

KEMI-TORNIO UNIVERSITY OF APPLIED  
SCIENCES

Social networking services: technologies and applications

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Bachelor's thesis of the Degree Programme in Business Information Technology  
Business Administration

TORNIO 2011

## ABSTRACT

Puzyrnyy, Oleksandr. 2011. Social networking services: technologies and applications. Bachelor's Thesis. Kemi-Tornio University of Applied Sciences. Business and Culture. Pages 52.

The aim of this thesis is to describe the concept of social networking, its technological base, business opportunities and future perspectives. The study discovers how social networks are made and which different purposes they might have. In addition, social networking is viewed as a part of business strategy of modern companies and its potential is shown in such fields as collecting customers' base, establishing brand loyalty and creating an image. Moreover, the research focuses on that fact that social networks are taking more and an increasing amount of space in people's everyday life, and therefore forecasts their possible ways of developing in the direction of even ever deepening integration in it.

The topic of the research is rather new and therefore the sources are scarce. The research is mostly made with help of different Internet resources. Therefore, the outcomes and my own presumptions are based on their analysis of the Internet sources used.

Research output is showing how research questions are expected to be answered. It sets the aim to discover social networking technology and services, their use for businesses and future development. In addition, it analyses the possible ways of social networking trends, and pointing out the importance of social platforms' understanding.

Study conclusions – the importance of social networking for different aspects of life. This aim is reached by showing the examples of companies, which are social networks, which are integrating with social networks and which are successfully implementing social networking technologies for their own use. In addition, the study is giving clear image of how social networking is done, which trends it followed and how is it going to develop in the nearest future and why.

Keywords: Social network, social networking service, social media, development trends

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## 1 INTRODUCTION

Today, social networks are one of the fastest growing segments of the Internet world. MySpace, Facebook, Google+, Classmates, and many others are opening new ways of knowledge sharing, and therefore attract an increasing number of users.

People have constantly changing demands. Since the idea of social networks is not only to gain, but also to keep their users, they are following constantly changing themselves, trying to fulfill all the possible humans' needs. Constantly changing environment makes them even more interesting. Social networks are living organisms of the web. They are continuously developing, to attract an increasing number of people, becoming more specific and therefore everyone could find something for himself. Constant change and user specification, together with the basic tools and possibilities of social networks, require use of many different technologies, programming languages and software. That makes social networks interesting not only as a socialization tool of new era, but also as a piece of engineering thought.

Content in social network is the most important for users. Content at the same time cannot be equally interesting to all the users, and therefore it should be specified. Nowadays social networking services (henceforth SNS) are working on "User-Generated Content" principle, i.e. social network is providing all the needed tools, and by applying them, users are generating new content. This model works well. However the amount of tools for specialized content creation is rather limited. At the same time, users in modern IT-world want to receive differentiated, qualitative content. Previously social networks were trying to construct the users' content; but later on they started to create qualitative content filtration tools. Thus, transformation of social networks into the platforms, where different applications will be developed, including the applications from content providers, can be expected in the nearest future.

Content generation and technologies of social network creation are going side by side. People need more than just news from their friends. They want to know about sales in their favorite shops, their favorite bands' news, they want to be entertained. Therefore, social networks are implementing integration with extraneous web sites and programs

to fulfill users' growing needs. Millions of web sites are already integrated with the most popular networks. At the same time, almost all new projects are being created with integration possibility as a default. Such integration can be done by placing the links leading to the site's official fan communities belonging to social network, as well as providing the information sharing buttons for sending information straight to the social networks' newsfeed, as for example Facebook's "like" button. Furthermore, integration of online-shops for selling different goods can be done, special offers which work with usage of social networks (henceforth SN) or tools for leaving feedback or other comments. This list of possible interactions can still be continued. The next step will be creating specialized integration platforms, which will provide an opportunity of social ecosystem initiation inside the extraneous web sites. Thereby, users, being logged in to Facebook or other social networks will be able to get the same information on extraneous sites, as they would get, being directly on social network's page. Users do not generally understand the meaning behind new upgrades of their social networks. Some of them are getting disappointed, some happy, but sooner or later they all are adjusting to them, and learn to use their new possibilities. It is vital to realize that behind any improvement or additional function one sees, lays a long process of programming and development. It is amazing how many new possibilities are opening in social networks, when one think that nothing else could be improved. New options, applications, possibilities, tools are still continuing to appear. Therefore social networks are a good subject of studies, from technological point of view.

Besides being a communicational tool, and a complicated technology, social networks have opened a brand new view at business and marketing. In the modern society, businesses are use social networks almost in all fields of activities and not only for clients' attraction. Companies are actively using social networks in outside world, for the reason of resolve certain tasks. Those tasks could be customers' attraction, finding personnel, information searching, image creation, etc. Moreover, before these tasks were solved with different tools, nowadays significant activity is transferred exactly to social networks. In the same time social networks are creating more and more tools, which help companies to solve their tasks more effectively. Extraneous social networks are congestion of people, which means that they can be used for companies' commercial needs. On one hand, there are people with needs and on the other hand companies, which are ready to fulfill those needs. The problem is that by now there are

not enough tools for fully functional communicational system creation, which would simplify the dialog between these two parties. Therefore, one can make simple and logical conclusion that during the next few years there will be a tendency for functionality development. This functionality will allow creating an efficient communication between companies and consumers.

As well as being the biggest e-commerce space, social networks simply became an inseparable part of today's life. People live in mobile technologies era, and year by year, mobile devices are getting new functions, becoming irreplaceable tools. In the same time people have a need to be connected, whenever and wherever they are. Going online is now possible almost from any cell phone, regardless of the location, since wireless networks are covering significant part of dry land. These technologies became closely connected to long existing and recently appeared social networks. During last few years, all popular social networks already created fully functional mobile versions of their web sites. Integration of mobile technologies gave an opportunity to the modern part of users, to be connected, no matter which location they are at. Frequently, companies are block the access to social networks during the working time, on the level of company's local network. However, this is becoming useless, since employees can use their mobile devices for entering their social networks. In the nearest future, mobile versions of networks will have no difference in functionality comparing to normal versions.

Since social networks are so many sided and complicated mechanisms, my research is going to be beneficial for several different parties. It will be useful for all types of businesses, since it will uncover the importance of integration and social networks' commerce possibilities. Also it will be interesting for developers of different software and applications, for the reason of exploring the IT background behind the social networks' creation and different ways of interaction between them and extraneous programs. Finally, this topic perfectly brings together business and information technologies, what gives me as a BIT student a possibility to apply my knowledge, gained from both of these areas, and therefore it is beneficial also to me.

Chapter 2 discusses research topic and questions of the thesis, describes research's methodology. Chapter 3 is focusing on fundamentals of social networking services, classifies social media and defines its problems. Chapter 4 provides information about

business opportunities of social networking services and applications used for their realization. Chapter 5 forecasts possible trends and directions of social media development, and therefore is mostly theoretical. Chapter 6 consist general conclusions of the thesis and answers the research questions.



## 2 RESEARCH TOPIC, QUESTIONS AND METHODOLOGY

The main objectives of this thesis are exploring of social networking technologies and application services. My research uncovers the social networks' structure, presenting it as unique platforms for all kinds of differently oriented applications. Analyzing the today's trends in this area, and forecasting the future possibilities based on the modern society's needs, will give us an opportunity to see the future of social networking and its place the world of fast technological development.

To reach my study's objectives, the following questions are important to be answered:

1. What is the history behind social networking development? Which technologies are used to create social networks?

As I mentioned above, it is important to understand how something works, to get the biggest benefit from its use. In case of information technologies, it is impossible to create, integrate, merger or use projects on their full capacity without clear understanding of the processes behind these actions. It is necessary for my research to discover how social networks are made, and how the services they provide are created. Knowing the mechanisms will help users to deeper understands their use, and makes such processes as integration or application creation clearer for interested parties.

2. What kind of applications can be developed on social networks' platforms? Which opportunities for businesses can provide social networking?

After getting to know the history of social networks, I concentrate my attention on opportunities they provide, such as multifunctional base for different applications. Moreover, I show the significance of opportunities that social networks are opening to almost all types of businesses. It is important to be innovative and follow the newest trends in the modern business society. Going hand by hand with technological development is one of the crucial factors for companies today. Not paying enough attention to one or another invention can cost some companies their leading positions on the market. I believe that the use of social networking for business is one of is

among the inventions.

### 3. What are the future trends and development directions for social network services?

IT is one of the fastest growing industries. It changes, develops, and evolves. As I mentioned above, it is important to be on the same foot with technological progress. Therefore in my study, I see an analysis of future trends and development directions for network services as a necessity. Technology is getting increasingly deep in people's daily lives, and there is no reason to think that this tendency will eventually stop. My research helps to realize that fact. In addition, on the basis of theoretical ways of general technological development, the study forecasts possible directions of social networks' development.

