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The Ruse Branch of the Union of Scientists in Bulgaria was founded in 1956. Its first Chairman was Prof. Stoyan Petrov. He was followed by Prof. Trifon Georgiev, Prof. Kolyo Vasilev, Prof. Georgi Popov, Prof. Mityo Kanev, Assoc. Prof. Boris Borisov, Prof. Emil Marinov, Prof. Hristo Beloev. The individual members number nearly 300 recognized scientists from Ruse, organized in 13 scientific sections. There are several collective members too – organizations and companies from Ruse, known for their success in the field of science and higher education, or their applied research activities. The activities of the Union of Scientists – Ruse are numerous: scientific, educational and other humanitarian events directly related to hot issues in the development of Ruse region, including its infrastructure, environment, history and future development; commitment to the development of the scientific organizations in Ruse, the professional development and growth of the scientists and the protection of their individual rights.

The Union of Scientists – Ruse (US – Ruse) organizes publishing of scientific and popular informative literature, and since 1998 – the "Proceedings of the Union of Scientists- Ruse".

BOOK 5

"MATHEMATICS, INFORMATICS AND PHYSICS"

VOLUME 13

CONTENTS

BOOK 5

"MATHEMATICS, INFORMATICS AND PHYSICS"

VOLUME 13

Physics

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POSSIBILITIES AND PROTECTION CAPABILITIES OF SOCIAL NETWORKS

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Abstract: *Technological changes led to the existence of a great variety of social networks. Social networks became pervasive not only among ordinary users but nearly all mass media. They allow fast and easy sharing of opinions, mood, interests, events, hobbies, photos, data and files including music, video clips, as well as finding and making friends and business contacts, entertainment and shopping, advertising goods or services, etc., providing users with options to announce their interests, select contacts and information content for uploading and sharing. Social networks, however, appear to be also hazardous sources of frauds explored by users with false identification. The paper presents some of the basic possibilities of the most frequently visited social networks and the protection capabilities of users' profiles and information content.*

Keywords: *social network, notification, security, post, profile, session, cycle, like, followers, friends.*

INTRODUCTION

Undoubtedly, social networks' usage is enhancing concomitantly with the information technologies' development. Social networks have become a large-scale communication means not only for ordinary users and business entrepreneurs, but for nearly all mass media interested in audience opinion. They differ from social media as they provide online services that can be used through web sites or applications [5]. They are based on Web 2.0, the so called *social web,* whose most distinguished feature is the possibility of producing user-generated content via Internet communications. While social media aim to deliver information to a target audience, social networks help people get to know each other, communicate and build up contacts [1], [8]. Social networks are convenient for fast and easy sharing of opinions, mood, interests, events, hobbies, photos, data and files including music and videos, for finding and making friends and business contacts, for entertainment and shopping, advertising goods and services, etc. One of the basic advantages is that a user can announce his/her interests, select contacts, information content, which he/she wants to upload and/or share in their profiles, choosing the friend circles for that purpose. Social networks are the ideal platform for online games and online discussions involving different users. In general, the availability of a profile is nowadays obligatory for any business, as social networks are the perfect way to expand its social effect. Hundreds of social networks have been created but many of them are not used on a large scale. It is important to log into the right social network relevant to one's needs and intended application. For instance, Facebook is convenient for making a personal profile and contacts; LinkedIn – for professional contacts; Twitter – for short messages; YouTube – for video sharing and Google+ is a combination of them.

Users should not neglect the fact that anything they publish or reveal in the social networks reflects on their media image, raising the importance of being in a full consideration in order to work out relevant ethic and professional picture of themselves [1], [8].

Social networks appear a mirror, even a continuation of real life activities. Users can show off their latest achievements, display projects, or write about new partnerships, i.e.

everything they do offline. However, one should not forget that social networks are sources of information that can be retrieved from their profile even by unknown people.

Social networks' benefits provide [1], [8], [9]:

- a cheaper way for communication with target users;
- a quick contact in real time;
- variety of communication tools, ensuring a natural continuation of one's everyday life, but they should be careful about frauds with false identification;
- more comprehensive and visualized information in thematic categories compared to conventional media;
- management of shared information;
- choice of a friendly circle of users;
- creation of users groups and contact categorization.

POSSIBILITIES OF SOCIAL NETWORKS

Mediapool.bg announced that the Bulgarians are the most active users of social networks among the Europeans in view of the fact that 92% of them use technological devices for access to social networks, juxtaposed to the average 75% of the people in Europe [13].

