

The Impact of the New Web 2.0 Technologies in Communication, Development, and Revolutions of Societies

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Abstract – In lase years with all of the attention paid to social networks (SN) and Web 2.0 tools these days, it is important to both explore their uses and evaluate their effectiveness in supporting communication, developing, and revolutions of countries, are rapidly evolving technology and play an important role in every daily life activities in societies. This technology includes wikis(Wikipedia, Seedwiki), blog, micro blogging (Twitter), YouTube, social book marking, podcasts, Second Life (virtual communities), and RSS.This paper will illustrate how Web 2.0 technology has been successfully used as a supplement for communicative practice in societies. Moreover, this paper explores the impact of communication SNS, Web 2.0 technologies, and the Internet in particular, has been widely credited as contributor to the democracy and freedom of countries. Some challenges of SNS and Web 2.0 have been overviewed. In addition to, the role of such technologies has been influenced by the Tunisian and Egyptian revolutions in 2011 which have been explained and highlighted in this work.

I. INTRODUCTION

Web 2.0 are a technology shifting the Web to turn it into a participatory platform, in which people not only consume content (via downloading) but also contribute and produce new content (via uploading). Web 2.0 ideas incorporate new techniques (tagging, blogs, wikis, mashups), which are breaking the barriers between users and data-providers, by creating new and useful links among them [18].

Few have done more for codifying the meaning of *Web 2.0* than publisher Tim O’Reilly, co-founder of the Web 2.0 conference and author of the widely cited “What is Web 2.0?” [47]. O’Reilly used the term *Web 2.0* to

acknowledge a broad shift in the Web fulminated by the turning point of the dot-com boom and bust. For O’Reilly, the seven principles outlined in “What is Web 2.0?” form a new “pattern language” or “mindset” sharply distinct from the broadcast-oriented model that the first web boom borrowed from the mass media. Second-generation developers saw the Web as a rich platform for applications and services, not just as a simple medium. They welcomed a wide variety of browsing technologies and imagined users not only as readers but also as writers. According to O’Reilly [47] and Kevin Kelly [48], the Web had reinvented itself with folksonomies, weblogs, feeds, and social networks about a decade after the Web first took off. The new Web was different and merited a new name. Hence “Web 2.0.”

Web 2.0 was conceived from the outset as a dynamic set of innovations that developed in large part to make the Web viable again after the dot-com bubble burst in 2001. Over the years, two defining elements have emerged. The first is that Web 2.0 is a platform, with applications and files stored on the Web rather than on a user’s desktop; in this arrangement, software is a service (and often a free service) rather than a product. The second defining element of Web 2.0 is participation; the Web is now the participatory Web, the social Web, the read-write Web. We see this as personal activities in Wikipedia, YouTube, Facebook, blogs, video sharing, podcast, and elsewhere as in Fig 1. The idea is that the Web “harnesses collective intelligence” [47] and empowers users through the formation of communities and the mass publication of user-generated content.



Figure 1. Some Web 2.0 personal activities tool

The remainder of this paper is organized as follows. Section 2 overviews Online SN services and its role in the society especially Facebook.com. Section 3 compares Web 1.0 and Web 2.0 compares and summarizes core advantages for each one .Section 4 explores Web 2.0 technology. Section 5 presents the benefits of most common Web 2.0 tools. Section 5 is devoted to the hybrid intelligent systems in DW mainly, ANN with FL, and GA with SI. Section 6 introduces some threats of DW technology. Challenges and some open problems of DW such as collusion attack, signal processing collusion, and cost are presented in Section 7. Section 8 presents the conclusion and future work.

II. WEB 2.0 AS TECHNOLOGICAL DRIVER OF COMMUNICATION

In the last decades, Web has become one of the widely used means for providing and sharing information. More recently, a major change has occurred in the way Web technology is being used in community to a tool for communicating and developing of communities. New social-sharing networks are transforming the Web technology from Web 1.0 (read-only) environment to Web 2.0 (read/write) technologies.

Communities today are considered “digital natives”, “Net generation”, and “Generation Media Multitasking”. Because they have grown up with digital technology—first computers, then the Internet and other ubiquitous information and communication devices such as cell phones, PDAs, iPods, and Web 2.0 technologies—digital natives are considered to be more comfortable with digital technology than previous generations [62].

Web 2.0 technologies — wikis, blogs, social networking, and so on — all encourage a more active, participatory role for users. Communities no longer use the web to obtain information, but instead create information and share it with others using Web 2.0 technologies.

The latter development in last year’s we want to highlight in more detail is frequently described by the term Web 2.0 and its tools. This terminology lacks a clear definition so far and many discussions about its real content and its future development to Web 3.0 are ongoing [1,2]. Nevertheless certain web technology

developments in the last 10 years have led to a new breed of web services that have certain elements in common that build the core Web 2.0 elements.

The phrase Web 2.0 was first used in 2004, to refer to what is perceived as a second generation of Web-based services emphasizing online collaboration and sharing. Howe [19] categorizes four general types of processes within Web 2.0 applications that reflect these ways of interacting in addition to virtual world environments to be:

1. to share user-contributed content;
2. for large sets of user contributed content;
3. for the development of content collections by the user community;
4. to find not only objects but trends and overviews of contributions;
5. to create the worlds and artifacts within the worlds that they are simulating and then interact within the virtual worlds

Nowadays, Web 2.0 technology changed the way of dealing with Internet, especially with certain technologies, such as, social networking, instant messaging, Internet telephony, and video sharing sites. In the next we discuss in details the Web 2.0 technology tools.

