Social Networks using Web 2.0

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In this article we highlight the pattern and behavior of different social networks and how they are implemented using Web 2.0. We have also indicated how behavior of individuals and their network can be extracted and analyzed by studying different social networks. Towards the end of this article we highlight the future of Web 2.0 and how its enhanced capabilities can make social networks more mature with added features and functionalities to improve the efficiency of social collaboration.

What is a social network

Whenever we consider a network, we imagine a set of entities connected with each other on a logical or a physical basis. Physical networks like computer networks are some things that can be planned, implemented and managed very optimally and efficiently. However, when we move from physical to logical networks, the visualization becomes much more difficult. Social networks are comprised of the most intelligent components - human beings. Being so, any activity involved with the social networks, be it participation, management, optimization becomes extremely complicated and context based.

Due to the various facets of the human species, we can have multiple types of social networks in all the fields and areas. This can range from a network of physicists, to a network of doctors to a network of soccer lovers. Each type of network has its own focus area, member size, geographical spread, societal impact and objective. Managing such networks is not only complicated but requires lot of collective effort and collaboration. There have been uncountable social networks formed but only a few has finally achieved their true goal which emphasizes the complexity of such a matter.

A social network is usually created by a group of individuals who have a set of common interests and objectives. There are usually a set of network formulators followed by a broadcast to achieve the network membership. This advertising happens both in public and private groups depending upon the confidentiality of the network. After the minimum numbers are met, the network starts its basic operations and goes out to achieve its goal. Success of a social network mainly depends on contribution, interest and motivation of its members along with technology backbone or platform support that makes the life easier to communicate and exchange information to fulfill a particular communication need.
Implementing social networks and sustaining them is one of the biggest challenges and people have formulated many mechanisms in the past to keep alive such networks. This has been largely supported by the advancements in the field of information technology. The large scale computerizations and the powerful advent of E-Commerce have aided this also, but overall the need for a structured support was and is still there. Web 2.0 has been one of the greatest contributors in this area and we will see how it has been a great contributor in this area.

What is Web 2.0

Web 2.0 tries to tap the power of humans connected electronically through its new ways at looking at social collaboration. This is one of the commonalities between social networks and Web 2.0 - both have people as their fulcrum.

The main agenda of Web 2.0 is to connect people in numerous new ways and utilize their collective strengths. In this regard, many new concepts have been created such as: Techniques (Blogging, Social Networking, Communities, Mashups, and Tagging), Standards (XHTML, CSS, and REST) and Tools (RSS, AJAX, DOJO, PHP and Ruby). The power of Web 2.0 is the creation of new relationships between collaborators and information.

The components of Web 2.0 help to create and sustain Social Networks as we will see in details in the upcoming sections. Blogging is the art of social conversation and have replaced personal home pages and this helps for a more consolidated flow of thoughts and ideas. Wikis have enabled collaborative contribution and authoring among distributed teams. Tagging or folksonomy is a collaborative means of identifying information widgets to increase the power of any web site and searching required information in a faster way. Combined with other such concepts, Web 2.0 provides an ideal platform for implementing and helping Social Networks to grow.

Components of Web 2.0 for social networks

In today's environment, computer literacy is at its peak and tools that are aided through the computerization age are most effective in keeping alive a concept as complicated as Social Networks. The beauty of Web 2.0 fitment to Social Networks is that all the components of Web 2.0 are built for the growth and sustenance of Social Networks. As discussed in "Building Smart Communities with IBM Social Collaboration Tool Suite" (developerWorks, May 2009), the major concepts that have been considered in Web 2.0 are:

- **Communities**: Communities are an online space formed by a group of individuals to share their thoughts, ideas and have a variety of tools to promote Social Networking. There are a number of tools available online now a days to create communities which are very cost efficient as well as easy to use.
- **Blogging**: Blogs give the users of a Social Network the freedom to express their thoughts in a free form basis and help in generation and discussion of topics.
- **Wikis**: A Wiki is a set of co-related pages on a particular subject and allow users to share content. Wikis replace the complex document management systems and are very easy to create and maintain.
• **Folksonomy:** Web 2.0 being a people-centric technology has introduced the feature of Folksonomy where users can tag their content online and this enables others to easily find and view other content.