In my work I used explorative research method, based on literature analysis. During my research I used three main data resources: electronic articles and magazines, printed literature and news feeds, i.e. Really Simple Syndication (RSS). Since my research is discover relatively new topic, printed sources are rather limited, and majority of the information is taken from the online sources. Information is gathered, systematized and analyzed to uncover the current view on the topic as well as forecast possible development directions.

### 3 FUNDAMENTALS OF SOCIAL NETWORKING SERVICES

This chapter discovers the history of social media. It presents the timeline of social networking development and presents the examples of different social networks. The chapter also classifies social media and provides basic knowledge of technologies behind it.

One of the main trends of the Internet during the last years has been the rapid growth in popularity of social networks. Recently, social networks are being used for promotion of one or another subject or object.

Boyd & Ellison (2007,2) define social network sites as web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site (Boyd & Ellison 2007, 2).

Social Network is a social structure consisting of nodes - can be both people and groups of people, communities and organizations, that are connected to each other one way or another through social interaction. In terms of the Internet, social network is a virtual network, which is providing services relating to the establishment of linkages between its users and between users and relevant to their interests the information resources. Simply put, social networks are the websites with the ability to provide any information about user (school, university, date of birth, etc.) on which one can find other network members.

One of the common features of social networks is the system of friends and groups. Social media is a term that can apply to any Web site or service that allows users to interact, collaborate, communicate, share information or engage in any other social activity. Social media is not limited to social networking sites. Hosting photos, videos, blogs, microblogs and other multimedia content is also a popular activity of the social media.

The main characteristic of social media is presence of the users' community and their interaction with a specific type of content. These resources are collecting millions people, who spend more and more time in "Online" environment.

Social media today gives companies an opportunity to build long-lasting relationships with their customers, build customer loyalty, manage company's reputation, increase sales and solve many other problems in business development.

### 3.1 History of social media

The most important part of telecommunication networks' development was the possibility of direct communication between people.

Methods of mass communication are as follows:

- E-mail. Appeared the very first, this form of messaging has demonstrated the possibility of communication through computer networks. Designed to exchange messages between two parties, with a little modification, it allowed exchanging the information between groups of people. Such modifications were group mailing or mailing lists.
- Newsgroups. Newsgroups were the next stage of communicational systems' development. Their features were the following: firstly, storing messages and providing the access to the entire history of information exchange to interested parties, and secondly, different ways of grouping messages.
- Interactive conversation. With the development of telecommunications an increasing number of users began to surf the Internet constantly, and as a logical development there was introduced a real time communication service. The main idea of which was, that user receives a message within a few seconds after it has been sent by his companion. Specialized service of this type was called Internet Relation Chat (IRC). Within IRC, communication takes place via special nodes in the common areas - channels.

At first, free communication between users, as such, was not the main purpose of e-mail, newsgroups and chat services. Their purpose was pursuing business objectives: to

inform, discuss problems and manage work communication. Despite that fact, their spread and development together with the growing appearing of individual users in the network and followed with getting cheaper equipment, communication has become free. That is how as part of these services began to appear communities. Community is a group of people united by common interests. Within such groups exchange of information was much more active and extensive over time, than outside of them. Inside these groups were formed so called information exchange history. Sharing of personal data with the other community's members over time led to establishment of some sort of relationships between participants. These communities had their own specialties for the reason of technical nature. Typically, a user in a community was identified by informal name, which often was abbreviated (nickname). One real user may perform under different designations, therefore leading several virtual characters. The main method of communication has been and remains text messaging. Since emotions are difficult to express in plain text and this text is not always perceived the same, over time, was developed a set of signs for emotional text – emoticons. One of the communications in group specialties is the accumulation of relations' social history (jokes, common situations, methods of conflict resolution, etc.). This history partly helps to identify if person is local, or a “stranger”. In online communities, one form of such histories is the formation of a peculiar style of communication, dialogue cuts and often specific jargon. Modern forms of online communication are similar in many ways to the previously described services. Since those services were formed on generally accepted notions and habits of sharing information, these ideas and habits are much more inertial than the technology.

The most common modern services of communication are browser programs, which from a technical point of view, are web-applications. This method of organization allows the easiest entry into the communication system by using well-understood program (browser), which people are already used to. It also minimizes the system settings since, browsers have become long time ago a standard program and are present in any operating system, designed for personal use. At the same time, thanks to the development of telecommunication networks, such service can be accessed from anywhere in the world with the computer or even mobile devices.

### 3.2 Modern communicational service

Social networks are the top of the social media mountain. However services of Internet communication were existed long before social networks were introduced. Basically these tools still exist and widely used, even their popularity is not as high as before.

Modern communicational services are discussed below.

- Guest books. Guest books are the first and the simplest form of communication organization in the form of web-based application. A simple guest book is a list of messages listed from last to first. Each visitor can leave a message.
- Forums. This form of communication is the development of teleconferencing idea. Messages on the forums are grouped by themes, names to which are given, as a rule, with the first message. All visitors can see the theme and post their message as a response to previously written ones. Historically, forums firstly appeared as an improved guestbook and organized messages into branches as well as in the newsgroups. Typically, subjects are grouped into thematic forums; system management is carried out, by administrators and moderators. The most developed forums are beginning to show the first signs of social networking, meaning that between the parties may appear certain social ties.
- Blogs. On blog services, each user has own journal and writes messages in chronological order. The most common approach of blogging is creating, so to say public diary. Other users may comment on the blog entries. In this case, the user, apart from conducting own journal, is able to organize viewing feed - the list of entries from the journals of its friends; to regulate access to the records and look for companions of interest. Blogs are being a base for creation of different communities, which are a lot like magazines, created by the community members. In such a community, a member may place any message reflecting the direction of the community.

With the development of these forms of communication social networks began to form. In general all modern systems of network communities have several common features. Most of the communities are requiring user registration i.e. each participant should

have an account. During the registration process, the user must specify some information about himself for identification. Almost all systems require user to enter his email address and verify that it is valid by sending to it, the account activation email. If the address is incorrect, the registration can only be activated by the system administrator. This approach partly ensures the uniqueness of the users; Work in the social environment is sessional. Each session begins with the fact that the user enters his name and confirms identity by entering a password. Usually, users' identification is permanent. Besides the account details, the user configures the environment: uploads the picture, adds data about himself, indicate his interests. Social networks and their supporting services proved to be a very effective method of providing site traffic, getting feedback, and gradually became a tool for generating content. Based on this approach quite a lot of social web-services appeared and quickly gained popularity, united by the common name of Web 2.0 services.

The term "social network" was introduced in 1954 by a sociologist from the Manchester School, James Barnes (Freeman 2006). In the second half of 20th century, this concept started to be actively used in studies of social and human relations, and the term became commonly used. Over time, not only the people as representatives of society were viewed as social networks' nodes, but also any other objects that may have social communication, such as cities, countries, companies, websites, their resources, etc. (Freeman 2006).

During the analysis of various kinds of social networks, such terms as social network analysis (SNA) and the social network theory have appeared. Many Internet services, which are allowing setting many telecommunication links, automatically generate and use social networks. As a result, people have a kind of automated service called social networking service.

### 3.3 Short history of popular social media

The first social network in the modern understanding of this term was Classmates. It was founded in 1995 and nowadays has over 50 million users (Social Networking Watch 2008). Today Classmates.com, one of the largest social networks in the world, is

uniting people who want to find and keep in touch with those with whom they studied, worked or served in the Army. It offers its members the opportunity to spread pictures, biography, participate in discussions in the news feeds of their communities.

The next wave of social networking sites began when Ryze.com was launched in 2001 to help people leverage their business networks (Boyd & Ellison 2007). In particular, the people behind Ryze, Tribe.net, LinkedIn, and Friendster were tightly entwined personally and professionally. They believed that they could support each other without competing (Festa 2003). In the end, Ryze never acquired mass popularity, Tribe.net grew to attract a passionate niche user base, LinkedIn became a powerful business service, and Friendster became the most significant, if only as "one of the biggest disappointments in Internet history" (Chafkin 2007, p. 1).

Friendster launched in 2002 as a social complement to Ryze. It was designed to compete with Match.com, a profitable online dating site (Cohen 2003). It is still a fairly active social network with more than 90 million registered users and more than 61 millions unique visitors monthly (Ryankett 2009). The biggest amount of Friendster's traffic is coming from Asia. Friendster allows people to find their friends, then friends of friends and so on, thereby expanding the network. Its purpose was to provide a secure and faster way to meet than in real life. Friendster was partly a new kind of dating site. Instead of finding pairs of strangers based on common interests, Friendster had another scheme, assuming that people with common friends and acquaintances will have a better chance of creating pairs than those who do not have any friends in common. (Chapman 2009.)