A. Web 2.0 tools

As with all new tools—the computer and Internet, Web 2.0 tools are quickly became common to adopt a new way for communication and interaction. What makes Web 2.0 tools unique? Earlier in the web's development, web sites offered one-way communications—from the website owner to an audience. Web 2.0 tools change this dynamic, making interaction on the web possible, collaboration easier, information sharing the norm, and the creation of web content by groups of people a reality. And while the term “Web 2.0” became popularized in 2004, Web 2.0 tools have exploded in number, creativity, and features. From the experience with these tools, is essential to understand what they can and cannot do, so that we can make better decisions on their use in the future. SNs and Web 2.0 tools can be summarized in Fig. 2. In the next we discuss in details these tools.

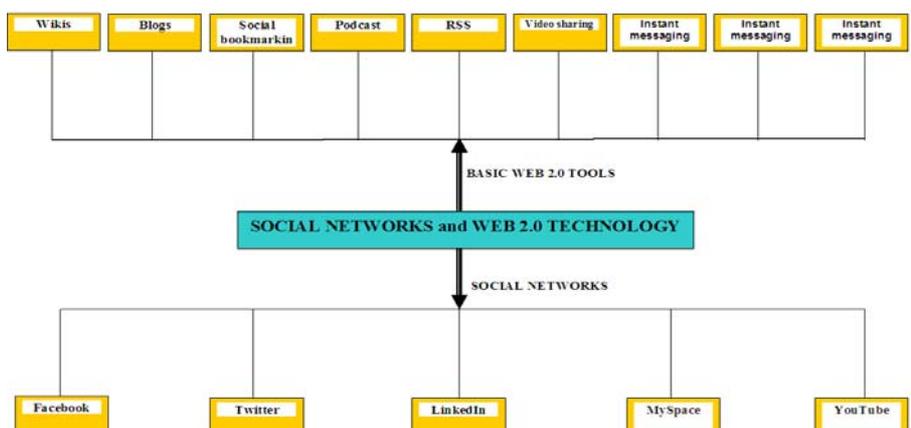


Figure 2. SNs and Web 2.0 Tools

I. Wikis

According to Leuf and Cunningham, creators of the original wiki concept, “a wiki is a freely expandable collection of interlinked Web pages, a hypertext system for storing and modifying information- a database where each page is easily edited by any user with a form-capable Web browser client” [10]. Therefore, Users can visit wiki, read and add content to wiki or update and organize content (text, image, video, link...) or structure of wiki. As wikis are free open source software, no one authorizes the creation of wiki pages and everyone is automatically authorized to write, edit and publish. Therefore, wiki is computer software that allows users to easily create, edit and link web pages. Wikis are often used to create collaborative websites, power community websites, and are increasingly being installed by businesses to provide affordable and effective Knowledge Management.

Wikipedia is the pioneer, the wiki that created the notion of wikis and, indeed, ushered in the 2.0 era. It seems appropriate, then, to offer Wikipedia’s definition: “A wiki is a page or collection of Web pages designed to enable anyone who accesses it to contribute or modify content. Wikis are often used to create collaborative websites and to power community websites [22].

Several web- sites offer no-cost wiki hosting, including Wetpaint, Wiki- dot, and PBworks. Wikis can be employed in teaching process, for example, as some professors have found various ways to employ wikis in their teaching, as a syllabus and course management system updated throughout the semester, or as a virtual classroom, where students can create, comment on, and edit discussions. Some proprietary course management systems, including Blackboard, provide a wiki within them.

Wikis have been touted as a collaboration tool that draws on the input of many individuals to craft a single product. Wikis are considered to be effective tools in different fields as in learning and teaching, they can facilitate collaborative learning, provide collaborative writing, support project based learning, promote creativity, encourage critical searching, support inquiry based and social constructivist learning [7,11]. Schwartz et al. [10] has listed selection criteria of wikis for educational uses under 6 heading; cost, complexity, control, clarity, common technical framework, features. Some of other educational usage of wikis are also suggested as classroom websites, easy course administration and timetabling, easy online updating content, online dictionary, student feedback and self-assessment, bibliographically organized class or group projects, virtual classes for online collaboration, creating frequently asked questions (FAQ) for classroom or students [12, 13]. Wikis can be employed as following.

- use for users projects; use for collaborating on ideas and organizing documents and resources from individuals and groups of users
- use as a presentation tool (as e-portfolios); as a group research project for a specific idea;

manage school and classroom documents; use as a collaborative handout for users; writing: student created books and journaling

- create and maintain a user FAQ; for example in a classroom discussion and debate area; a place to aggregate web resources; supporting committees, working parties and university projects etc.

II. Blogs

Blogs are also called online diaries which enable users, without requirement of any technical skill, to create, publish and organize their own web pages that contain dated content, entries, comments, discussion etc. in chronological order [8]. People can publish information which they collect from various resources and establish relation between them in blogs. Additionally RSS and the possibility to post comments make blogs also a collaborative and social-interactive software application.

As blogs are very easy and flexible tool for using, they are being utilized in various fields with various purposes. For example, since blogs have various educational advantages, number of researches and studies in educational usage of blogs increased. It is suggested that blogs enhance writing skills, facilitate reflecting themselves, encourage critical thinking with collaborative learning, and provide feedback and active learning. Also, blogs are well suited to serve as online personal journals because they enable students sharing files and resources and publishing blogs on the Internet and students has the possibility of writing for reader beyond classmates. In addition, blogs can be used as e-portfolios that keep records of personal development process, reflections and achievement [9]. Blogs can be used as following:

- use blogs for real-world activities, for example writing experiences
- quickly give feedback to users, and users to each other
- users can use peer networks to develop their own knowledge
- update new information about the users
- using comments in blogs can encourage users to help each other with their activities such as writing, and get responses to a question without getting the same answer twenty times etc.