• **File sharing/Podcasting:** This is the facility which helps users to send their media files and related content online for other people of the network to see and contribute more on.

• **Mashups:** This is the facility via which people on the internet can congregate services from multiple vendors to create a completely new service. An example may be combining the location information from a mobile service provider and the map facility of Google maps in order to find the exact information of a cell phone device from the internet, just by entering the cell number.

As we see from the above components of Web 2.0, each of them contribute to help the implementation and continued existence of social Networks on a meaningful basis. While wikis and communities help to create an online space for the networks, blogging, folksonomy and file sharing help to information flow across the virtual world of the social networking community.

**Figure 1: Information Flow in Social Networks**

![Diagram of information flow in social networks](image)

**Types and behavior of social networks**

The nature of social networks makes for its variety. We have a huge number of types of social networks based on needs and goals. Compartmentalizing social networks is quite a challenging activity which we have tried to do in this paper. Social networks exist in various domains - within and outside organizations, within and outside geographical boundaries, within and outside social boundaries and many other areas. Such huge variations make the reach of social networks grow to all sectors of the society. Keeping these in mind, the main categories identified are given below:

• **Social Contact Networks:** These types of networks are formed to keep contact with friends and family and are one of the most popular sites on the network today. They have all components of Web 2.0 like blogging, tagging, wikis, and forums. Examples of these include Orkut, Facebook and Twitter.
• **Study Circles:** These are social networks dedicated for students where they can have areas dedicated to student study topics, placement related queries and advanced research opportunity gathering. These have components like blogging and file sharing. Examples of these are FledgeWing and College Tonight.

• **Social Networks for specialist groups:** These types of social networks are specifically designed for core field workers like doctors, scientists, engineers, members of the corporate industries. A very good example for this type of network is LinkedIn.

• **Networks for fine arts:** These types of social networks are dedicated to people linked with music, painting and related arts and have lots of useful networking information for all aspiring people of the same line. Examples of such a network are Amie Street and Buzznet.

• **Police and Military Networks:** These types of networks, though not on a public domain, operate much like social networks on a private domain due to the confidentiality of information.

• **Sporting Networks:** These types of social networks are dedicated to people of the sporting fraternity and have a gamut of information related to this field. Examples of the same is Athlinks.

• **Mixed Networks:** There are a number of social networks that have a subscription of people from all the above groups and is a heterogeneous social network serving multiple types of social collaboration.

• **Social Networks for the 'inventors':** These are the social networks for the people who have invented the concept of social networks, the very developers and architects that have developed the social networks. Examples are Technical Forums and Mashup centers.

• **Shopping and Utility Service Networks:** The present world of huge consumerism has triggered people to invest in social networks which will try to analyze the social behavior and send related information for the same to respective marts and stores.

• **Others:** Apart from the networks outlined above, there are multiple other social networks which serve a huge number of the internet population in multiple ways. Some of these networks die out very fast due to lack of constructive sustenance thoughts while others finally migrate to a more specialist network as shown above.
Life cycle of social networks

The concept of social networks and the components of Web 2.0 which are significant for social networks have been outlined above. Next we will see how Web 2.0 gets linked with the entire life cycle of a social network. For any social network, there are a number of steps in its life cycle. In each of the life cycle step of an online social network, Web 2.0 concepts have a great influence. Consider the diagram below. For all the steps in the life cycle Web 2.0 has provided tools and concepts which are not only cost effective but very easy to implement.

Often times, online networks have a tendency to die out very fast due to lack of proper tools to communicate. Web 2.0 provides excellent communication mechanism concepts like Blogging and individual email filtering to keep everyone in the network involved in the day to day activities of the network.
The various implementations of social networks using Web 2.0 have already had a profound effect on society as a whole. One of the most important groups of people - the medical community already has reaped significant benefits from the technology and is translating the same towards the betterment of public life. According to a survey conducted by a website, almost “89% of physicians use at least one Web 2.0 tool in their medical practice” along with some other impressive figures that prove how Web 2.0 has been helping in the day to day activities. There are numerous reports detailing how doctors are connecting using Web 2.0 for increasing their knowledgebase.