LinkedIn launched in 2003. One of the first social networks devoted for business. The growing network includes more than 135 million professionals from 150 industries. Members have the tools to create own professional portfolio, search for partners and customers, expanding the circle of professional communication. (LinkedIn 2011.) The technologies used in LinkedIn architecture: Soliaris, Oracle, MySQL (Belkin 2010).

MySpace founded in 2003. By 2006, has already become the most popular social network in the world. "The online community for communication with friends of your



friends" - that slogan defined the purpose of this social network's developers. Network participants can create their own communities of interest; maintain blogs, post photos, music and video. However after 2009, MySpace is losing its popularity. By the year 2011 it held 72<sup>nd</sup> place in the world and its number of participants decreased from 80 to 30 million. (Alexa Internet Inc 2011.) In April 2011 the network was firstly announced unprofitable.

The technologies used in MySpace architecture: ASP .NET 2.0, Windows, IIS, MSSQL Server (Hoff 2009).

Unlike previous social networking sites, Facebook was designed to support distinct college networks only. Facebook began in early 2004 as a Harvard-only SNS (Cassidy, 2006). To join, a user had to have a harvard.edu email address. As Facebook began supporting other schools, those users were also required to have university email addresses associated with those institutions, a requirement that kept the site relatively closed and contributed to users' perceptions of the site as an intimate, private community (Boyd & Ellison 2007).

In 2008 Facebook became the most popular social networking site, surpassing MySpace and continues to grow (Chapman 2009). Facebook does not allow customizing the profile appearance, as does MySpace. However, Facebook allows users to upload photos, videos, and otherwise modify the appearance of their profiles, apart from the design. Over the last couple of years, Facebook has added several new features, including instant messaging chat, and applications together with the very own platform for developers. Users have several different methods of communicating with each other. Besides personal messages, one can also write on the wall of another user. No other users besides, friends can see the writing on the wall. Users can easily change their privacy settings and enable different users to see different parts of their profiles on the basis of existing relationships (the basic privacy settings are "only friends", "friends of friends" and "everyone"). Users can write notes that will be visible to all their friends. Users can also comment on the message their friends, or more often to mark a message as "Like". (Chapman 2009.) As of June 2011, Facebook had over 750 million active users and nowadays it is the most popular social network in the world (Kincaid J. 2011).

The technologies used in Facebook architecture: Linux, PHP with HipHop, Memcached, MySQL, Thrift, Scribble. (Agarwal 2008.)

The other social communication web site is YouTube. It was launched in 2005 and it is the first big video-hosting. Users can upload videos and share them via YouTube or pasting them to other sites (social networks, blogs, forums, etc.). On YouTube was also launched a service providing TV shows and movies under the license of copyright holders. The main social functions of YouTube are evaluation of the video files, comments, and the ability to subscribe to certain video channels.

The technologies used in YouTube architecture: Apache, Python, Linux, MySQL (Hoff 2008).

Twitter was founded in 2006 and gained popularity during the conference SxSW (South by Southwest) in 2007. During the conference tweets multiplied three times from twenty to sixty thousands. Twitter has also spawned a number of extraneous sites and applications becoming more of a platform than a simple service. There are client applications to update Twitter accounts, services for tracking tweets and update services for posting photos and video files directly on Twitter. (Chapman 2009.) The technologies used in Twitter architecture: Apache, Unicorn, Ruby, Scala, MySQL, Flock (Adams 2010).

While MySpace attracted the majority of media attention in the U.S. and abroad, social networking sites were proliferating and growing in popularity worldwide. Friendster gained traction in the Pacific Islands, Orkut became the premier SNS in Brazil before growing rapidly in India (Madhavan, 2007), Mixi attained widespread adoption in Japan, LunarStorm took off in Sweden, Dutch users embraced Hyves, Grono captured Poland, Hi5 was adopted in smaller countries in Latin America, South America, and Europe, and Bebo became very popular in the United Kingdom, New Zealand, and Australia. Additionally, previously popular communication and community services began implementing SNS features. The Chinese QQ instant messaging service instantly became the largest SNS worldwide when it added profiles and made friends visible, while the forum tool Cyworld cornered the Korean market by introducing homepages and buddies. (Ewers 2006.)

Blogging services with complete SNS features also became popular. In the U.S., blogging tools with SNS features, such as Xanga, LiveJournal, and Vox, attracted

broad audiences. Skyrock reigns in France, and Windows Live Spaces dominates numerous markets worldwide, including in Mexico, Italy, and Spain. Although SNSs like QQ, Orkut, and Live Spaces are just as large as, if not larger than, MySpace, they receive little coverage in U.S. and English-speaking media, making it difficult to track their trajectories. (Boyd & Ellison 2007.)

### 3.4 Classification of social media

Social media can be classified by several different criteria:

Classification by type: personal communication (Classmates.com), business communication (LinkedIn), entertainment (MySpace), videos (YouTube), audio files (Last.fm), photos (Flickr), geolocation (Foursquare), shopping (Groupon), blogging (Tumblr), news (Reddit), questions & answers (Answers.com), bookmarks (Delicious), virtual worlds (Second Life), thematic societies (Slashdot).

This is the most interesting classification of social media. Here are many different projects with different types of content and different purposes, each of which has found its niche. From this classification, it is not difficult to conclude that nowadays most of the major thematic are socialized into networks, regardless the content type. Rapid development continues only in certain niches, where thematic social networks are appearing. "Thematic societies", the last group in the classification, hides a lot of communities, each of which is based on the thematic content and communication.

Classification by accessibility: open (Facebook), closed (PlayboyU), mixed (VK).

This type of classification shows the accessibility of social media. Nowadays the majority of networks are fully open to the outside world, for that they are actively criticized by the users, but on the other hand it makes them very profitable. Some projects do not focus on publicity for their business model, so they were originally created as closed societies. Mixed networks usually develop poorly: their task is to collect a maximum popularity as "open" projects have, however, users are not used to have limitations, and therefore reluctantly becoming the participants in the media of this type.

Classification by region: world (hi5), country (Qzone), territorial entity, no region (InterNations).

The last classification by geographical region is the most simple and obvious. First, there were social media, the world's giants, which erased the physical borders. A little later, the media began to develop in some regions, often copying, in whole or in part, world-recognized leaders, but with an emphasis on their region. With the development of Internet networks gradually began to appear even in individual cities.

### 3.5 Problems of social media

Besides the growing popularity of social media, criticism directed at them has increased as well. The main problems are the following: issues of registration, user attraction and audience intersection, problems of psychological addiction, safety issues, and aspects of privacy.

#### 3.5.1 Issues of registration, user attraction and audience intersection

The appearance of a large number of different projects in many countries led to a significant intersection of audience, when the same person registered in multiple social networks. First of all, this happens for the reason of the fact that many networks still do not have tools to effectively meet the different needs, which often interfere with each other. Companies do not want to integrate with each other for the reason of fear of competition. Recently, for the reason of the strong development and wide variety of networks another common problem appeared, when a person is registered in multiple social networks simultaneously and often several times in the same social network. Therefore, when the social network, for example, claims 10 million users, it is more correct to say - 10 million registrations. It is also a big problem for non-unique new project is to attract users. The competition is very high, and almost all the users who are interested in this topic are already attracted by some existing network. For existing social networks the major problem is a possible migration of users from one social network to another.

### 3.5.2 Psychological addiction to social media

Social networks are the main reason, why people are spending more time on the Internet. That is the conclusion reached by the authors of the international studies Never Ending Friending. From the category of just an entertainment, social networks have grown into a real psychological addiction. Instead of official duties, the employees spend their time searching for friends and view new messages, which in turn affects not only the performance of the employee, but also the psychological condition of the person. Torn between work and virtual communication, people are getting stressed, what afterwards affect the physical health.

As noted in the report of british company Peninsula, for the reason of the workers who spend too much time on social networks, british companies are losing more than 130 million pounds per day. In total, british people are monthly spend 233 million hours of working time in networks. In total the Peninsula study surveyed more than 3.5 thousands of companies. (BBC 2007.)

### 3.5.3 Aspects of privacy

Recently, there is more and more talking about privacy on the Internet, the anonymity and other similar issues. That is of course concerning as well the social networks, which store a lot of personal data.

