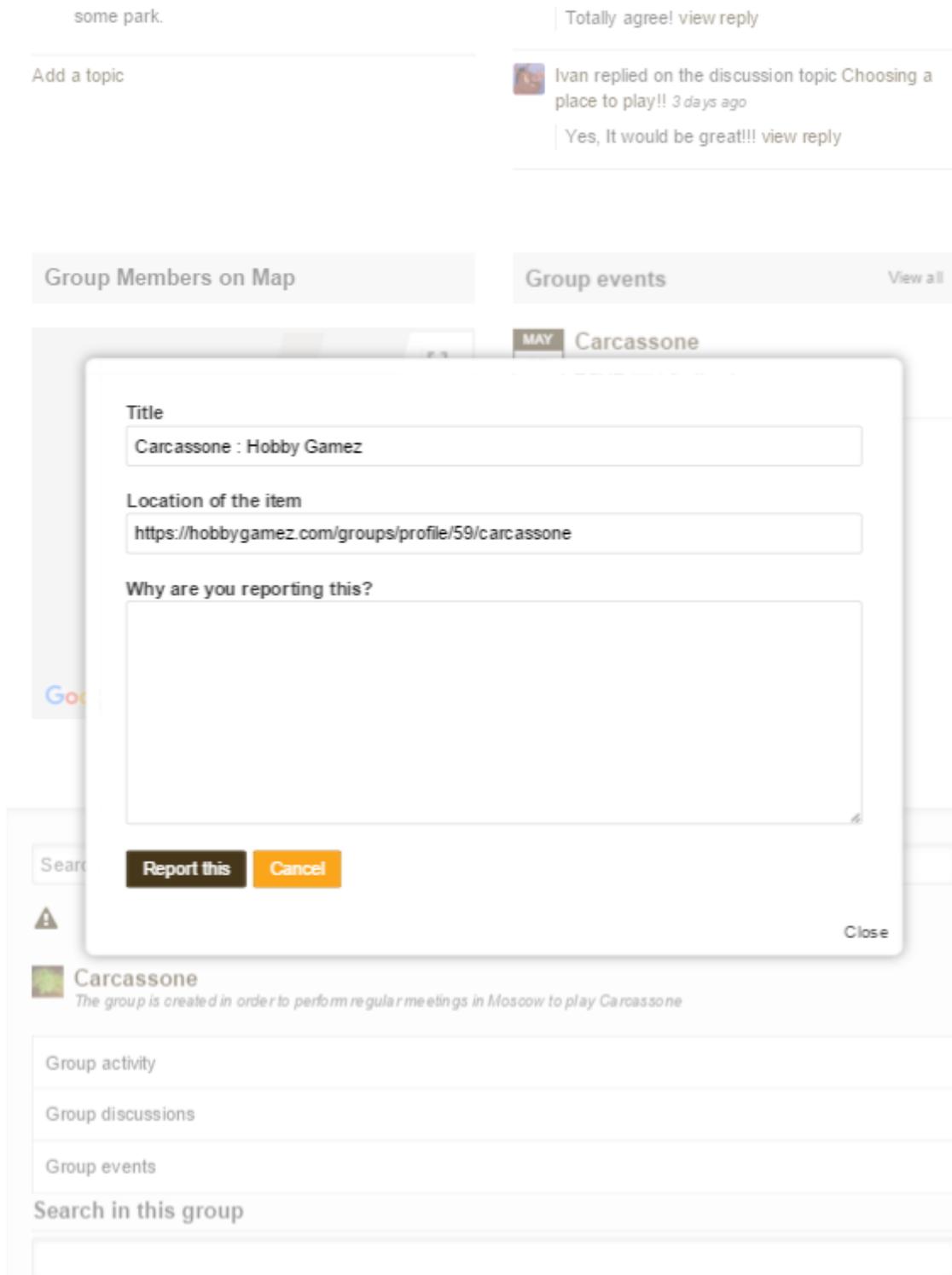


Figure D - 11. Report page

## Appendix E: Mobile version

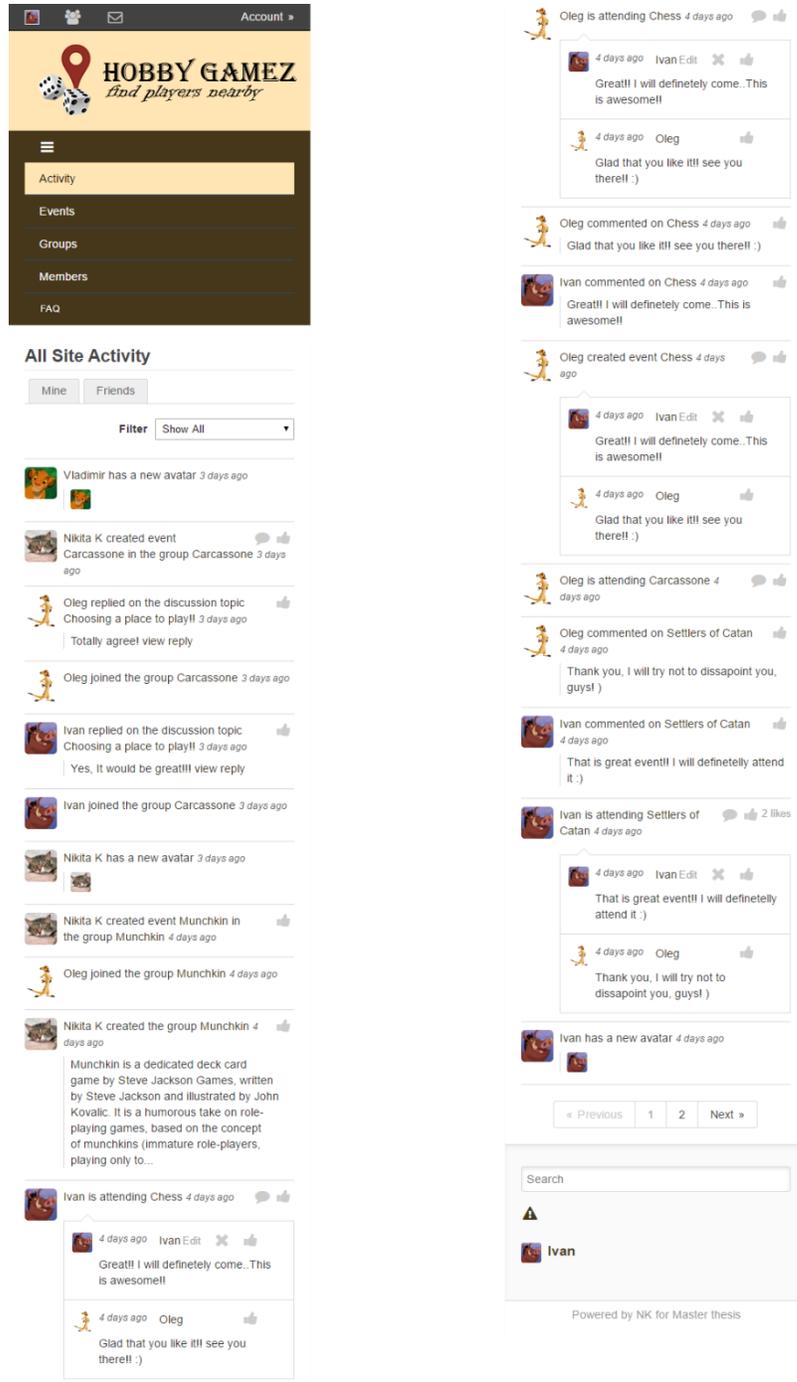


Figure E - 1. Activity

The screenshot displays the HOBBY GAMEZ mobile application interface. At the top, there is a dark navigation bar with icons for a profile, a paw print, and an envelope, along with an 'Account' link. Below this is a yellow banner featuring the app's logo, which includes a red location pin and dice, with the text 'HOBBY GAMEZ find players nearby'. A dark brown menu bar with a hamburger icon is positioned below the banner.

The main content area is titled 'All events' and features a 'New event' button. Below the title is an 'Advanced search' section with a search input field, a 'Search' button, and a checkbox for 'Include past events'. There are two view options: 'List' (selected) and 'On the map'.