A study was conducted [6] related to Bulgarian users' behavior in the social networks in order to estimate whether the frequency of using social networks is connected with searches of information or not. The results show that there is no statistically significant difference in the frequency of using social networks. It appears only in cases when users log in to share, discuss ideas, flirt or simply entertain [2], [3], [11], [14]. According to the same study Facebook is still the leading social network ranked on the basis of users involved, and it is followed by YouTube though being with different focus (shown in Fig.1).
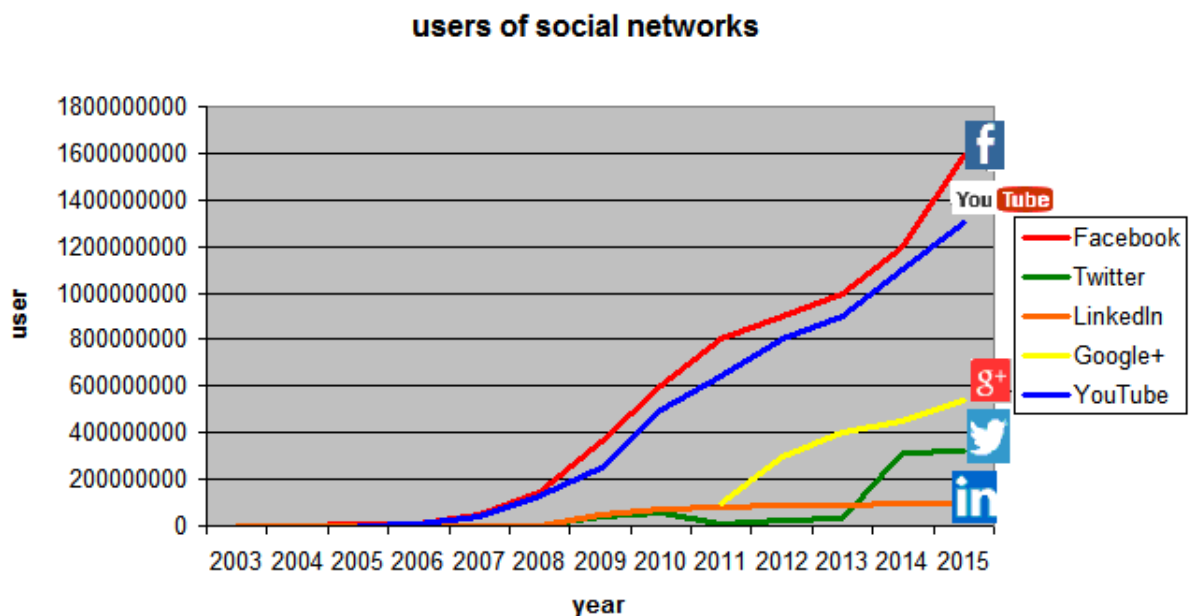

Fig. 1. Users of social network

The most frequently visited social networks in Bulgaria are [10]:

1. Facebook – launched on 04.02.2004 by Mark Zuckerberg with his Harvard colleagues and fellow student Eduardo Saverin [10], [15] is the world's largest and most frequently visited social network. It provides a big set of possibilities for personal

communication, e.g. finding a wide circle of friends; creating and management of unlimited number of users groups; possibility for uploading and sharing of personal data, photos, thoughts, ideas, experience, video, links; creating advertisements; receiving and sending messages, chatting, etc. The platform has an easy and convenient interface. It also provides management of contacts placing them in categories – close friends, acquaintances, or other user-created groups. Personalization of one's profile determines the access to shared data. Table 1 displays the basic possibilities of Facebook social networking services.

Table 1. Basic possibilities of Facebook social networking services.

Social network	Possibilities
Facebook facebook www.facebook.com	- finding friends - creating users groups - send and receive messages - sharing information, opinions, photos, thoughts, videos - see likes your posts and how many people have seen - register activity - notification -use applications - payment history - advertising - sharing your location with GPS

2. Google + was launched in July, 2011 by the most powerful search engine - Google.

It was designed by Bradley Horowitz and Vic Gundotra. Its main intent is the creation of corporate page that allows user communication with their followers. The corporate pages of Google are similar to those of Facebook. The basic difference between Google+ and Facebook is that Google+ provides the possibility to create friends circles. A user can create personalized circles like a circle of unknown people having similar interests; entities with which they want to make contacts and circles of close friends or business partners. Table 2 shows Google + basic possibilities. The main protection capability of corporate pages is the authentication through code. The code guarantees that false authentications shall not be accepted [10], [18].

Table 2. Basic possibilities of Google+ social networking services.