III. Really Simple Syndication(RSS)

RSS, which may stand for “Really Simple Syndication,” makes many things possible and helps various social media interact with each other. An excellent overview of RSS is available through Common Craft on YouTube: <http://www.youtube.com/watch?vZ0klgLSxGsU>. RSS means a Twitter user can update their Twitter feed and have that content also appear on Facebook. The beauty of RSS is that one need not understand the technology of the tool to use it well. RSS means that we do not need to visit each website to track changes, but, rather, an RSS reader (like Google Reader or Bloglines) will alert us when one of

our tracked blogs or sites has been updated. RSS greatly facilitates almost every Web 2.0 technology. It is an excellent tool for filtering and keeping up with information. RSS can be deployed as the following way.

- professional development, time saving; for example, update information in teaching area
- information coming from constraining sources; sharing work with other users
- RSS feeds can potentially replace traditional email lists, reducing email overload
- RSS feeds can be used to keep course specific webpages current and relevant etc.

IV. Video sharing

Video and photo sharing are important aspects of Web 2.0, especially at popular sites like YouTube (youtube.com) and Flickr (flickr.com). Almost everyone with Internet access is familiar with YouTube; it has become quite a sensation around the world as it creates temporary fame around the most popular videos. People use it to watch TV, commercials, and homemade videos. Some people load their own videos to share, but plenty of people watch videos without ever loading one to the website or even creating an account. Video sharing can be used in the following way.

- video professional development on own terms; create an own subject specific videos with users; use video sharing sites to find videos on current issues etc.

V. Social bookmarking

Social bookmarking allows users to store, organize, search, manage, and share webpage bookmarks. Think about your list of favorites or bookmarked sites that you have on your own computer. A social bookmarking website makes this list available anywhere that you can connect to the Internet, so the user can access these bookmarks from home, work, or even a public computer. Bookmarks can be saved privately, made available to other Internet users, or shared with friends or colleagues. Delicious (delicious.com) is the most popular social bookmarking site. Delicious account holders create tags (tag can be defined as a triple comprising the object that is tagged, the keyword used for the tag, and the user who attaches the tag to the object), or phrases that categorize a piece of information like a blog entry or website. These tags can be searched or browsed, allowing the information to be retrieved more easily and facilitating discovery; though the tags are user-defined, many account holders use the same tags for the same kinds of items, thus linking information between various users. Delicious account holders click on tags, often in tag clouds, to find out what others are reading and discussing. A tag cloud is a list of tags in which the popularity is indicated by size; for example the tag 'music' would appear in a larger font size than 'architecture' if more bookmarks have been tagged with 'music' than with 'architecture.' Scanning a user's tag

cloud offers a glimpse into that person's most-tagged concepts, and thus their interests. Social Bookmarking can be applied in the following way.

- create a set of resources that can be accessed on any computer connected to the internet; conduct research and share that research with peers
- track user (author) and book updates; for example, groups of students doing a classroom project sharing their bookmarks; rate and review bookmarks to help with students decide on usefulness of resources; setup a group tag in order to share educational resources

VI. Podcast

The term of podcast is constituted of words of iPod (portable digital audio player from apple) and broadcasting and they are basically digital audio programs that can be subscribed to and downloaded by users via RSS and listened to on either a variety of digital audio services or desktop computer [14]. With on demand nature and portability features, podcast allows users to catch up on audio content while completing other tasks without having to sit at a computer. They also have some limitations as being linear and one way, which is why they need to be integrated with blogs, online simulations and other more interactive channels [15].

Especially as podcasting is being used with mobile devices, it can be viewed as another variant of mobile learning. Because of the time and cost resources are limitations for mobile learning, podcasting can be an alternative.

VII. Another tools

- **Instant messaging** (MSN Messenger): It is a form of real-time communication between two or more people based on typed text. The text is conveyed via computers connected over a network such as the Internet. instant messaging increase the sense of community and accessibility which is required for collaborative learning; VoIP can promote international collaborations and understanding; calendars make calendar events, homework, anything you want available on mobile devices connected to the Internet
- **Internet Telephony** (Skype): is a form of real-time communication of audio between two or more people. It enables people to use the Internet as the transmission medium for telephone calls.
- **Audio/Video Conferencing** (NetMeeting): It is a form of real-time communication of audio and video between two or more people at different sites.

B. Web 1.0 versus Web 2.0

What exactly does the phrase 'Web 2.0' mean? The idea of Web 2.0 is "commonly associated with web

applications that facilitate interactive information sharing, interoperability, user-centered design, and collaboration on the World Wide Web,” allowing users to interact with one another or edit or add to website content [20]. Of course, this definition comes from that frontrunner of Web 2.0 tools, Wikipedia. As an encyclopedia that can be edited by users, Wikipedia embodies the concept of 2.0. Websites that are now retroactively identified as Web 1.0 are static. The user can look at the website and take information from it, but cannot interact with the creator, website, or information itself. In fact, the phrase ‘Web 1.0,’ was not even developed until there was something to which it could be compared. Prior to 2004, when the phrase Web 2.0 became popular, the Web was just the Web. Web 2.0 applications allow users to share videos and links, find and stay in contact with friends, comment on each other’s photos, and much more.