The events list contains four entries:

- MAY 23 Chess**: 2 attendees, Public. Created by Oleg 4 days ago. Location: Baykonurskaya ul., Sankt-Peterburg, Russia. Description: We are going to play chess, come and join us! Includes an RSVP button.
- MAY 25 Carcassone**: 0 attendees, Public. Created by Nikita K 3 days ago. Location: Ruskonlahdenkatu 13, 53850 Lappeenranta, Финляндия. Description: We are going to play carcassone this time. Includes an RSVP button.
- MAY 29 Settlers of Catan**: 2 attendees, Public, 2 likes. Created by Nikita K 7 days ago. Location: Ruskonlahdenkatu 12, 53850 Lappeenranta, Финляндия. Description: we are going to play settlers of catan. Includes an RSVP button.
- MAY 30 Carcassone**: 1 attendee, Public. Created by Nikita K 7 days ago. Description: we are going to play Carcassone. Includes an RSVP button.

At the bottom of the screen, there is a search bar with the placeholder text 'Search' and a warning icon. Below the search bar, it says 'Powered by NK for Master thesis'.

**Figure E - 2.** Events list

Account >



# HOBBY GAMEZ

find players nearby

☰

All events

## Chess

Add to Calendar

By Oleg 4 days ago 👤 2 attendees Public 👍

chess



Venue:

Location:

Start:

End:

Organizer:

Spots left:

Description:

My home

Baykonurskaya ul., Sankt-Peterburg, Russia

2017-05-23 19:00

2017-05-23 20:00

Oleg

4 / 6

**Chess** is a two-player [strategy board game](#) played on a [chessboard](#), a checkered gameboard with 64 squares arranged in an 8x8 grid.<sup>[1]</sup> The game is played by millions of people worldwide.

Each player begins with 16 pieces: one [king](#), one [queen](#), two [rooks](#), two [knights](#), two [bishops](#), and eight [pawns](#). Each of the six piece types [moves](#) differently, with the most powerful being the queen and the least powerful the pawn. The objective is to [checkmate](#)<sup>[note 1]</sup>the opponent's king by placing it under an inescapable threat of capture. To this end, a player's pieces are used to attack and capture the opponent's pieces, while supporting each other. In addition to checkmate, the game can be won by [voluntary resignation](#) of the opponent, which typically occurs when too much [material](#) is lost, or checkmate appears unavoidable. A game can also in several ways end in a [draw](#).

**Contact Details:** oleg@oleg.com

**Fee:** no fee

**Region:** Saint Petersburg

**Type:** Strategy games

RSVP 👍

**Attendees (2)**



4 days ago
Ivan
Edit
✕
👍

Great!! I will definitely come..This is awesome!!

4 days ago
Oleg
👍

Glad that you like it!! see you there!! :)

**Leave a comment** Edit HTML

B
I
U
I<sub>x</sub>

S
☰
☰
←
→
🗨
🗨
🗨
🗨
🗨

Comment

⚠

Oleg

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Figure E - 3. Event page



**Figure E - 4.** Events on the map

The screenshot displays the HOBBY GAMEZ mobile application interface. At the top, there is a dark navigation bar with icons for a profile, a group, and an envelope, along with the text 'Account »'. Below this is a yellow banner featuring the app's logo (a red location pin and dice) and the text 'HOBBY GAMEZ find players nearby'. A dark brown menu icon is visible at the bottom left of the banner.

The main content area is titled 'Newest members'. Below the title are several filter buttons: 'Newest', 'Alphabetical', 'Popular', 'Online', 'Map of Members', and 'Live Map'. The 'Newest' filter is currently selected.

Below the filters, a list of members is shown:

- Ivan** (profile picture of a cat)
- Oleg** (profile picture of a cartoon character) - Saint Petersburg, Russia
- Vladimir** (profile picture of a lion) - Ruskonlahdenkatu, Lappeenranta, Suomi 13-15
- Nikita K** (profile picture of a dog) - Saint Petersburg, Russia

At the bottom of the screen, there is a search section with a search bar containing the text 'Search'. Below the search bar is a warning icon (a triangle with an exclamation mark) and the text 'Search members'. A second search bar is provided, followed by a dark brown 'Search' button. Below the search bar, the text 'Total members: 4' is displayed.

