A REVIEW ON SECURITY AND PRIVACY ISSUES CONCERNING WITH SOCIAL NETWORKING SITES.

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ABSTRACT

Today we live in the era of social networking, where everyone is having access to the social media sites like Facebook , Twitter , Instagram etc. . With the growing popularity and number of users of the social media, the most concern and discussed topic is the security issues and threats that the users are facing these days. Due to the lack of proper safety measures , the users private data can be accessed illegally (hacked) by the hacker(outsider) . Lot of security thefts are there on these sites. Some of the following security issues like privacy & confidentiality, authentication etc. are discussed in this research paper. We have drawn a comparison table among the leading social networking sites like Facebook, Twitter Instagram & WhatsApp on the various parameters of security threats. In this paper, comparison between various social media sites and application based on security parameters has been carried out.

Keywords: Facebook, Instagram, Twitter WhatsApp

I. INTRODUCTION

A social networking site is a platform to build social networks, friends, contacts or social relations. It provides users to share similar interests, views &thoughts, pictures, videos, ideas,blogs, to chat with friends,and real life connections. [15]It is a web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. It represents user in form of account (often called "profile "in local language) type based on individual personality (like celebrity account, public account, addspage, idea sharing page and many more.). Most of the social network sites are web-based (accessed by internet) i.e. they ask user to put their information online (and the thing which is online is never private). They also allow user to interact and communicate with the help of their mobile applications with good GUI's.

1.1 Usefulness of SNS

SNS in making life easy:

Social networking sites help in a number of ways in making life easy and simple of user, such as:

Finding friends

Seeking a new job

Locating assistance

Getting and giving product referral

Receiving support, ideas, and thoughts from like-minded persons.

1.2 Current Scenario

[16] The use of SNS such as Facebook.com and Twitter.com has become a popular and integral part of the life of people. Young people are particularly using it with great enthusiasm; the vast majority are engaging on a daily basis with SNS via the computer or the mobile (either messengers or WhatsApp type applications). Research in this area is an emerging field because the number of users are increasing so with this, the number of threats to the user private information are also increasing (like hacked, or steal or misused by third person). Studies have shown negative impacts of these SNS which are dominating their popularity and development. New strategies for maximizing security for user are coming into action. More targeted research needs to be undertaken to ensure specific emerging practices are properly understood so the positive effects of SNS can be leveraged.

II. BACKGROUND HISTORY: [10]
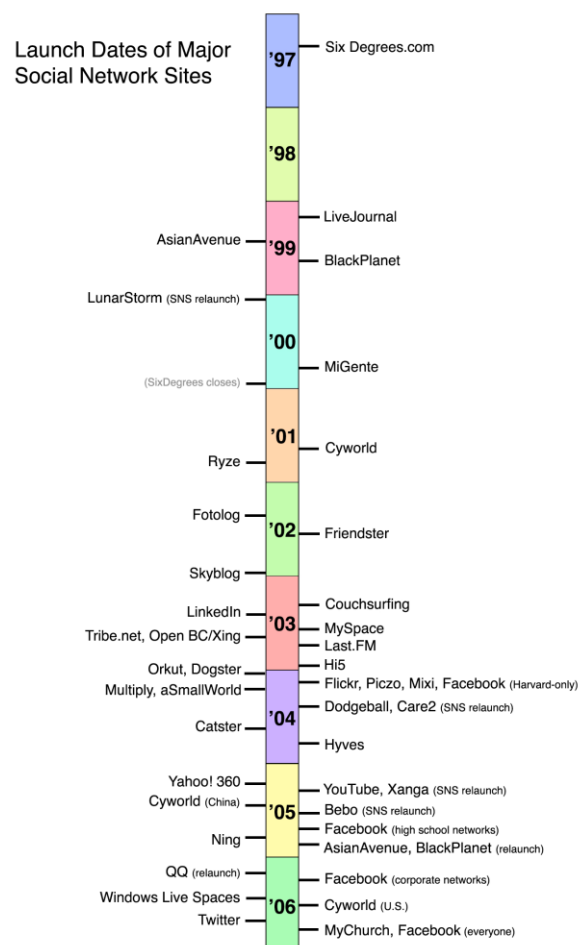
Figure 1: Timeline of the Launch Dates of Many Major SNS and Dates when Community Sites Re-Launched with SNS Feature.