Web 2.0 technologies — wikis, blogs, social networking, and so on — all encourage a more active, participatory role for users. Users no longer use the web to obtain information, but instead create information and share it with others using Web 2.0 technologies. Cloud computing [3], desktop-like usability [4], interactivity [5], and semantic web [6] are core technologies that helped to transform the Web 1.0 into a Web 2.0. While Web 1.0 was focused on one-directional spreading of information from one central source to many different receivers, Web 2.0 can be characterized by a many-to-many form of communication. Therefore the Web 2.0 enables the active participation of many more users, leading to a collective wisdom of the crowd rather than relying on a single source of information as in the Web 1.0. Also the flexibility increased by replacing a PC and server focused architecture to a platform and device independent architecture which is easily to scale.

The first used technologies, radio, tv, one way video conferences, e-mail, discussion forums etc., provided a communication between users, however, they were lack of effective interaction and collaboration. Users were passive consumers of content with these tools as many of them have been called Web 1.0. To fulfill the shortages of Web 1.0 and to provide more effective interaction and collaboration, investigation for the ways of using blogs effectively, wikis, podcasts and social networks in society has been started. The main characteristic of these tools called Web 2.0 is users’ active participation in the content of creation process.

III. SOCIAL NETWORKS

In recent years, there has been an explosion in the number of Social Web sites which allow the creation of knowledge through simplified user contributions via blogs, wikis, and the deployment of online social networks.

Social networking is the building of online communities. Online social networking services provide a variety of ways for members to interact from emailing to instant messaging to photo tagging. The most popular sites provide a way to connect with friends through multiple interaction methods. Encyclopedia Britannica

Online defines a social network as “online communities of individuals who exchange messages, share information, and, in some cases, cooperate on joint activities”. Social networking applications and websites “support the maintenance of personal relationships” [21]. Note that Wikipedia and Encyclopedia Britannica are representative, respectively, of Web 2.0 and Web 1.0. Any user could interact with the Wikipedia entry on Web 2.0 by editing the information in the article. However, the Encyclopedia Britannica article on social networking is static; a user can consume the information but not respond to or change it.

Social networks are software that supports collaboration, knowledge sharing, interaction and communication of users from different places who come together with a common interest, need or goal [16, 17]. Social networks are also known as range of applications that augments group interactions and shared spaces for collaboration, social connections, and aggregates information exchanges in a web-based environment. Social networks can also be viewed as, for example, pedagogical tools that stem from their affordances of information discovery and sharing, attracting and supporting networks of people and facilitating connections between them, engaging users in informal learning and creative, expressive forms of behavior and identity seeking, while developing a range of digital illiteracies. Well-known social networking service: Facebook is a Web 2.0 service that is used in the online communication and interaction. In the next subsection we illustrate an example, Facebook, as the most popular social websites.

A. Facebook.com: an example

Facebook.com is the most popular social networking sites all over the world. It is the sixth most-trafficked website in the world and the number one photo-sharing site, with over 80 million active users across over 55,000 regional, work, high school, and college networks. Launched in February 2004, Facebook allows users to create personal profiles viewable to anyone in a given network. Individuals can enter information on their background (e.g. high school, hometown), demographics (e.g. birthday, gender), “interests,” political views, and group affiliations, as well as on their cultural tastes (e.g. “favorite” books, movies, and music). Additionally, users can enter “friendship” relationships with other registered users and share photo albums that can be linked to the profiles of those present in a picture. Over 400 million people in the world actively use Facebook [46]. Indeed, Egyptian students seemed particularly responsive to efforts to reach out to them through Facebook, perhaps because it is one area of Egyptian life that offers (relatively) free speech. Therefore, Facebook became a popular amongst Egyptian young people and played a critical role in Egyptian revolution. 25 January. While originally Facebook was popular with young adults, currently over 50% of users are over the age of 35 [46]. As a result of the Facebook revolution in Egypt, Egyptian scientist and Nobel prize laureate Ahmed Zewail said that

about this revolution” It is the revolution of Science” based on using social network such as Facebook and Web 2.0 technology

On Facebook, individuals establish profiles with detailed personal information, from birthday and religion to relationship status and family members. Facebook users then “friend” other Facebook users, and their social network begins. Institutions have become a huge force in Facebook as well. Facebook users can “like” their favorite magazines, television shows, authors, non-profit organizations, corporations, food products, and more. These companies, in turn, use Facebook to promote their products and their brand. Users also agreed that Facebook helped them learn new words in English and practice English reading and writing. Since current figures total 400 million Facebook users worldwide as of February 2010 [63]. Later, in this paper we will present more details about the impact of Facebook on the Egyptian revolution.

IV. WEB 2.0: APPLICATIONS

In today’s world, information and communication technologies are influenced in many different areas where people need more knowledge and better standards to accomplish their works especially in Education, Academic Library 2.0, Geographic Information Systems (GIS), and e-banking. Such these fields that information and communication technologies are substantially interested in. In this section we highlight some of these important applications of Web 2.0 for developing and communicating communities.

A. Web 2.0 in Education

Recently, dimension of education has changed as a result of technology’s rapid development. Virtual learning environment has been growing rich while diversity of education technology has been increasing. Change is difficult but it is probable that the rapid development and implementation of new technologies and social changes make change in the educational provision inevitable. Most of the universities, nowadays, are struggling to enhance the professional experience and skills of their personnel in order to efficiently utilize the new technologies in their teaching activities such as wikis and video conferencing as in fig. 3. The pressure for this comes from many sources, including employers who are demanding graduates with generic as well as domain-specific skills, from students themselves who expect using technologies in their learning, and from institutions that want to take advantage of the opportunities afforded by the new delivery methods. The advancement in technology has been revolutionizing the way educators teach and students learn.