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**Figure E - 5.** Members



Members

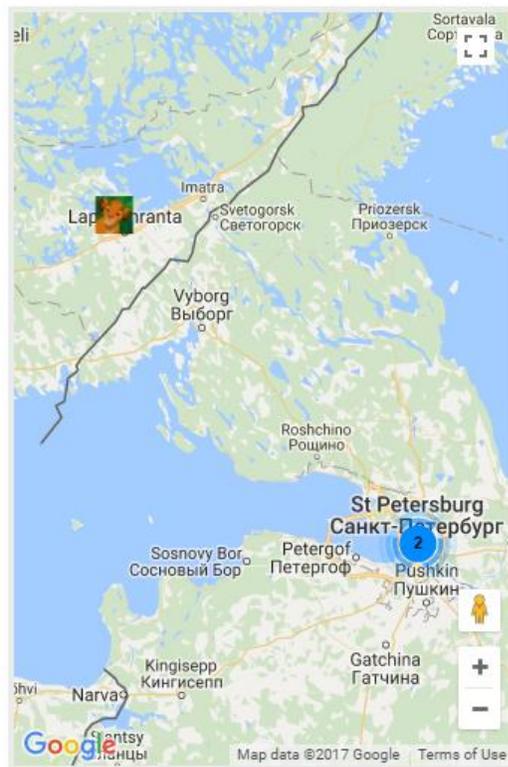
### Map of Members

location

radius (meter)  keyword

Show search area

**Search**

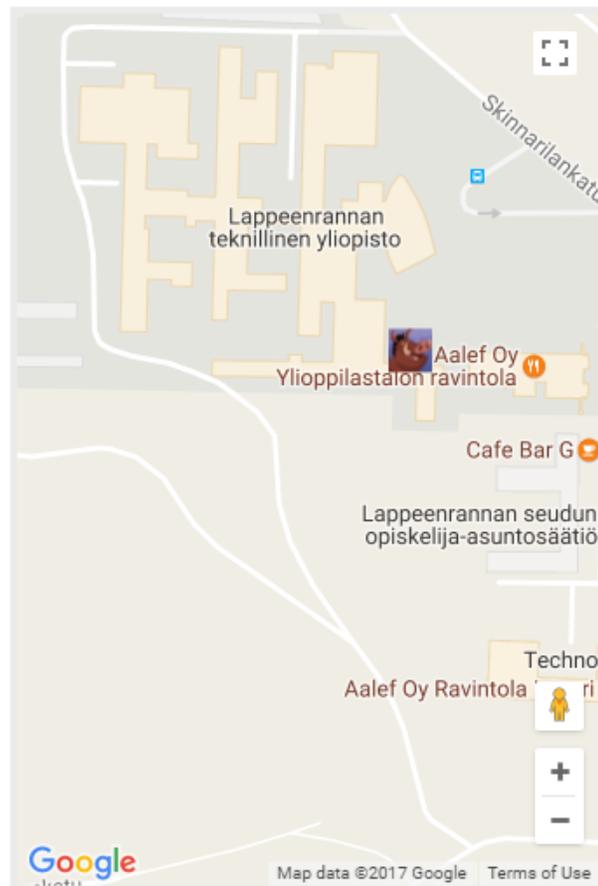


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**Figure E - 6.** Map of members



Members > Map of Members



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Figure E - 7. Live map

The screenshot shows the Hobby Gamez website interface. At the top, there is a dark navigation bar with icons for a profile, a group of people, and an envelope, along with the text 'Account »'. Below this is a yellow banner featuring the logo 'HOBBY GAMEZ' with the tagline 'find players nearby' and an illustration of dice and a location pin. A dark brown bar with a hamburger menu icon is positioned below the banner.