All "personal" and "secret" messages, photos, protected by privacy settings, the videos that "only friends" can see are not always so "secret" and "personal", as promised by social media. At the very least, the posts are known by the owners of the social network in which the person is registered as a maximum, they can be discovered by almost everybody. The most innocuous can be considered the use of personal data by the owners of social networking companies for the reason of grow your business. The easiest way is to find information based on the completed account information of the users. One should remember the advertising technology. It's safe to say that a user profile (voluntarily provided information about himself) and his behavior in any social network (involuntary provision of information) are priceless sources of the information

for marketers and a very promising source of revenue. Many social networks are already offering the possibility of behavior-based advertising, and information technologies are rapidly evolving. Starting from a simple division by sex up to complicated systems for tracking and analyzing users' actions on the basis of which one or another advertisement will be shown. For example, Facebook has been attacked by the publicity for the reason of changes in its privacy policy, which has been formulated very ambitious, allowing Facebook to use both public and private users' information, for its own purposes (e.g. advertising), even when they have removed their accounts from the site. Although the company claims that its intentions have never been like that, and that it was simply the misspeaking, the reaction was so severe that Facebook changed its privacy policy back to the old version and then asked the users themselves to make changes to this document. It was a good lesson, showing that many users are valuing very much the information they provide on the Internet. Thinking of the fact that many people publish information on all aspects of their online lives mainly on social sites, it is not surprising that many of them are concerned what a company can do with this information. Social media should respond quickly to user concerns about privacy and security. With information on the average social profile for hackers will be fairly easy to obtain the necessary information about user for unlawful use, or for other harm. Also there were security issues when some users' profiles had been hacked and their personal details were published elsewhere. Although previously such things were only happening with celebrities, recently this started to happen with ordinary users.

#### 4 APPLICATIONS AND BUSINESS OPPORTUNITIES FOR SOCIAL NETWORKING SERVICES

Since one live in the era of informational technologies, word user from recent time became the equivalent of word buyer, consumer. During last decade, society experienced the Facebook boom. Started as a college project, Facebook became the most populate web site on the Internet space, as of July 2011 it had eight hundred millions active users, and this number continuously grows. Created originally as a tool for sharing pictures and recent life events between students of Harvard campus, gaining a huge popularity all among the world it became much more than just a chat-room. It became one of the strongest marketing tools of the new era. Creating business pages on Facebook if not starting to substitute original idea of company's websites, but becoming a necessary addition to one. Now to find out company's location, sphere of interests, product line, to be in touch with its latest news and products, one do not need to search for a company in the web, and constantly check their web page for updates, or getting annoying subscription letters to your e-mail. Like company on Facebook, or subscribe to its news and user will see a short description in news feed, about anything important happening in there. Is it a special offer or a campaign, new product or a contest, one will know that right away. If user liked some of that news, one can share them, so friends will see them as well. This way, Facebook created a new way of transferring knowledge, so to say online "word of mouth", but when the word is not shared from person to person, but from person to people. Therefore companies are advertising twice. First when they share the information through their groups, and second, when other people share it among their friends who also might share it with their friends, and so on. The main benefit of such on-line marketing is that it does not cost company a cent, in the same time remaining to be really effective since the speed of information sharing is extremely high.

Social networking sites can be seen to capture the 'everydayness' of the 'knowledge economy' as people exchange information, cultural artifacts, personal details, links to products and commodities, contacts, friends, and details about events and meetings (Thrift 2005, 3) . Indeed, the activities and interactions of MySpace and other SNS resonate with Thrift's observation that through the auspices of Internet and wireless technologies, consumers and producers now increasingly interact jointly to produce

commodities, and, increasingly, commodities become objects that are being continuously developed (as is the case of, for example, various forms of software) increasing number of consumer objects are becoming part of an animate surface that is capable of conducting ‘thought’; thought is increasingly packaged in things. (Thrift 2005.)

Therefore marketing through social network is getting more and more popular. In my work I am aiming to show, how companies are advertising through social networks, and discover several practical suggestions, how this on-line way of marketing can be implemented in businesses’ strategies. The results of my research will be useful for firms and enterprises which are not using social networks as a marketing tool, and give them a guidance to enter this niche. Also on the examples of businesses which are successfully using all the possibilities of these networks, my work will help some companies to explore the full potential of the modern knowledge sharing systems, and to improve their marketing policies. Since big companies are well aware of social networks’ power and use them at maximum, my research is mostly targeting small and medium enterprises. As a matter of fact, the biggest advantage of it is that it could be useful for companies belonging to any market sector, since social networks are gathering people of all kind of interests, social positions, cultures and nations. Therefore the networks and Facebook in particular could be called the ultimate cross cultural knowledge sharing tool.

#### 4.1 Business in social networks

There are three main mechanisms of getting money through the social networks: advertising, paid subscription and e-commerce. Look in detail every mechanism separately.

Social networking sites are commercial spaces, even those that are free to access – in actually, it is where they are free to access that one need to remind themselves of this most frequently. This is illustrated by the recent developments at Facebook, valued at \$15bn, where the business model is being reconfigured to capture further profits from its established social networks with the development of ‘social ads’ (van Duyn 2007;



Keen 2007).

Almost all social networks are advertisement oriented. Users, moved by the wish to tell about themselves are generating huge traffic, which moreover does not need to be fed with renewing content. In fact, users are generating content themselves which is attracting their friends and like-minded people into the networks. It is called user generated content, or shortly UGC-content.

Main problem with advertisement placement in social networks is lack of potential brand loyalty. Social networks are popular, since authors of content are not controlled by anyone, however this environment can be dangerous for brands. Since users, unlike site owners, are not interested in advertisement placement, they can provide any kind of feedback to the brands, whose commercials will be placed in the social network, as well negative ones. This can lead to collective abasement and concentration of negative feedbacks, what cannot discredit the advertisement and the goods advertised. Moreover, brands' advertisements can appear on the pages with abusing or pirated content. In this case is will be located together with prohibited content, what will not improve the brands' image. However, if content authors will be put into strict behavior frames, the popularity of social networks will rapidly decrease. As a following the attractiveness of the resource as a commercial place, will go down too. The more content users are publishing in the social network, the more addicted to it they become. Therefore after some time resource owners might demand some kind of payment for its use. At the same time, paid subscription, in case of availability of many different services, might cause that part of the users will switch to the competitors' service. The higher is a probability of finding a needed or sometimes even concrete person, the bigger is social network's value. Paid subscription makes this probability lower and therefore value of such a network will go down. This explains why most social networks' services are free.

E-commerce is possible there, where communities with specific needs are formed. For instance Flickr is already providing photo servers for sale. However e-commerce in social networks still has a lot of opportunities for further development. One of the ways to use e-commerce is application. Application for a social network is a program (widget), created by extraneous developer using "flash" technology, and integrated into

social network. Users, who installed the application on their page, are giving it access to their personal information, i.e. pictures, friend list, groups, interests and so on. In fact applications are additional functionality for social networks, which opportunities and monitoring are limited only by social networks' rules.

The biggest Chinese social network Qzone, according to its own data, earned on advertising only 12% of their profit; the rest came from applications (Garipov 2010). Big parts of all applications, available in social networks are games. For example, Facebook game Farmville from Zynga Company was the most popular game in 2009, and had over 22 millions of users, part of which invested some money in their gameplay. Over a year 2009, Zynga made profit of over 100 million dollars; its main competitor Playfish, around 50 millions. (Wyman 2010, 101-110.)

#### 4.2 Risks of working in social networks and ways to avoid them

As I discussed above, promoting and earning through social networks is a fast developing tendency nowadays. Bringing company to a new level by public social networks is relatively easy and risk-free. However, using social networking for companies' inside purposes has several risk factors.

Risk 1: information leaks about a company, its employees, planned contracts, negotiations with potential clients.

Defense method: clear instructions to the employees about, limitations of publishing their private and corporate information in social networks or blogs along with periodical monitoring of content

Risk 2: infection of IT-infrastructure with viruses and spam

Defense method: limitation of computers' amount, which has access to the networks; in time updates of antivirus software; instructions about IT-security for personnel

Risk 3: decreasing of work efficiency for the reason of visiting public networks by the employees.

Defense method: restriction of access to networks to the personnel, except for people who need them for completion of working tasks. (ScanSafe 2008; Gonzalez 2011.)

## 5 FUTURE TRENDS AND DEVELOPMENT DIRECTIONS FOR SOCIAL NETWORKING SERVICES

Social networks are constantly changing mechanisms. This chapter discovers the possible directions of SNS development and future trends. The ideas introduced in this part of the thesis are built on the analysis of current social media novelties and concept of web 3.0.