Figure 3. Web 2.0 Education activities

Web 2.0 platforms are seen to have an emerging role to transform teaching and learning. Specific technologies and services contributing in higher education include blogs, wikis, syndication of content through RSS, tag-based folksonomies, social bookmarking, media sharing, and social networking sites. There are already a growing number of actors from higher education sector who are exploring Web 2.0 technologies in their activities with students.

It is important to realize that Web 2.0 has to share something new with higher education - the development of a clear picture of the features that might constitute a new ICT pedagogy in the 21st century: *pedagogy 2.0*[41].

Some possibilities and applications of using Web 2.0 tools in the educational systems can be summarized as follows.

In conclusion we believe that Web 2.0 will change the teaching and learning process in all countries as Web 2.0 is the future of education.

B. Web 2.0 in Academic Library 2.0

The term of “Library 2.0” was first coined by Michael Casey in September 2005 [29]. Although the term initially provoked a considerable number of doubts, practitioners and researchers alike in libraries soon began actively exploring how Web 2.0 applications could be introduced to libraries for service enhancement and for encouraging participatory librarianship [30]. Though a specific consensus is still developing, examples of Web 2.0 applications in libraries include blogging, instant messaging (IM), information sharing (e.g., Flickr, YouTube), RSS (Really Simple Syndication or other variants), social bookmarking (along with tagging and folksonomies), social networks (e.g., Facebook, MySpace), virtual communities (e.g., Second Life), and wikis.

Library 2.0 encompasses all kinds of libraries, including academic libraries. Thanks to their strong tradition in the IT forefront as well as their focus on education and research, academic libraries are quickly becoming the major players in adopting and incorporating Web 2.0 applications into their services compared with other types of libraries. Habib [31] suggested the concept of Academic Library 2.0, describing how Web 2.0 tools could be applied in academic libraries for various purposes.

Writings on Web 2.0 and libraries have been mushrooming in recent years although most of them focus on what constitutes Web 2.0 and how they can be used in libraries [32-36]. Those publications normally discuss Library 2.0 conceptually and also without references to any specific library types or services. There are, however, several exceptions where attention has been given to the implementation of particular Web 2.0 tools for certain library operations.

In addition, academic libraries are the target libraries in several studies. Habib [31], as briefly mentioned earlier, wrote his master's thesis on the subject and made

pioneering contribution to research on Academic Library 2.0 [31]. Based on what has been published on Library 2.0 as well as what academic libraries have been doing, Habib proposed a conceptual model of Academic Library 2.0. Although Habib's Academic Library 2.0 model goes beyond the boundary of a library by including the social dimension of students' campus life, it does not cover research activities academic libraries strive to support.

Besides Habib's pioneering work on Academic Library 2.0, there are two other studies of pertinence and both focused on specific Web 2.0 applications in academic libraries [39]. One study analyzed the websites of 111 ARL (Association of Research Libraries) members, recommending that future academic library website design should engage users in the process via relevant Web 2.0 tools [37]. The other study described how Media- Wiki, a wiki software program, was integrated with electronic resource access in one academic library for online training as well as course-based information literacy instruction [38].

But to what extent does Academic Library 2.0 turn into a reality? This represents a new challenge of Academic Library 2.0, in the next few years.

C. Web 2.0 in Geographic Information Systems (GIS)

Recent advances in Geographic Information Systems (GIS) and Web 2.0 technologies provide new ways of creating sophisticated Web applications that strengthen social interactions based on comments on online maps, which have the potential to improve Public Participation GIS (PPGIS) practices.

A key aspect in collaborative geographic applications is the interoperability between geospatial data and tools available on the Internet to users wanting to build up their content. Virtual Slaithewaite, one of the first online applications for participatory urban planning [42], allows citizens to zoom and pan, to select features, to get information about it, and to add their comments. Any features selected provide a free-form typing text box. As comments are not organized or related to each other, tracking discussions over time is not though supported. The Argumentation Map prototype [43] developed solutions for georeferencing comments. It makes geographic references in discussions and uses them for linking text messages to maps.

Finally, WikiMapia [44], a collaborative Web mapping strategy, combines Google Maps and Wiki, where any user can add a place mark to any location and provide information. Registered users can also check certain areas and send personal messages to one another. Besides, users can vote for or against other users' contributions as a means of data trust. To characterize the usability of Web 2.0 and GIS technologies in practice, [45] assessed the impacts of the Web 2.0 Public Participation GIS (PPGIS) prototype. The assumption of this work helped in developing alternative ways for public participation, engage more people, and encourage open communication between citizens and decision makers. Practical results of [45] showed that participants found it easy-to-use, useful

for communication, and that it may support participatory urban planning. Comments were relevant to planning issues and users did not have substantial problems in using the tool. Besides, they reflect great satisfaction and excitement about a possible institutional implementation linking to other web sites like local government and local tourist offices. In their opinion, it could improve their participation in decision making. Accordingly, it confirms the potential of Web 2.0 and PPGIS in participatory urban planning.

The use of Web 2.0 services is still limited to delivering collaborative applications with GIS. In general, users can post comments on a map, but user-friendly map-based citizen's opinion and interactive discussion is still not widely supported. We expect to engage more citizens in local actions for urban planning by using the emerging technologies for web-based collaborative social networks (missing in most of the early applications).