The main content area is titled 'Groups' and includes a 'Create a new group' button. Below the title are several filter buttons: 'Newest', 'Alphabetical', 'Popular', 'Featured groups', 'Latest discussions', and 'Map of Groups'. Three game groups are listed:

- Munchkin**: open group, 2 members. Description: 'The group is created in order to perform regular meetings in St Petersburg to play munchkin'.
- Settlers of Catan**: open group, 1 members. Description: 'The group is created for Catan Settlers.'
- Carcassonne**: open group, 3 members. Description: 'The group is created in order to perform regular meetings in Moscow to play Carcassonne'.

Below the group listings is a search section with a 'Search' input field. An information icon is present. A list of filters includes 'All groups', 'My groups', 'Groups I own', and 'Group invitations'. A section titled 'Search for groups by tag' contains a 'tag' input field and a 'Go' button.

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Figure E - 8. Groups

The screenshot shows the mobile application interface for 'HOBBY GAMEZ'. At the top, there is a navigation bar with icons for home, a group of people, and a mail icon, along with an 'Account' link. Below this is a header banner with the app's logo, which includes a red location pin and dice, and the text 'HOBBY GAMEZ find players nearby'. A hamburger menu icon is located on the left side of the banner.

The main content area is titled 'Groups' and features a 'Map of Groups' section. This section includes a search interface with three input fields: 'location', 'radius (meter)', and 'keyword'. Below these fields is a checkbox labeled 'Show search area' and a 'Search' button. The search results are displayed on a Google Map of the Saint Petersburg region, with a blue location pin and a group icon. The map shows various cities and towns, including Lappeenranta, Vyborg, Saint Petersburg, and others.

Below the map, there is a search bar with the text 'Search' and a list of search results. The results are as follows:

- Munchkin  
Saint Petersburg, Russia
- Settlers of Catan  
Ruskonlahdenkatu 13-15, Lappeenranta, Suom
- Carcassone  
Moscow, Russia

At the bottom of the screen, there is a footer that reads 'Powered by NK for Master thesis'.

Figure E - 9. Map of groups

Account >



## HOBBY GAMEZ

find players nearby

Groups

**Carcassone**
Leave group



**Owner:** Nikita K  
Group members: 3

**Description:**  
**Carcassone** is a tile-based German-style board game for two to five players, designed by Klaus-Jürgen Wrede and published in 2000 by Hans im Glück in German and by Rio Grande Games (until 2012) and Z-Man Games (currently)[1] in English.[2] It received the Spiel des Jahres and the Deutscher Spiele Preis awards in 2001.  
It is named after the medieval fortified town of Carcassonne in southern France, famed for its city walls. The game has spawned many expansions and spin-offs, and several PC, console and mobile versions. A new edition, with updated artwork on the tiles and the box, was released in 2014.

**Brief description:** The group is created in order to perform regular meetings in Moscow to play Carcassone

**Tags:**  
carcassone

**location:** Moscow, Russia

**Group discussions**
View all



**Choosing a place to play!!**  
*By Nikita K 3 days ago Replies (2)*  
*Last reply by Oleg 3 days ago*

carcassone

What do you think, guys about meeting on the nature and play carcassone? I propose to choose some park.

Add a topic

**Group activity**
View all



Nikita K created event Carcassone 3 days ago



Oleg replied on the discussion topic Choosing a place to play!! 3 days ago

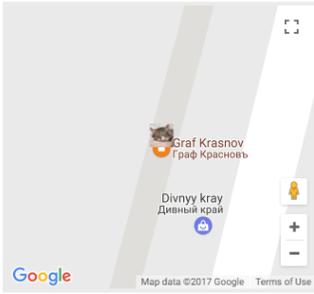
Totally agree! view reply



Ivan replied on the discussion topic Choosing a place to play!! 3 days ago

Yes, it would be great!!! view reply

**Group Members on Map**



**Group events**
View all

MAY

25

**Carcassone**

RSVP  | 0 attendees

New event

**Carcassone**

*The group is created in order to perform regular meetings in Moscow to play Carcassone*

Group activity

Group discussions

Group events

**Search in this group**

Go

**Group members**


View all members

**My status**

Group notifications are off

You are in this group

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**Figure E - 10.** Group page

**Group events** View all

**Title**

**Location of the item**

**Why are you reporting this?**

Close

**Search in this group**

**Figure E - 11.** Report page