### 5.1 Socialization of extraneous web sites and programs

Socialization of extraneous web sites and programs is an important trend of last years. It started to develop relatively recently and nowadays takes a mentionable place in social networks' development, however still remaining to be in the initial phase. Social network is an enormous amount of connected people and therefore it has power. However, there is never too much power and as a following one can assume that social networks will aim to enlarge their influence. In this case, integration with all the possible extraneous web sites, programs and outside world in general, is one of the most important strategic tools for that purpose. The deeper is, the more power social network will gain. Therefore, this tendency can be expected as one of the leading trends during the upcoming years. This process could be divided in the following two general groups:

- Integration with social networks
- Social functionality creation

Integration with social networks has already taken its place in today's life. Big numbers of web sites are integrated with the most popular networks. At the same time, almost all new projects are being created with integration possibility as a default. It can be done by placing the links leading to the site's official fan communities belonging to social network, as well as providing the information sharing buttons for sending information straight to the social networks' newsfeed. Furthermore there can be done, integration of online-shops for selling different goods, special offers which work with usage of SN, tools for leaving feedback or other comments, this list of possible interactions can still be continued. The next step will be creation of specialized integration platforms, which will provide an opportunity of "social" ecosystem initiation inside the extraneous web

sites. Thereby, users, being logged in to Facebook or other SN, will be able to get the same information on extraneous sites, as they would get, being directly on social network's page. The same process could be done as well vice versa. In other words users will be able to get updates or other information needed from external web sites, without quitting the social network page. External web sites at the same time are happy to accept the integration tools, since they are widening the clients flow from SN, therefore opening possibilities for additional profit. Since social networks are concentrating power, it could be said, that they are actually making sites integrate. Companies are realizing the importance of communication between users inside web sites' ecosystems, without letting them out and not giving communication process to the possible competitor. Social networks are developing fast, and users are demanding new content. Therefore, there is a risk that SNs will create the content, close to one, belonging to the group of sites integrated into them. Therefore, from being a tool, big social network will in a matter of moments become a competitor to previously integrated small site or even a segment. Companies are trying to create useful social functionality, which would be closely connected with the site, and would help to attract new users. Often companies are remaking their sites into small thematic social networks, and by doing so multiply their popularity.

Today, active socialization is not only applied by different web sites. Many applications have taken the road of social network integration. This tendency started from the communication programs in particular, but is awaited to spread out to the other types of applications too. One of the examples is Microsoft Corporation, which is integrating their mail service Outlook, with social networks. (Parr 2010.)

In the future, tendency of socialization is only going to grow, and popular social networks will gather more and more power and control over IT sphere. Old products, which will not socialize in the right way, will be gradually losing their popularity. Content will be created and quickly shared, for the reason of social network users' activity.

## 5.2 Thematic networks development

General types of social networks, created for private or business communication and based on specific type of content, started to develop around five – seven years ago, as well as clones of general networks for local markets. Thereafter, it was time for thematic networks to appear and develop. Based on the same mechanism of social network, their content was related to specific limited niches. This process started three – five years ago and nowadays came to especially active stage. As for today, on the Internet can be found social networks specialized for IT people, tourists, music lovers, photographers, athletes, book lovers, politicians, researchers etc. Herewith, there are still many popular niches which are not filled in, for example, there is no popular networks for drivers, realtors, for educational purposes and some others. Almost all thematic projects are aiming on global level, without some specific country orientation. Presently the stage of creating global projects is coming to its end, and new stage of creating thematic networks on local markets is taking a start. Often these local networks are more or less copying already existing structure of “big brothers”. During the nearest three – five years, quantitative filling of the market is expected to reduce or even stop, giving a start for qualitative filling. In other words, thematic projects are going to repeat the scenarios of global social networks, which are already many and which nowadays, are competing on qualitative level.

Today, users do not want to receive the edited content, which is someone gathering and creating without taking in consideration their opinions, anymore. They prefer to control this process and be its direct participants. This is exactly the reason why, users are going to witness the creation of one or several thematic social networks, on almost all more or less significant thematic, which will attract big part of targeted audience. Moreover, these communities will be based on a mix of thematic content and users' communication. At the same time they will be providing mentionable space for additional services in electronic commerce, geo-location, integration with related sectors' companies, etc. This process will be much easier for the companies which already gained certain popularity. All they need to do is reconfigure in a right way and add social functionality. This tendency may create indirect competition between general networks and thematic communities and most likely lead to integration of such projects. The list of most popular social networks can be seen on pages of Wikipedia.

Enclosed social networks of big organizations, such as commercial corporations, governmental organizations, political parties, etc., which can be seen as thematic networks, will become a separated branch of their development. These types of organizations are demanding effective communication systems for quick sharing of information between their members, located in different cities or countries, and therefore increasing the efficiency. This tendency is just starting its development, and is being implemented generally by biggest companies, leaders which start to implement this technology, thus gaining competitive advantage.

### 5.3 Technological development

Today, social networks are widely used and gaining more and more popularity day by day. Popularity, in turn, leads to a fast growth. Since first appearing, social networks were developing generally in quantitative way, increasing their amount of users. As for today, networks are entering the stage of qualitative development, by creating new tools of interaction with users. That is why technological development in nearest years will become a necessary condition, for survival in the competitive environment. Development of technologies will be many-sided, however even now I can point out several key tendencies.

Communication is a basis of any social network, and therefore communicational tools will be the first ones to be developed. This process is going on continually since the creation of first networks. Currently, many of world's leading networks are starting to gather all the communicational tools from user's lives in their projects. For instance, not so long ago, Facebook announced the integration of e-mail technology in its project (McGee 2011). In the nearest future, integration of all known communicational tools into social network can be expected. This will open an opportunity to keep contact with any person on the planet by using just one Internet resource, quick and comfortable.

Nowadays social networks are working on "User-Generated Content" principle, i.e. social network is providing all the needed tools, and by applying them, users are generating new content. This model is working pretty well, however the amount of tools for specialized content creation is rather limited. At the same time, users in

modern IT-world want to receive more and more differentiated, qualitative content. Previously social networks were trying to construct the users' content; later on they started to create qualitative content filtration tools. In future users can expect creation of new level functionality of content creation/filtration, as well as integration with different content providers. Model of web sites, where social functionality is mixed with qualitative thematic content, is very perspective. There already is an opportunity of integration for content providers, however it is not used so widely. Besides the standard widgets, which can be placed on the content providers' web pages, it is rather useful to create special applications through API networks. For a present, the integration through applications mechanism is not very comfortable. Users must enter the application to get the information they are seeking for. In the future users can expect the transformation of social networks into the platforms, where different applications will be developed, including the applications from content providers. At the same time, it is beneficial for social networks to create content inside the network. Its social network itself, its users or something else, what will help them to totally control and navigate the content creation process. That is why, simultaneously with integration, new content creation mechanisms will be appearing. In the light of this tendency, the concept of web 3.0 is coming to mind, which is especially oriented on qualitative content creation. Modern Social networks can create qualitatively new platform for content generation already now, generate content by themselves and give the opportunity to users to filter it, as well as participate its creation and editing.

Entertaining content such as games, videos or music, is taking a special place in content creation, and already has a great popularity among users. Integration with entertaining services is going on very actively. For example Facebook announced the integration with Spotify music service (Hamburger 2011). Warner Bros. notified launching of streaming service for their movies in Facebook (Purewal 2011). Before that, many gaming applications started to appear in social networks, for instance from famous game publisher Zynga.

During the last several years social networks are putting effort into integration with on-line shops, and creating the trading tools for their users. This is really interesting segment for social networks, since presently the e-commerce has hundreds of millions in turnover, when social networks have hundreds of millions potential consumers. So,

finding the efficient tool, for selling the goods and services to buyers, is remaining. As well as in case of content, here I can point out two ways of development: integration with on-line shops, or creating the very own platforms for this purpose.

Integration tools are not developed so well nowadays. There is a possibility to create special shopping-applications for social networks, as well as a possibility to connect the online shops to the networks and load their data to special sections. This integration doesn't work so successfully. It should be integrated deeper into social network, take into consideration users' behavior, personalize the trading process, etc. Creation of new integration tools shall be awaited in the future.

Social networks themselves are gradually progressing towards their own e-commerce platforms. Already now there are such creations as Facebook Marketplace, Second Life Marketplace, and other developments. It is beneficial for social networks to create precisely the platforms, special functionality, which will give an opportunity to buy and sell, making the network itself a middleman. Being such a middleman will bring profit from several sources such as commercial, additional functionality, commission and other services. This tool will be highly popular not only among users, but also among companies. In the same time social networks will be able to earn on this billions of dollars yearly, what makes this branch of development one of the prioritized and leaves no doubts in its serious development in the nearest future.