D. Web 2.0 in electronic banking (e-banking)

Electronic innovation in banking can be traced back to the 1970s when the computerization of financial institutions gained momentum. However, a visible presence of this was evident to the customers since 1981, with the introduction of the Automated Teller Machines (ATM). In general, e-banking refers to the use of Internet as a remote delivery channel for providing services indicated that the services of e-banking can be offered in two main ways. It is believed that e-banking services would be indispensable for people's daily life in the near future.

Web 2.0 represents a broad collection of recent trends in Internet technologies and business models. Among some key trends, particular focuses have been given to user-created contents, lightweight technology, service-based access and shared revenue models. Amol [40] indicated that Web 2.0 is already part of our mainstream culture. A marked contrast with what happened during the first wave of Web development, which was characterized by a hierarchical structure (ruled by Webmasters) offering static websites broadcasted and distributed mostly through hypertext links. Some features, which are all about connecting people to people, could be found in Web 1.0, but appear to be essential for Web 2.0 applications that are already having a major impact on Web ATMs issues.

The first important concept that learned from the philosophy of Web 2.0 is Web-centralized platform realization. Amol [40] indicated that the power of Web 2.0 does not reside in any one server, individual or organization. Instead of relying on command-and control monolithic systems to generate value or efficiency, Web 2.0 operates by allowing individual users to interact with a site and affect its behavior based on a common set of low level rules.

Over the history of financial service, patron should make financial service around the brick-and-mortar bank, proprietary banking website or even take time to find the

entity ATM machines. Nowadays online service of Web ATMs architecture allows customers make transfers between accounts, pay bills or taxes and carry out other financial transactions through any of the banking or portal site with the services of Web ATMs at any time of the day or night, and at any place, including the home or office.

The second concept that learned from the philosophy of Web 2.0 is leveraging the long tail of Web ATMs. As we all knew well, the power of World Wide Web had not only changed the people's life but also changed modern business operation. Customers can be served and services can be provided right over the Web. The type of Electronic Service in natural should not be limited by the geography and time.

From an economic standpoint, the long tail, however, represents the numerous fringe individuals and groups that are poorly served online by brick-and-mortar banks because of provision locally or limited technology involvement in reality. With Web 2.0 technologies, these groups are not only easily accessed from anywhere on the Web, but as a collective their numbers are significant, and in some cases are even greater than the mainstream [40].

The third concept that learned from the philosophy of Web 2.0 is alternative network effects. Amol [40] indicated that Web 2.0 enables large numbers of individuals to unite and collaborate around a common resource. The most recent and notable example of individuals congregating at a virtual site to benefit from the network effect is MySpace. Actually, harnessing these network effects through Afternoon Tea Time Break Platform in the Web ATMs system, indeed, could provide some incentives for further promotion and address marketing strategy for such innovative service.

With Web ATMs and Web 2.0, we now have an opportunity to make amends. Modern electronic financial services will be more flexible and modular, allowing capabilities to be added as and when required on Web. Such safe payment services will not only extend their sales opportunities but also benefit to the whole economic benefits, cost-effective of banking industry. Most importantly, this does mean that there is a big breakthrough on the innovative payment instrument of money flow of e-commerce.

In conclusion, Web ATMs applications, by themselves, will not solve all the problems of the banking system. However, if coupled with other sagacious strategies such as from the concepts of Web 2.0, innovative applications to support coordinated services and intelligent online banking services, Web ATMs could play a critical role. Therefore, these innovative technology or strategic thinking for change may be our better chance yet to steer the banking system in a direction that is consistent with the needs and expectations of a population, especially in consumer to consumer (C2C) business model.

V. SECURITY FOR SNS AND WEB 2.0: DOES SNS AND WEB 2.0 NEED SECURITY?

Information security is the protection of information from a wide range of threats. "Malware" is a general term used for viruses, worms, Trojan horses, etc. With the advent of SNS and Web 2.0, Spam and malware attacks via social networking sites are on the up, and then some researchers are working now on these threats from Facebook, Twitter and LinkedIn, etc.

Attack tactics using SNS as a medium is on the rise. SNS includes various loosely connected applications that enable individuals to communicate with one another and track discussions across the Web as they occur.

The emergence of Web 2.0 is characterized by a broad array of social software, including instant messaging, social networking websites, blogs, Wikipedia, etc. These have caused a significant increase in the number of users involved in social software, and opened doors to new opportunities for knowledge exchange and socializing. Malware authors see this population as potential targets encased in SNS, and so have extended their umbrella of attacks to these venues. As people increasingly share and release personal information on SNS sites, they become rich sources of information for identity theft.

Major social networking sites such as Facebook and Twitter are targets of denial-of-service attacks that disrupt or slow services. For instance, some Twitter users who were tricked into clicking on a link in a tweet were directed to a rogue site that attempted to download malware [49]. The availability of personal information on social networking sites, such as MySpace and LinkedIn, increases the vulnerability of the victims and the success rate of phishing [50]. Not surprisingly, the number of new phishing sites has significantly increased [51], with Twitter users being the most recent victims.

File-sharing websites are now increasingly used by Internet users to facilitate sharing large files, pictures, and videos with family and friends. Malware authors often rename malware-infected files to resemble music or video files in order to lure people to download and install the malware. A variant of the Koobface worm spread through Facebook, with users receiving messages from their friends including a picture of their friend extracted from Facebook [52]. The message had an embedded web link pointing to a spoofed web page, and the user was prompted to install a flash update resulting in the Koobface variant being installed on the user machine. Another malware, Worm SD_BOT, spread rapidly through instant messaging services by sending messages from infected friends of the social network users [53]. Once users click on malware-infected zip files, the worm opens backdoors, connects with other Internet relay chat (IRC) sites, and downloads other malware.