One of the best implementations for social networking using Web 2.0 on a societal basis has been the site Chicago Everyblock where people can explore the crime patterns of the city through all the locations using Mashups. This not only helps the civilians to keep safe but also help the police to track criminals based on crime behavior. This site also hosts public records like Building permits, Business licenses, property transfers and similar such services that are essential for the common mass. Websites like this have Web 2.0 concepts like Mashups, forums and blogs running in the background. Merseyside Police have launched something similar which allows citizens access to information on an on-demand basis, post code enabled search and features to report crime patterns.

Social networks built on Web 2.0 concepts has become so cost affordable and easy to use that more and more people are migrating to this wave. This has also helped NGO’s and other social service organizations to create meaningful social networks to reach out to people in a much more structured manner and in turn benefit the needy and deprived sector of the society.

Future scope of Web 2.0 in social networks

There is a lot of contribution that Web 2.0 has already done for social networks as well as other areas. However the reach for the technology has not been complete and there are still a
number of areas that need improvement so that the true power of the technology integrated with social networks can be truly be felt. A majority of social networks still operate in an offline and unstructured manner and if proper education on Web 2.0 can be imparted, then a greater number of such networks will come under the wing of social networks.

Areas like space exploration, scientific experimentation, social sciences along with the area of collaborative research through social networks are something that Web 2.0 practitioners can actively contribute in. The social impact that the technology is making via social networks is also making aware of the power and flexibility and is making Web 2.0 an integral part of social networks throughout the world.

The future of Web 2.0 itself is something which will be providing much more exciting features for social networks. As time progresses the technology in itself is becoming more secure and transparent and much more user oriented. The concept of semantic Web is being crystallized which will aid the growth of social networks even more. New features like online video conference instead of scrap messages/blogs and Object Oriented Programming will also help in introducing new features within the social network.

**Business analytics of social networks using Web 2.0**

Social networks on the Web require a large number of users with a variety of specialist areas and behavior patterns. Studies of social networks and the populations combined with a business analytics reveal interesting facts and figures and help for a trend analysis in various fields. Implementing social networks using Web 2.0 also helps in performing faster analysis to identify trend patterns.

From the behavioral patterns of people linked with social networks, we can run analytical studies to predict the social, economical and behavioral patterns of the community as a whole. This helps in advertising and promotions as well as linking one Social Network community with others. There may be a specific networking site comprised of a community with specific interests and producers can target these sites with their consumables on a business angle.

**Benefits and challenges for social networks using Web 2.0**

Web 2.0 has provided a number of benefits to social networks. It provides a platform where users of the network need not to worry about the implementation or underlying technology at a very affordable cost and a very easy pickup time. Concepts of Web 2.0 like blogging are some things that people do on a day to day basis and no new knowledge skills are required. The beauty of this lies in this very fact - Web 2.0 techniques are very people centric activities and thus adaptation is very fast. People are coming much closer to another and all social and geographical boundaries are being reduced at lightning speed which is one of the biggest sustenance factors for any social network. Using Web 2.0 also increases the social collaboration to a very high degree and this in turn helps in achieving the goals for a social network.

There are a number of challenges that are faced within the implementation of social networks using Web 2.0 concepts. One of the major aspects is data security and privacy and in such public
domains, there is a huge chance of data leak and confidentiality loss because there are usually no centrally mandated administrative services to take care of such things. Privacy of individual users also arises and can create a huge problem if malicious users somehow manage to perpetrate the social networks. This is all the more important for public utility networks like doctors and police. A major of the social networks are offline, and for bringing these under the purview of online social networks, a lot of education and advertising needs to be done which itself becomes a cost burden when the people involved are not computer literate. This becomes more viable in areas of the world that are developing and do not have the basic amenities. The fact is that these areas are the ones that can benefit the most using social networks in an online mode and a huge amount of effort would be needed to help them using the technologies.

**Conclusion**

Web 2.0 has introduced a number of powerful features that social networks are utilizing. These have provided significant advances which can be seen by the worldwide acceptance of networking sites with these technologies.

In spite of all challenges the worldwide acceptance of social networks and its implementation using Web 2.0 is here to stay and flourish. It is up to us to participate in this movement and continue to contribute towards the betterment of the technology and concept for more contribution to the society as a whole.

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