Social network	Possibilities
Google+ Google+ https://plus.google.com	- finding friends - selection of collections that can monitor interest - opportunity to join the community - create custom circles - track file activity and indications of publications with +1 - send and receive messages - sharing information, opinions, photos, thoughts, videos - receive notifications about activity - sharing your location with GPS - customizing my circles

3. Twitter is a social network launched in July, 2006 by Jack Dorsey, Evan Williams, Biz Stone and Noah Glass and it is designed for sending short messages (up to 140 characters) for which reason it is often called microblog. Users can publish messages, data, thoughts, interests, photos, videos, music, etc. The process of publishing in this platform is named *tweet,* while in Facebook it is *post.* Users have the possibility to forward information they liked that has been published by other users – a process named *retweet.* Users' in-the-moment updates are primary for Twitter, ensuring dialogues in real time and the subscribers to other users' tweets are named followers, unlike LinkedIn social network where the leading part is set upon users' profiles. Another significant advantage of the platform is that by writing a code through Java Script users can add dynamic information to a static website. The drawback is that Twitter is still not sufficiently popular in Bulgaria, a circumstance that narrows the circles of people who might be in the focus of one's business activities [10], [19]. As most of the social networks, Twitter is also funded mainly by advertising revenues. The basic possibilities of Twitter are listed in Table 3.

Table 3. Basic possibilities of Twitter social networking services.

Social network	Possibilities
Twitter twitter https://twitter.com/	- finding friends - create and manage your widgets - send and receive messages - use twitter cards for removing the restriction of 140 characters - registered cards to online payment - use applications - sharing information, opinions, photos, thoughts, videos - see likes your posts and how many people have seen

4. YouTube is a leader among video-sharing social networks. It was launched by three PayPal employees - Chad Hurley, Steve Chen and Jawed Karim on 15.02.2005 but in November 13, 2006 the website was bought by Google for US$ 1,65 billion [Wikipedia]. Perhaps all Internet users have used YouTube for video clips watching and downloading [10], [17]. The platform offers two possibilities for video content creating and uploading – in existing channels and in multi-channel networks (MCNs). YouTube networking services are offered for personal computers and mobile devices, same as those of Facebook and Google+. One of YouTube basic advantages is that the platform provides possibilities which cannot be ensured by TV. YouTube allows creating video content; video and music clips uploading; editing existing video content and music clips; creating video slideshows from photos; visualization of clips on TV or other display; commenting and discussing a published content by professional and non-professional users. MCNs are entities which link with multiple YouTube channels and offer assistance to content creators in areas like: product designing, programming, funding, cross-promotion, digital rights management, partner program management, monetization of videos, sales and/or target audience development. Sharing video content in YouTube allows access from the website where it shall be integrated; from Facebook profile; from Twitter accounts which share it, as well as search engines.

Table 4 presents the basic possibilities of the platform.

Table 4. Basic possibilities of YouTube social networking services.

Social network	Possibilities
YouTube You Tube www.youtube.com	- create channel - upload videos - upload video longer than 15 minutes - create a channel for income - linking to trading partners - edit video content - fan funding - subtitles settings - search and classification of clips by category - setting channel live streaming for fans - link account to another social network - share your public activity to connected accounts - ability to create video slideshows from photos - determining the quality of uploaded videos and player size - inclusion of the latest updates on the popularity of videos, music, news makers - setting for visualizing TV and a choice of display

5. Linkedin is a business-oriented social network that was launched on 05.05.2003 by Reid Hoffman. Through this platform users of common interests or business partners can easily connect and communicate. It is very important what kind of information a user has shared in their profile or in business page, as it is the leading feature for making contacts. The information should include user's skills, interests, education, experience, workplaces and positions occupied to the moment. All the information including photos provided in user's profile shall be assumed as a kind of CV by the rest of the users and this is why it is important to be presented in a way that shall attract the attention of the target audience. LinkedIn is the space where one can create business partnerships, seek job vacancies, or find qualified employees. Over 80% of the companies with registered accounts in LinkedIn use the network for staff recruitment [10], [12], [16]. LinkedIn provides the possibility for creating groups of companies and firms which have common clients, interests, etc.

Table 5 lists the basic possibilities of LinkedIn social networking services.

Table 5. Basic possibilities of LinkedIn social networking services.

Social network	Possibilities
LinkedIn Linked in. www.linkedin.com	- creating a professional profile - finding partners to your interests - find alumni - subscriptions - send and receive messages - create a company page - connect with user or company - download an archive of your account data, posts, connections and more - online learning - choosing a service provider - notifications - job post

SECURITY OF SHARED DATA AND ACCOUNTS

Social networks provoke their users to set up profiles with personal data and publish personal information that can be accessed through the web by a great number of users, or to share information published by other users because it has attracted their attention or it is in correspondence with their mood or interests. The process enhances the options for establishing social contacts, but at the same time, it arises hazards for speculations; it also increases the probability of producing victims of attacks or blackmails coming out from users with false identification. The need of social contacts should not infringe one's right of privacy. In this context the security of user's account and personal information is a serious and crucial matter [7]. Social networks are provided with diversity of settings for protecting user data and profile [4], [9].