Web 2.0 refers to a large variety of applications characterized by user participation in the creation and functioning of online sites. We are referring here to social networking sites, or encyclopedias like 'Wikipedia' and content sharing sites like 'YouTube' or 'Dailymotion'. These kinds of uses raise new questions as regards the protection of personal data. This is so, first, because these sites concern sometimes intimate details that are supplied willingly and actively by the users: emotions, the group

of friends, and the events in their lives or the lives of others, their health; and second, because the information is about them and those close to them. Here we can see the web user in two roles that in the past were separate: from one site as data subject – the subject of the personal content posted on the Internet – and from the other site as data processor since web user might also be the generator of personal data posted on the website.

Blog pages are also being heavily exploited to launch malware attacks. Popular and trusted blogging websites are hacked into with fake blog posts that include web links with malware.

Social networking has made the web a friendlier, more connected but more complex environment. Sites such as Facebook, MySpace, Orkut, LinkedIn and their like have concocted a dangerous cocktail of user-supplied content, open APIs, and web pages heavily loaded with Javascript and embedded media of all descriptions. It is an environment that is largely devoid of security standards and practices.

Social networks are subject to all the standard vulnerabilities of the web. Facebook, for example, has suffered a number of XSS exploits ranging from session hijacking to fake login pages for stealing credentials. And not all of the exploits required sophisticated techniques. At one time, it was possible to view other users' images on Facebook, even those marked as private, simply by guessing the image ID, because Facebook's software failed to check user permissions.

A. *The privacy impact of social networks*

SNs have caused a revolution in the way how users particularly teenagers share information about themselves and others. The speed of dissemination (increasingly facilitated by mobile devices) and the sense of connectedness and intimacy cause users to forget the long term consequences of publishing information on the internet, especially as information will be publicly available for an undefined period of time. Furthermore, it has proved to almost be impossible to have a defamatory or undesirable publication removed from the internet.

While SNs offer tools to protect information, these tools are generally not sufficiently understood by the average SN user. Their default configuration also tends to be set on making information public, and is seldom changed by the users. Moreover, these tools do not deal with user etiquette, nor with an individual user's privacy-threatening actions. It should therefore not come as a surprise that popular media frequently make reports on the (ab)use of information on SNs. Moreover, the publication of personal information also increases the risk of identity theft, stalking and physical harm.

Because SNs are a recent phenomenon, there are no existing, clear social conventions about their use for example, whether it is considered acceptable to ignore "friending" requests on a SN? Many users will automatically accept such, so that even information that is marked as private on their profile becomes accessible to an unwieldy number of other users. Other users consider

the number of friends as a status symbol, effectively causing the boundaries between private life and professional life to become increasingly blurred [56].

SN users do not seem to fully realise which information they expose. In addition to the information that is intentionally published by users, SN operators place cookies on the computers of their users, and also register all the pages visited by their users, as well as their IP-address, geographical location, the devices they use, etc. SN operators subsequently use this information for commercial purposes, such as targeted advertisements or user profiling.

Emerging technologies such as face recognition and voice recognition [57] can also generate extra information, which will allow a combination of different sources of information. Such technologies are significantly helped by the urge of users to label ("tag") the persons displayed on the pictures they upload. Indeed, SNs seem to fit particularly well in the changing privacy paradigm of children and teenagers, who participate in the emerging trend of sharing information with large user groups, or even the public at large.

Because SNs and Web 2.0 technology have become a central place that combines entertainment, social interactions and communication facilities, SN operators can build a rich profile for each user. The economic value of personal data - which is even considered the new "oil" [58] should therefore not come as a surprise, causing various committees and authorities to scrutinize the privacy impact of SNs with Web 2.0 technology.

B. *Privacy analysis of SNs and Web 2.0*

In the context of SNs and Web 2.0, the difference between data controllers and data processors is particularly vague, because both the SN operator and the users qualify simultaneously as data processor and data controller, as they both define the purpose and the means of the processing (although for different combinations of data flows and purposes). For example, the structure and the technologies used on the SN are solely determined by the SN operator. However, the user himself also defines the purpose and the means of the processing when he chooses which SN he will use, why he will use this network (e.g. to stay in contact with friends or colleagues, or to boost his career), and which SN applications he will install (e.g. a birthday or event calendar). As a result, the network operator qualifies as a controller for the account data of the user (name, first name, alias, icon or photo, membership of specific groups, etc.) in the context of the performance of its contract with the user. The user qualifies as a data controller for the personal data he publishes on the network about third parties such as pictures from friends, family videos or blogs about classmates. For this purpose, the SN operator is a mere data processor, which stores and publishes the personal data pursuant to the request of the user.

While the above analysis provides some insight in the division of data protection responsibilities, in fact it is actually overly simplified. Although a user primarily

qualifies as the data controller for his own personal data on his SN profile, it should be pointed out that many SN operators also use the very same data for their own purposes. Indeed, many privacy policies state that the SN operator is allowed to use the user's personal data for its own commercial purposes, which includes the transfer of data to various third parties.

However, the user's personal data does not consist exclusively of data relating to the user himself, and is in fact intertwined with personal data of third parties. The processing of the user's own personal data will therefore often also imply the processing of personal data relating to third parties. Furthermore, although SN operators mainly focus on their users' own personal data (as such data can be transferred to third parties without requiring additional extraction), new technologies such as semantic web tools, data mining and face recognition allow the automated extraction of data from large quantities of unstructured data (such as text, photos, videos and audio files), effectively enabling a SN operator to obtain an enriched profile of its own users and the associated third parties [59].