Another significant tendency during the upcoming years, in my opinion, will be development of tools for work. They will be developed more or less in all the networks, but biggest steps towards that direction will be made by business communication oriented ones, like LinkedIn. Nowadays the amount of work done through Internet is increasing, as well as use of social networks. As a following the need of working tools is growing day by day. Appearing of such services as contact storing, client search, documentation turnover, employees' management, co-operation projects or even Enterprise Resource Planning systems. These tools, most likely will be free in basic functionality, as for additional functionality they will be spread with software as a service model. First steps in this direction were made already, since social networks started to give access to extraneous developers, which can create special applications, including ones for work. Also, networks are starting to create functionality for job



seeking, trading, people recommendation and so on. Those are just a first steps, later on professional oriented networks will become a basis for special sections or even platforms' creation, aimed for solving different work-related questions. At the same time personal communication oriented networks will become a base for special functions development, which will be used by companies, giving them opportunities for activity in these networks.

In future, users can be ready for new networks appearance or transformation of old ones. They will become sort of working platforms, for business oriented people. In these types of networks, communicational tools, business applications spread by SaaS model and tools for distant cooperative work will be highly develop.

Any social network has a great possibility of its performance personalization for concrete user. It can track user's behavior, interests, location, and by using this information, give him personalized content of any kind. The principal of personalization is highly demanded in nowadays Internet world. Huge amount of information, most of which is useless, can be filtered, providing to the user only specific one, according to his personal preferences, in the particular moment of time and location. This tendency is progressing for over five years by now, but still did not use even half of its potential and as a following the future development can be expected in the nearest time.

Social networks have already learned to provide personalized advertisement, pointing out user-specified content, finding people which are important for him. For example Discover Facebook Pages service is opening the opportunity to find interesting web pages for specific person, based on the information he provided to the network. Next few years users shall expect even more qualitative personalization of content. Social networks will learn how to connect the content into united semantic web, creating multileveled information connection inside the projects when one "link" will be continued with user-specified content "chain", even functionality might be personalized. This tendency is mostly connected with the technology development, new functionality will be appearing personalized by default.

Development of advertisement technologies is another important trend, progressing

during the last years. Exactly advertisement is remaining to be the main source of income for social networks, and as a following, advertising tools will be the ones to be developed during the next three-five years. As for today, behavior tracking technologies are actively implemented. They show to the users the commercials not only based on their profiles' information, but also on their behavior. Generally networks are possessing huge amount of information about the users, so to say tracking their lives. This makes it possible to show the maximally targeted advertisements and have a high level of users-buyers conversion. In addition to these possibilities, can be added enormous users' base, which in the same time is constantly growing, what makes social networks very attractive advertising space. All the most well-known brands are already staying in a line, and massively buying out the commercial places.

Speaking of today, in many network advertisements can be targeted by the following parameters: country, city, region, street, sex, age, marital status, education, working position, interests, etc. Besides, there also developed behavior tracking technologies, aiming to make advertising more efficient and gathering the info for such parameters as duration of commercial showing, its frequency, appearance after specific users' actions. These tools are helping to bring the commercials rather precisely to the target group, picking up needed people out of enormous mass of users, without spending huge money for marketing. This way of advertising is accessible by everyone, starting from private person to huge corporations.

In the nearest future, targeting tools will continue developing. First of all that will be behavior tracking technologies, which after some time will be able to predict users' needs with higher probability. Moreover, there will be appearing a lot of new functionality, related to e-commerce in particular, what will become a huge base of new information, which will help commercial targeting to be even more precise. Also, networks are actively experimenting with increasing of advertising efficiency, for instance Facebook introduced new format of advertising, when users are paid for watching the commercials (Wasserman 2011). During this decade, advertising through social networks will become the most effective channel for goods' and services' promotion.

Geolocation is relatively new trend, which mostly started to develop for the reason of

modern mobile technologies. Social networks are gradually learning to track physical location of the users, and provide specified by the location content, i.e. everything what is situated near the user: friends, entertaining facilities, information about the area. Nowadays tracking process is getting even easier with introduction of geolocational services as for example fast gaining popularity Foursquare. Identification of current location is happening automatically with help of mobile technologies or by information provided by user himself. This type of information is allowing social networks to integrate in day-by-day human life, and make people even more connected with them. Pocket Pc's, smartphones, and alike technologies are going to developed during the upcoming years what will lead to fast growth of geolocational functionality in social networks. Even when phone is switched off, companies will be able to track the location with other technologies, as for example, face recognition. Many services are gradually going to take in consideration users' location.

Anonymity is one of the biggest problems of social networks which one way or another should be solved. Many people are purposely providing incorrect information about them, or sharing just a small part of it. That is why during the next following years, one can expect the appearance of new anonymity tools, which will probably help to completely hide personal data, or even encode it. In other words users will be able to be connected to network and track their friends' activity, without showing their activity. Today there already are existing first projects as Diaspora or NektoMe, based on anonymity principle.

#### 5.4 Social networks in business

In the modern society, businesses are using social networks almost in all fields of activities and not only for clients' attraction. Generally this process can be divided in two major groups, depending on the objectives:

- Implementation inside the company
- Implementation outside of the company

From long time ago, different information systems exist, inside the companies, especially big ones. They can be either Content Management System (CMS), purchased from the outside or unique developments. First movers were world class IT companies,

for which it was important to keep efficient communication between their employees all around the world, i.e. Microsoft Corporation, Google, IBM, Apple, Cisco Systems and many others. In fact, their informational systems are enclosed social networks, only for the companies' employee, even they are called differently. Employees have profiles, communicational tools, blogs, knowledge bases, corporate journals and so on. Basically this is whole electronic ecosystem inside the company. Besides big companies, these technologies are already available for smaller organizations as well, mostly as services for cooperative work. For example, project for cooperative work Manymoon, which is in the same time closely integrated with Google services. These types of systems are highly demanded nowadays - they solve enormous amount of tasks such as project management, knowledge accumulation, increasing employees' loyalty, information sharing, work distribution etc. Today, such systems already became essential part of any big company and in the nearest future and they will be actively developing and becoming more complex. They will gain new tools for solving new business tasks and quite possibly will integrate with social networks.

In addition, companies are actively using social networks in outside world, for the reason of resolve certain tasks. It could be customers' attraction, finding personnel, information searching, image creation, etc. Moreover, if before these tasks were solved with different tools, clients were attracted through TV advertising, employees were found through specialized publishing and image was built on conferences. Today significant activity is transferred exactly to social networks. In the same time social networks are creating more and more tools, which help companies to solve their tasks more effectively. Use of social networks for business purposes is highly depends on the region, where company is operating. In fact, extraneous social networks are huge congestion of people with, what means they can be used for companies' commercial needs. On one hand, there are people with needs and on the other companies, which are ready to fulfill those needs. The problem is that by now there are not enough tools for fully functional communicational system creation, which would simplify the dialog between these two parties. Therefore, one can make simple and logical conclusion that during the next few years there will be a tendency for functionality development, which will allow creating an efficient communication between companies and consumers. Most of the companies will become really active participants of many social networks and will start deep integration on the informational level.

Different organizations are often creating thematic networks on their targeted markets. For example financial group can create social network for financiers, and itself benefit from it, or big educational institution can launch education-oriented network, and even have some profit from it. Networks of these types of organizations, will be actively developing, moreover having a set of specialties, which will allow deep integration between owner-company and social network.

### 5.5 Integration and merger

Nowadays, social networks are developing apart and not aiming to merge. The reason for this separate development is huge amount of Internet users, still remaining to be not connected to them. Quantitative growth is going pretty fast, that is why there is no need in speeding this process through merger, especially since most of the networks are competitors. However this tendency will gradually switch to the opposite. People have a need in gathering together different pieces of information and first integration examples already exist. For example, Yahoo! Plus service, closely integrated with Facebook, appeared last year (Noyes 2010). Even fresher example is Google+, which is integrating its projects into new social network, and by doing so has achieved the phenomenal growth. By now Google+ is the fastest growing social network in the world (Lux 2011). Soon, it will become beneficial for networks to integrate with each other, if they are not direct competitors of course. For instance, thematic networks with content for managers MeetTheBoss TV already started to integrate with LinkedIn, Twitter and Facebook. During the last few years, extraneous technologies for a social networks merger were already developed, independently from the social networks themselves, and being beyond their control.

The merger process is going on for a few years already. First mentionable technologies were FOAX, XFN, OpenSocial, Google Social Graph, and few others. Some social networks had already started to support these initiatives. In particular, projects like MySpace, LinkedIn, Hi5 and Bebo, already gave their support to OpenSocial. As for Facebook, it went its own way and created Open Graph protocol for integration with extraneous web sites, which is however, is beneficial mostly for the company itself.