User profile security can be strengthened if the following recommendations are observed:

- usage of strong passwords: the passwords should not contain personal data like user name, family name, date of birth, hobby or personal information about their relatives;

- usage of complex passwords: complex password's length is minimum of 6 characters, it should contain capital and small letters, numbers and if possible, one special character at least;

- do not share your password with friends or write it down unless you use relevant software for storing encrypted passwords;

- do not use one password for your profiles in different websites;

- change your passwords periodically with passwords of equal strength [4];

- on setting up your account use the option for a secret question, phone number or pick trusted friends if you get locked out;

- set up the option for Login Notifications for getting informed if your account has been accessed from an unrecognized device or browser;

- use updated antivirus software;

- log in only once in a session, as the inclusion of an additional login display may be a signal for an attack;

- sign out your profile when you exit the platform: many users think that closing the website is sufficient to exit the account; in fact it is an effective way for fakes because if the account is not signed out from the network, it remains accessible for the user who opens the browser next;

The following recommendations can improve the protection of shared information in the social networks:

- arrange your friends/groups by priorities: close friends, acquaintances, or other categories. It will help the management of shared information;

- use protected browser for online shopping via HTTPS и SSL protocols for encrypting data transfer;

- by setting up the option for management of account activeness you will be able to monitor whether your account has been accessed by another user;

- change your settings for privacy, i.e. who can see the list of your friends [8];

- manage your platform to specify who can share information on your timeline;

- if needed, block some applications or "friends";

- specify the friends who can comment your shared data;

- set up the problem reporting option.

Every social network is secured with relevant protection means. Tables 6, 7, 8, 9 and 10 present the protection capabilities of the most visited social networks: Facebook, YouTube, Google+, Twitter and LinkedIn [15], [16], [17], [18], [19].

Table 6. Protection capabilities of Facebook social network

Social network Facebook
facebook
Protection capabilities
- use special password for applications - manage an OpenPGP key - use security code with code generator - manage who can see your posts - who can look your email address or phone number for connect - who can post on your timeline - who can send you friend request - who can see my friends list - block users - block messages or event invites - report a problem - managing each photo album and videos - management sharing of personal data - inclusion HTTPS secure connection -confidentiality of the friends-close friends (familiar), known friends, added to another list

Table7. Protection capabilities of YouTube social network

Social network YouTube
You Tube
Protection capabilities
- determining the privacy of uploaded video content- public, unlisted or private - protecting my activity by e-mail - manage subscriptions - history viewed videos - show or hide notes or notices to videos - analytics- report to time watching, likes and dislikes, demographics data, subscribers and more

Table 8. Protection capabilities of Twitter social network

Social network Twitter
twitter
Protection capabilities
- log in with code - verify login requests - limit photo tagging - protected your tweets - Who can see my Tweets - manage your contacts - timeline settings - twitter analytics- . - receive a request when new people want to follow you - manage the links to your tweets, will be visible to your some followers - e-mail or web notifications - blocked accounts

Table 9. Protection capabilities of LinkedIn social network

Social network LinkedIn
Linked in
Protection capabilities
- who can see your connections - see your active sessions - choose whether to show or hide profile photos of other members - who can see you as a suggested connection if they have your phone - choose whether can use cookies to personalize ads - verification security- activate this feature for enhanced account security - choose what types of emails you wish to receive - who can send you invitations to connect - choose whether you want to receive invitations to join groups - who can follow you and see your public updates - block or report

Table 10. Protection capabilities of Google+ social network

Social network Google+
Google +
Protection capabilities
- with whom to share your post - managing each photo album and videos - management sharing of personal data - if your photos can be downloaded by users - who can comment on your posts - authentication of authorship of corporate page through code

CONCLUSION

It is necessary to keep abreast with the technological changes of our time and make maximum use of Internet and information technologies benefits including those of the social networks. On the other hand, we should consider the negatives and risks from high technologies' applications and take relevant measures for using the protection means, which secure our profile accounts and shared data. Users should commit themselves to find out the protection means and purposefully use the social networks settings for security.

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ВЪЗМОЖНОСТИ И СРЕДСТВА ЗА ЗАЩИТА НА СОЦИАЛНИТЕ МРЕЖИ

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Резюме: Съществува голямо разнообразие от социални мрежи. Те се използват масово не само от обикновените потребители, но и от почти всяка медия. Те позволяват бързо и лесно споделяне на мнение, настроение, интереси, събития, хобита, снимки, данни и файлове, в това число музика и видеоклипове, за намиране и изграждане на приятелски и бизнес контакти, за забавление и пазаруване, за рекламиране на стока или услуга и др., като потребителят сам определя своите интереси, избира своите контакти и съдържанието на информацията, която да качи и сподели. Употребата им обаче открива и опасности за спекулации от страна на потребители с фалшива самоличност. Статията представя някои основни възможности на най-често използваните социални мрежи, както и средства за защита на потребителския профил и споделената в него информация.

Ключови думи: social network, notification, security, post, profile, session, cycle, like, followers, friends.