[10]The first recognizable social network site was launched in **1997** i.e. **SixDegrees.com**. It allowed users to create profiles, list their Friends. In 1998, surf the Friends lists. Each of these features existed in some form before SixDegrees.com. Profiles existed on most major dating sites and many community sites.

After that came **Classmates.com**which allowed people to affiliate with their high school or college and surf the network for others who were also affiliated, but users could not create profiles orList Friends until years later. **Six Degreesbecame**the first to combine these features (creating profiles, list friends) in one.having millions of users, SixDegrees.com failed to become a sustainable business and, in 2000, the service closed (Downfall of SixDegrees).

From 1997 to 2001, a number of community tools began supporting various combinationsof profiles and publicly articulated Friends. **AsianAvenue, BlackPlanet, and MiGente** are example of such which allowed users to create personal, professional, and dating profiles—users could identifyFriends on their personal profiles without seeking approval for those connections.

Likewise, shortly after its launch in1999, **LiveJournal** [11] (*Live Journal is basically a blogging service, but the members can add other members as*

Friends) listed one-directional connections on user pages. On **LiveJournal**, people mark others as Friendsto follow their journals and manage privacy settings.

After that The Korean virtual site**Cyworld** was started in 1999 and added SNS features in 2001. In 2000, Swedish web community**LunarStorm** refashioned itself as an SNS by including Friends lists, guest books,and diary pages

The next wave of SNSs began when **Ryze.com** was launched in 2001 to help people leverage their business networks.

[11]**Ryze.com** was originally an online business networking site, but members can use this site to communicate with other members for dating purpose or for photo sharing. Being free members can get gold membership which is a paid service for performing advanced features.

In the end, **Ryze** failed to get mass popularity, **Tribe.net** grew to attract a passionate user base, along the same time**LinkedIn (**One of the popular SNS of today) became a powerful business service, and **Friendster** became the most significant.

2.1 The Rise and Fall of Friendster

[13]The **Friendster.com** was launched in 2002 as a social complement to **Ryze** (the downfall of **Ryze** mark the beginning of Friendster). [11]It is primarily a site for social connection: for dating with friends, making new friends and to meet new people. It was designed to compete with Match.com (also a dating site).

 The reason for the downfall of the site was technical and social difficulties. Friendster's servers and database were ill equipped to handle its rapid growth, and the site faltered regularly. It makes users frustrate who replaced email with Friendster. Due to this many users left Friendster because of the combination of the technical difficulties, social collisions and broken trust between user and site. At the same time the popularity of site decreased drastically in countries like Singapore,Malaysia, Indonesia and Philippines which make the site to close.

2.2 The SNS Hit Mainstream

Year 2003 saw the beginning of some new SNS like LinkedIn, Xing (formerly open BC for business people) which help the users to connect on the basis of shared interests. Furthermore as the social media and user-based and desire content increase new SNS came into the existence like YouTube (for video sharing), Flickr (photo sharing),Last.FM (for music learning habits).

MySpace launched in Santa Monica, California(hundreds of miles from Silicon Valley) in 2003 to compete with siteslike Friendster, Xanga, and Asian Avenue. Because of the rumors against Friendster, MySpace was able to grow rapidly by capitalizing on Friendster's alienation of its early adopters. Due to the growing popularity of MySpace among youngsters as more and more people were joining it either due to their friends , family members or to connect to their favorite brands. In July 2005, News Corporation BBC purchased MySpace for $580 million, Afterwards, safety issues plagued MySpace.