The point of Social Graph technology appears to be interesting. Internet is full of people with particular connections, direct and indirect. Every person has its friends, visits favorite web pages, including social networks, and consumes information. Often, these connections might cross with other people's ones. Two people, might read the same web site, this is the crossing point. All this can be imagined as a huge web, Internet itself is in fact one big social network. Individual person's activity and connections in the net, can be tracked in few ways. The easiest one is to gather and analyze information from several popular web sites, such as Google, Facebook, and Yahoo. Automatic analysis of that information can show the map of person's connections, and forecast his/her interests. For example, person A is a friend with people B and C on Facebook, at the same time A and C are using Twitter, but do not know about each other there. In this case, system can make a forecast that A and C would want to become friends on Twitter as well, and give them such suggestion. Generally this is similar to semantic web principle, which is foreseen to have a great future, but specialized in social networks area.

OpenSocial project, which uses many social networks' API, and allows creating cross-platform applications, seems to be no less interesting. Networks are voluntarily opening access to their information, allowing extraneous developers to use it. However here is a big minus: if on that technology's basis will start to grow a potential competitor, network can easily close its access.

Also, step by step appearing new special services: For example service in Russian language, Best Persons, which is allowing to do cross-posting into different blogs and social networks, gather links on different profiles in one place, subscribe to friends' updates and so on. Other, service, Plaxo, this time in English language is created for bringing together all the contacts. Development of such services is usually slowed down by social networks themselves. It is not good for them if users are spending time on other web pages or programs, having all the social networks' possibilities.

Technologies which will allow connecting users from different social networks will be gradually develop. Networks will start to actively support this process, as soon as all the quantitative growth will be over, and they will start qualitative development. In

nearest future merger will be on the level of integration between networks, content providers online shops different services and projects. This type of integration is beneficial already now. Later on integration will come to the new level and become symbiosis. Services which are parasitize on social network will be appearing and developing as well. Besides the integration through official tools, there is always a possibility to create a parser and read the information under the user's login with bots' help.

## 5.6 Mobile technologies

We are living in mobile technologies era, and year by year, mobile devices are becoming smaller and smaller, getting new functions, becoming irreplaceable tools. Going online, is now possible almost from any cell phone, regardless of the location, since wireless networks are covering significant part of dry land. No wonder, this technologies became closely connected to long existing and just appearing social networks.

Big projects, which previously were relying only on the Internet, now are getting new functions with mobile technologies implementation. For example russian social network VKonatkte, implemented compulsory connection between users' profiles and their cell phones. Moreover, there are special services, mostly oriented on mobile technologies. For example geolocational services, previously mentioned by me Foursquare or AlterGeo. There is a special term, describing this kind of services, "MoSoSO"-mobile social software.

During last few years, all popular social networks already created fully functional mobile versions of their web sites. Integration of mobile technologies gave an opportunity to the modern part of users, to be connected, no matter which location they are at. Often, companies are blocking the access to social networks during the working time, on the level of company's local network. However, it is becoming useless, since employees can use their mobile devices for entering their social networks. In the nearest future, mobile versions of networks will have no difference in functionality comparing to normal versions.

Today, specialized mobile services are using such popular technologies as GPS, Wi-Fi, Bluetooth, Geo-IP and others. Within the closest future, one can expect implementation of new technologies, and social networks' connected ones in particular. Development of such networks and separated functions depends on technologic development of humanity in general. The more people will have multifunctional mobile devices with fully functional Internet connection, supporting the latest mobile technologies, the faster functions of this class will be progressing.

### 5.7 Implementation in everyday life

Entering every sphere of human's life, is vital for social networks, since gaining maximal control over people's life, and gives them a chance for maximal monetization. Nowadays, social network is just an interesting web page on the net. In nearest future, it is standard of life.

Let's take a look at the electronic devices which are surrounding us. They become more and more complex every day, and become more similar to the computers. In the nearest future, different electronic devices quite possibly can get some social functionality. Technically it is already possible. For example, ordinary refrigerators will know, what their owners prefer, what their friends are buying. Stoves might get to know, what to cook, what was cooked yesterday by owner's friends, how long meat should be grilled. TV's will be finding itself all the interesting programs for all the family members, filter the commercials and phones would give info about the closest restaurants or remind to call someone who has a birthday. This list of future possibilities can be continued. Such functionality is demanded by special group of people, beneficial for social networks and might as well become useful for household appliances' manufacturers. That is why one can expect progress in this direction, however, most likely, not in the nearest future. Other example is geolocational services, which are already being actively developed. In the closest future, it will be possible to find on the map nearest entertaining facilities, offices, public organizations; read reviews about any place or information about local sights; find interesting people in the area or a company for the evening adventures; ask questions from locals or find people from your city, living



nearby. This all will be, easy to do, with any small mobile device such as smartphone, netbook or something else. Some social networks are aiming only for organization interaction in real world. In other words they are used as organizational Internet platforms, as for example service Meetup. Geolocational services are highly demanded and therefore they are going to be develop even more during the next few years.

## 5.8 Semantic Web

Semantic web is a part of a global concept of Internet development, which aims at realization of the possibility of machine processing of the information available on the World Wide Web. The main focus of this concept is to work with the metadata which clearly characterizes the properties and content of World Wide Web resources, instead of the currently used text analysis of documents.

The term was introduced by Tim Berners-Lee. (Berners-Lee 2001, 34–43.) The concept was based on the fact that the World Wide Web continues to evolve, and, on one hand, the volume of available information is enormous and dramatic changes occur slower for the reason of the fact that changes require more time and power. On the other hand, exactly because of its scale and scope, the problems become more visible. The amount of the information is constantly growing, therefore to find and to organize it becomes more and more difficult. Tim Berners-Lee, the inventor of the existing version of the Internet, offers its own version of an updated Internet, calling it the Semantic Web. The idea of a new model is unusual to stereotypical understanding of the network. Its meaning is, that the documents are not plain text, but a meaning, which has a text form, written in some language, or even more broadly, graphics, video, etc. If users would be able to teach machines to “understand” that meaning, one will be able to operate with the information at a higher level. For example, make inferences, search for non-obvious solutions to avoid unnecessary duplication of information and much more.

The concept of Semantic Web involves the use of its own standards (different from the usual HTML and CSS) to describe the structure and meaning of the pages. These standards were developed by a worldwide consortium W3C - RDF, OWL, SparQL etc. Really many sites have started to implement an API to access their data, not only in

HTML form, but also in RDF, XML, JSON, which requires more spending on developers, but also makes life easier for search engines. At the same time, many search engines have received the title of "semantic" – starting from Yahoo!, Google, and ending with Bing, as they have learned to look for resources with RDF markup. In the Semantic Web, wide use of the following elements is expected: uniform resource identifiers (URI); ontologies and metadata description languages.

The concept of Semantic Web was accepted and being promoted by W3C (World Wide Web Consortium-main international organization that develops and implements standards for the World Wide Web). For its implementation it is expected to create a network of documents that contain metadata about the resources of WWW, which will exist parallel with them. Then, as the resources themselves are intended for human perception, metadata is used by machines (search engines and other intelligent agents) to obtain unambiguous information about the properties of these resources through the mechanisms of inference. (Berners-Lee 2001, 34–43.)

Tasks and problems of the Semantic Web: indexation and search of information, development and maintenance of metadata; development and maintenance of annotation methods; understanding of the Web as a large, interoperable databases; machine organization of finding data; discovery and the provision of web-based services; research in the field of intelligent software agents. Technical part of the semantic web is a family of standards for description languages, including XML, XML Schema, RDF, RDF Schema, OWL, etc. The need for metadata description one way or another is lead to duplication of information. Each document must be created in two copies: marked for people to read, and in machine-oriented format.

Ontology is an attempt of total detailed formalization of some knowledge area with help of the conceptual scheme. Typically, such a scheme consists of a hierarchical data structure containing all the relevant classes of objects, their relationships and rules (theorems, limits), used in that area. Modern ontologies are typically consisting of the examples, concepts, attributes and relations. To describe the ontologies a special language - Web Ontology Language (henceforth OWL), built on XML was developed. Language OWL can be used to describe classes and relations between them. The language is based on a representation of reality in the data model "object - a property."