While **MySpace** attracted the majority of media attention in the U.S. and abroad. , Orkut became the premier SNS in Brazil before growing rapidly in India , Mixi got widespread success in Japan, LunarStorm took off in Sweden, Dutch users embraced Hyves, Grono captured Poland, Hi5(another SNS) 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. The ChineseQQ 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. Blogging service also became popular. In the U.S., blogging sites 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.

Now it's time for **Facebook** to be ahead in the crowd of SNS. **Facebook** was initially designed to support distinct college networks only. Facebook began in early 2004 as a Harvard-only SNS which provides a good GUI, offers user to share what they like, what they are thinking, comment on their friend's idea, pictures and much more. To join, a user had to have a harvard.edu email address. Slowly **Facebook** began supporting other schools due to the huge success in Harvard College; those users were also required to have university email addresses associated with those institutions.

Beginning in September 2005, **Facebook** expanded to include high school students, professionals inside corporate networks, and, eventually, everyone. The new signup method did not mean that new users could easily access users in closed networks—gaining access to corporate networks still required the appropriate .com address, while gaining access to high school networks required administrator approval. Unlike other SNS's, **Facebook** users are unable to make their full profiles public to all users. Another feature that differentiates **Facebook** is the ability for outside developers to build "Applications" which allow users to personalize their profiles and perform other tasks, such as compare movie preferences and chart travel histories.

Within very few interval of time **Facebook** became very popular. **Facebook** is now in 207 countries with 500 million members.

[12]In 2006 another famous microblogging service "**Twitter**" came in eyes of the people. **"Twitter"** is a microblogging service which has emerged as a new medium in spotlight. It is also internet based-service that enables user to send short 140 character message which is called "tweet". It also provides the facility of creating

account or profile which can be followed by other profile members. Registered users can read and post tweet but unregistered user can only read tweets. Unlike on most online social networking sites, such as **Facebook** or **MySpace**, the relationship of following and being followed requires no reciprocation. A user can follow any other user, and the user being followed need not follow back. Being a follower on **Twitter** means that the user receives all the messages (called tweets) from those the user follows.

[14]With the advancement of phones, users are accessing social networking site as an application like Facebook messenger,**WhatsApp** (which is a messaging application founded in 2009). **WhatsApp** allows to text message, send images, videos and audios. This application is available for android,ios,windows, Symbian allows user to use its service free for 1 year and after that they have to pay ($1). **WhatsApp** allows user to access it with the help of their phone numbers. User can have only account (phone number as username ID: [phonenumber]@swhatsapp.net) with the single number i.e. user can't access two account with the same number at a time. **WhatsApp** provides the facility to change the number from which user access. There is no restriction on the length and number of messages one can exchange and no carrier IM fees apply. **WhatsApp** uses a customized version of the open standard Extensible Messaging and Presence Protocol (XMPP). **WhatsApp** automatically synchronizes all the phone numbers from user's phonebook with its centralized database of WhatsApp users to add contacts to the user's **WhatsApp** contact list. Previously, **WhatsApp** messages were not encrypted, that means data which was sent and received was in plaintext, meaning messages could easily be read easily if packet traces were available but now **WhatsApp** database use encryption having custom AES encryption algorithm with above 192-bit encryption key mainly used for **WhatsApp** Android Platform.

III. SECURITY ISSUES IN SNS

The question arises that why the social networking sites are unsafe after having so much popularity among the people. Answer is that in now a days these social sites are used as a means to humiliate,insult, defame someone either by the friends of the victims or by the unknown (hacker). Due to lack of feature of proper authentication of person who is using that whether that person is real or fake, hackers/ bad persons are spoiling the SNS by posting anti-religion matter or matter related to abuse,sex, malware and spam.

3.1 Comparison Table
Comparison table has been shown in Annexure-I

IV. PRECAUTIONS WHILE USING SOCIAL MEDIA SITES

Here are some useful tips regarding the privacy and security of social networking sites and the precautions an individual must take while using social networking sites:

4.1   Make sure that the device used by you to access to social media sites is secure. One must use efficient and updated anti-virus software and keep the application and operating system patches up to date.

4.2   Do not use the same password for all social media accounts as it increases the vulnerability of other accounts, if one of them is hacked. Use unique and strong passwords including characters,alphabets and special symbols.

International Journal of Advanced Technology in Engineering and Science
Vol. No.3, Issue 11, November 2015
www.ijates.com

ijates

ISSN 2348 - 7550

4.3 Be careful and cautious while clicking on a link to another page on a social networking site as even if it is from a trusted source as attackers use such sites for distributing their malwares and you might fall prey to them thereby sharing your personal and private information with them.

4.4 We should only post such information which we are ready to share even with a stranger because there is nothing as 'privacy' on a social networking site.

4.5 Be careful about the pages and groups you join on a social networking site and the people whom you add to your circle and to your id as a 'friend'. The more friends or groups joined, the more people will have access to your information.

4.6 Do not share your personal information with a website you do not trust. If you are sharing your personal details social networking sites like Facebook, Twitter etc. then make sure to customize your security settings and only allow people you trust to view this info.

4.7 Your profile picture is viewed by millions of user on the social networking platform. Thus, adding fuzz or smearing might helpyou in preventing misuse of your profile picture.

4.8 Don't post your address online. If someone has your full name and knows the area where you live, they can find you online. If they can figure out when you'll be gone, you're inviting disaster.

4.9 Remove any pictures with location data of you and your family, any geo-tagging data from your smart phone.

4.10 Don't provide a minute by minute account of your day. Keep some things a secret. Telling the world where you are and what you're doing can be used to predict where you'll be in the future. If you are excited about an upcoming vacation, keep it to yourself. Criminals use this information to determine the best time to rob your home.

4.11 Some sites may share information like email address and contact numbers with the third party applications. Make sure your review the site's privacy policy before signing on it. If you find it vague,then do not use the site.

4.12 User's activeness is also necessary, if a user sees anything illegal, unnatural, and a kind of criminal activity they can "Report Abuse" that content. Report abuse is a feature in almost many sites to report a suspicious and non-social content and activity, then the site admin would like onto that matter.

V. CONCLUSION

Online social networking is a relatively new way to communicate, and it has been quickly adopted by young people as a primary means of communication. Because social networking is so widespread among kids, it's important to at least understand the basics of how it's used so you know what to keep tabs on. Social networking sites are playing very significant role in today time; it has a direct impact on all age group people. Though it has many cons but still these are like an effective tool in communicating millions of people and spreading our expressions and view worldwide. We must need to understand the security risks involved in the usage of social networking sites. A well- informed user will not only help to maintain security but will also educate others on these issues. We all need a change in the pattern of use, in order to prevent miss-happenings on these sites. If we will be active and aware these sites will serve us their batter and will bring some more revolution in the world of cyber technology.

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ANNEXURE-I

Security threat	FACEBOOK	TWITTER	INSTAGRAM	WHATSAPP
1.Privacy issues & confidentiality	Facebook transmit and exchange user private information to the third party applications. Text chat, voice chat and private instant message between users may not be Encrypted.	On twitter anyone can see your tweets depending on type of your account. Twitter already analyzes your tweets, retweets, location, and the people you follow to figure out which "Promoted Tweets"(a.k.a. ads) to inject into your timeline.	The privacy and geolocation settings are optional and can be modified, they are often activated unknowingly by young users. "The result is that the public can view the exact location where a child's photos were taken, usually clustering at the child's home, school, and primary after-school location which means that the child's daily path or routine is easily identified and mapped,"	Acc. to privacy policy, WhatsApp won't store personal information like names and addresses. Users contact names and numbers are synched on user phone, not on the company's servers, and this data isn't sent to them.
2. Authentication & identity theft.	Verifying the identity of a Facebook user could be an Issue. Identity theft is possible if social engineering techniques or by the use of key logging software.	[1] Posting sensitive information (paychecks, or addresses) without blurring or hiding on twitter by # (hash tag) makes the thieves using that information to steal.	Oversharing on instagram can make you the victim of the identity theft.	As such no problem of identity theft has occurred in whatsapp, because whatsapp doesn't allow the creation of account from two numbers. User can create a whatsapp account only by one number only. At a time user cannot access the same account by two numbers (although it provide the facility of changing the number to access the account).