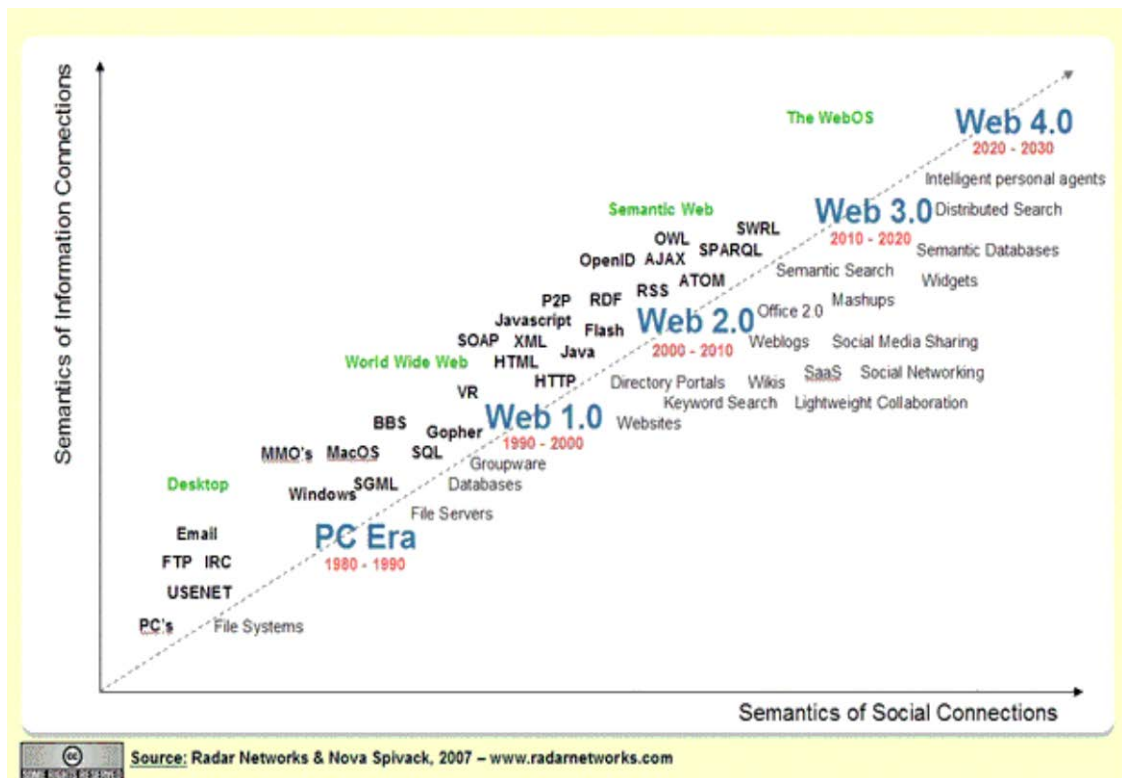
The language is not only applicable to describe Web pages, but any objects in reality and is regarded as one of the fundamental technologies needed to build the Semantic Web.

Resource Description Framework (henceforth RDF) - is developed by a consortium of the World Wide Web, model for data representation, metadata in particular. RDF is providing definitions of the resources in a form suitable for computer processing. RDF is a part of the semantic web concept. Any entity either informational (website or image) or non-informational (e.g., people, city, or an abstract concept) can be a resource in the RDF. The statement expressed about the resource, has the form "subject - predicate - object" and called a triplet. For example statement: "the sky is blue", in RDF-terms can be represented as following: the subject - "sky", the predicate - "has color" object - "blue". To refer to the subjects, predicates and objects in RDF, URI is used. The set of RDF-statements form a directed graph in which vertices are the subjects and objects, and edges are labeled as predicates.(Beckett & McBride 2004; Klyne & Carroll 2004.)

While a collection of resources and their metadata can be considered as part of the static semantic web, its dynamic part is represented with semantic web services. Semantic web services are the complete elements of the program logic with clearly described semantics, accessible via the Web and suitable for searching, composition and execution.

Technically, the semantic web service differs from the usual web service by having not only interface description (usually on language of the WSDL) in terms of types of data transmitted to service, return values, and generated errors, but by having a semantic description of its characteristics. The potential benefit of using Semantic Web services is the ability to automatically search for software agents suitable services for the task.

However, the complexity of this problem in its general form allows us to achieve so far some positive results only in highly specialized fields, explicitly benefiting from the introduction of service-oriented architecture, such as enterprise application integration. Semantic Web is often called Web 3.0, but, in fact, Web 2.0 and Web 3.0 for many years are existing side by side (Figure 1).



**Figure 1** Flow chart of Web concepts (Radar Networks & Nova Spivack 2007.)

In fact, there is going on a small switching of concepts. Search engines have not learned to fully understand the "meaning" of text, simply by using additional meta information, they can increase the identification of entities in a weakly structured texts. As a following, human intervention still remains necessary.

## 6 CONCLUSIONS

In this chapter I would like to introduce all the research's findings and outcomes, by answering the research questions and highlighting the main findings of my work.

It is important to understand where terms, such as social networking come from. It helps to realize, why and more importantly how these phenomena appeared in the society, and took over all possible spheres of people's lives. Human as such is a part of society and being a fully functioning part of society without communication is impossible. People are developing through knowledge exploring and sharing which is unreal without interaction with other people. People are in need to share and gain information, but since information technologies made their first appearance and quickly became an inseparable part of people's lives, this need came to the brand new level. Volumes of information flow are enormous, and so is the speed of their transfer. Social networks walked a long way to be where they are now. Starting from e-mail technology, and developing into fully functional online societies, they became an ultimate tool of communication, which is used in one or another way by anyone who uses the internet on the regular base. In my Thesis I introduced the history of SNS development to point out that social networks did not appear out of nowhere. I aimed to show that, combining together social functions of their predecessors, social networks, were just a logical step in communicational tools' progress.

Created on such technologies and programming languages as PHP, MySQL, Linux, Python, Apache, Oracle, it proves one more time that all the great things are simple. As we all know, the most popular social network of modern times Facebook, was just a school project from the beginning. This Thesis therefore identifies that to start something that big, everyone aware with above mentioned technologies can create the next web service of the era.

As I discussed above, social networks have become the ultimate knowledge sharing tools. Moreover, they have become an enormous database of potential clients, employees or partners. Social networking is a gold mine for companies of any size, field of activity or purposes. Besides that, social networks are the platforms for

extraneous developers' applications which can pursue different aims, such as being informational, entertaining, providing extra communicational tools or having other purposes. To get information about the weather for a week ahead, follow stocks, shop, meet new people, play games, receive information about new goods from your favorite brand and many more activities are now available on only one web page. Moreover, all these actions can be done without interrupting dialog with the friends. Application creators at the same time are trying to reach different aims. Some of them are getting profit from their apps, by providing some payable extra services, some of them are building a brand name, and some are establishing brand loyalty. An increasing number of businesses are integrating with the most popular social networks and building their own inside networks. The inside networks are supporting effective human resource management, facilitating interactions between different levels of companies. Processes of communication with units which are placed abroad are also becoming more comfortable since interaction can be held in a form of conference and involve several parties. In addition, social networks are giving to the businesses new ways of doing old things, and helping them to promote, enlarge clients' base, interact with other companies, and get instant feedback from the customers and many other opportunities, which companies from the past could only dream of. In this Thesis I described the possibilities, social networks provide to businesses of all kinds. I also pointed out the risks connected to social networking implementation in companies' structure. Moreover this Thesis introduced the applications' technologies and to prove their use for business, gave examples of the companies which are already using social networks in their business structure at their full capacity.

However, what was dreamed of yesterday is taken for granted today and tomorrow can lose its value at all. This saying can be applied to many different technologies which were revolutionary at first, but completely forgotten by now. For example cassette players were substituted by CD, which in turn lost their positions to MP3 reading devices. Information technologies are still constantly developing, and that tendency does not seem to slow down. On the basis of what is experienced today, it can be said that thematic social networks are going to develop in the niches which still remain to be unoccupied. Due to constant development of mobile technologies, the mobile versions of the web services will gain the same functionality as the originals. Geolocational services are on the go and soon location of one or another person will be identified with

extreme accuracy. Social networking technologies are possibly going to integrate with people's everyday life even more, and soon even an electric kettle might be able to “tweet”, that water has boiled. Semantic web is also rapidly developing and in the nearest future might completely substitute the Web 2.0, even there are occasions already, when these two concepts are working side by side. Nevertheless this whole question is partly subjective, since it is impossible to predict the future, what I can do is forecasting. It cannot be said for sure that tomorrow someone will not introduce the new technology which will change everything and therefore outcomes from this question, although they are built on relevant information, might be proved or disproved only when future will become today. Therefore in this Thesis I analyze the trends which already started their way to the top. Such trends as mobile technology development, thematic niches' fulfillment, and increasing integration rates are impossible to ignore. Moreover, this Thesis is forecasting some unpredictable trends of SNS deepening into people's everyday life. I also point out the features, like geolocation, which are gaining their popularity, and most likely will continue to go up. In addition is Thesis introduces the technology of new era Web 3.0. This technology has already started to work together with concept of Web 2.0 and is expected to completely substitute it in the future.

It can be said that the development of social networks is just starting, and during next years, rapid development of these interesting phenomena can be expected. Networks will transform into fully functional platforms for different spheres of life. First of all, global socialization of the Internet and even everyday life can be expected. Thematic projects will be appearing, business will get deeper into the social networks. In addition new technologies are about to be developed as well mobile ones. Different projects will be merging and grow.

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