3.Intellectual property theft	[2]Facebook is committed to helping people and organizations protect their intellectual property rights. The Facebook **Statement of Rights and Responsibilities** does not allow posting content that violates someone else's intellectual property rights, including copyright and trademark.	[18]Twitter respects the intellectual property rights of the user. If the content of the user has been copied/stealed/hacked/ by unknown person, the user can contact with the twitter with the information: (i) Electronic signature of the owner. (ii) identification of copyrighted work. (iii) identification of the material that is claimed to be infringing. (iv)The user contact information (v) statement that the information in the notification is accurate	[3] Instagram is committed to helping people and organizations protect their intellectual property rights. The **Instagram terms of use** do not allow posting content that violates someone else's intellectual property rights, including copyright and trademark.	As the whatsapp database is being stored on the device memory (SD card/internal) so any third party application can access that information without knowing of the user and can transefer it to the owner of the application
4.Vandalism, Harassment & Stalking	Many issues of harassing and stalking has been noted on Facebook. Facebook provides the user to block and exclude such persons and report to Facebook for further investigation	[4]Twitter also provides user a way to report to the vandalism and harassment by filling out a form which includes the name of the person, issue and the victim.	[5] If an account is established with the intent of bullying or harassing another person or if a photo or comment is intended to bully or harass someone, user can report it to instagram. Once user has reported the abuse, the concerned person is blocked.	[6] According to whatsapp legal policy " posted material that is unlawful, obscene, threatening, harassing, racially or ethnically offensive, or encourages conduct that would be considered a criminal offense, give rise to civil liability, violate any law, or is otherwise inappropriate "

International Journal of Advanced Technology in Engineering and Science
Vol. No.3, Issue 11, November 2015
www.ijates.com

ijates
ISSN 2348 - 7550

SECURITY THREAT	FACEBOOK	TWITTER	INSTAGRAM	WHATSAPP
5.Payment & transaction integrity	[8]As the Facebook doesn't charge for its service but some third party applications may require credit card registration for identity verification or alternative payment systems like Battle stations application, user can purchase ochos using their credit card. But the difficulty lies in the ensuring security as it is the third party application. Educate Facebook users are using secure socket layer process	As twitter is a free service; they do not charge to use it or the mobile twitter. Twitter does not charge for sending text messages to the mobile (number of user).	The creation of account is free of cost but if you want followers from instagram, you have to pay as per the criterion decided by the company. [17]For posting a commercial or advertisement on instagram, you need to pay as per the following criterion: (no. of followers = commercial cost) 100k = $20 250k = $50 500k = $100 750k = $150 1 mil = $250 1.5 mil = $400	[9]WhatsApp charges about 1$ (one dollar) of its one year service, user can pay the payment by using Google wallet or by the credit card.
6.Malware and viruses or	Malware and computer viruses in the form of unsolicited emails	Spam, Viruses over twitter can be in form of a message or a link in which user	Due to the thousands of the fake account , these spam activities(like unwanted follows) are increased	Viruses can be spread through email which will look to user as it is send by the WhatsApp.

spam	and messages that can contain viruses.	(victim) can be asked of entering his/her detail and as soon as he/she clicks, their account get infected.		
7.Defamation & disparagement	Harming the reputation of someone on Facebook has become common these days. Posting someone pictures with bad comments and making it viral or uploading someone personal video with intention of harming can be easily done on Facebook.	Tweeting against someone or using bad words in the tweet to harm the reputation of someone(may be person, product, group, environment)	Uploading morphed images of person/ group/ product/ environment to defame that or to criticize that thing	According to whatsapp legal policy "Uploading data (can be image, video) against someone with the intention to harm that is considered illegal", and whatsapp will not be liable for that.