Even so, the intentional or implicit use of third party personal data is not typically mentioned in the privacy policies of today's popular SNs. In addition, many users do not seem to realise that they contribute to the accumulation of third party personal data, and that they are involved in a transfer of personal data from one controller (the user) to another controller (the social network operator and its commercial partners), for which a lawful legal ground is necessary.

In conclusion, the privacy impact of SNs should not be underestimated. Many users do not seem to realise that their free use of SNs has an indirect but steep effect through the exposure of their own personal data. In addition, many users do not realise which impact they have on the privacy of their friends and families when they publish information (such as photos and videos) about them. Recent initiatives suggest that the privacy boundary has already been reached [60].

Even as computer systems continue to become more secure through better software development and testing, SNs need to be more secure too. SNs attacks are evolving and becoming more complex and sophisticated in the future and require new techniques due to the fact that malicious code authors are now utilizing highly sophisticated attack strategies that make it difficult for end users to distinguish between legitimate and non-legitimate e-mail messages and websites.

Many papers have documented the use of virtual machines (VMs) for malware analysis [54,55]. This has also generated new thinking amongst malware designers, who are now trying to hide their malicious behaviour while they suspect being inside a VM. Consequently, the ability to detect the presence of a hypervisor is of great interest for both malware authors as well as malware hunters. In this article we want to begin by exploring new virtualisation technologies that are available to modern platforms, followed by discussing how they can prevent hypervisor-based rootkits.

However, the fast adoption and deployment of SNs and Web 2.0 technology also poses challenges for security. The security aspects of virtualisation have been an ongoing field of research.

VI. IMPACT OF WEB 2.0 TECHNOLOGIES: NEW GOVERNMENTAL AND POLITICAL CHALLENGE

The use of communication SNs and Web 2.0 technologies, and the Internet in particular, has been widely credited as contributor to the democracy and freedom of countries. Web 2.0 technologies open the world to many people and facilitate communication and conversation. This can be threatening to governments that limit the speech of their citizens. Some governments have attempted to block these technologies with varying success. Ethiopia, for example, blocks blogging website Blogger.com. Saudi Arabia blocks sites it considers "immoral." China limits information about Taiwan [23].

WikiLeaks is an international non-profit organisation that publishes submissions of private, secret, and classified media from anonymous news sources and news leaks. Its website, launched in 2006 under The Sunshine Press organisation, claimed a database of more than 1.2 million documents within a year of its launch [27].

We have seen that Internet and Web 2.0 technologies played important role with WikiLeaks reports in publishing important documents about confidential agreements and movements of number of governments all over the world to keep citizens informed with critical negotiations and important political decisions.

A. Tunisian Revolution: Jasmine Revolution

The Tunisian Revolution is an intensive campaign of civil resistance, including a series of street demonstrations taking place in Tunisia and was initially spread via social media such as Facebook. The events began in December 2010 and led to the ousting of longtime President of Tunis in January 2011. Street demonstrations and other unrest have continued to the present day [61].

The protestors were precipitated by high unemployment, food inflation, governmental corruption, a lack of freedom of speech and other political freedom and poor living conditions. The protests constituted the most dramatic wave of social and political unrest in Tunisia in three decades and have resulted in scores of deaths and injuries, most of which were the result of action by police and security forces against protestors.

The protests were sparked by the self-immolation of young man on December 17 and led to the ousting of President of Tunis 28 days later on 14 January 2011, when he officially resigned after fleeing to Saudi Arabia, ending 23 years in power.

B. Egyptian Revolution: Egyptian youth revolution

After the Tunisian revolution, the protests has inspired similar actions throughout the Arab world; the Egyptian revolution began after the events in Tunisia and also led

to the ousting of Egypt's longtime president of Egypt. Furthermore, protests have also taken place in Algeria, Yemen, Libya, Jordan, Bahrain, Iraq, Mauritania,^[13] Pakistan^[14] and elsewhere in the wider Middle East and North Africa [61].

Egypt has witnessed two examples of the power of social networks with Web 2.0 technology facilities such as Facebook and Twitter. The first challenge of the government was in 2008 in Egypt, where criticism of the president and political protests are illegal [28]. With growing concern about rising bread prices and government corruption, some young Egyptians began a call for a national strike on April 6. Facebook was already a popular social network in Egypt, especially amongst young people, who started a Facebook group for the strike in that time, and it quickly gained over 70,000 members. April 6 saw riot police swarming Tahrir Square (Freedom Square), a central gathering area in downtown Cairo, as well as universities, factories, and other areas where the government anticipated political activity, which had a chilling effect on most potential strikers [24]. The summer of 2009 showed Twitter to be a powerful tool of communication in Iran's green revolution, when protestors used the social media service to share news with each other and with those internationally, without government filters [25].

Twitter users and other social media users have found ways around government filtering and blocks of certain technologies. For example, people can update their Twitter status from their mobile phones. In Cuba, political blogger Yoani Sanchez emails text for her blog, "Generation Y," to friends in other countries, who then post her entries and reply with comments made to previous blog entries [26]. Some bloggers post updates to their blogs directly from their mobile phones. As these technologies become more ubiquitous, it becomes easier and easier to communicate with them, and more difficult for governments to limit them. Therefore, mobile technology offer a new challenge for governments because of the rise of smart phones, which function more like miniature computers, and the widespread use of mobile phones-even in the poorest countries, mobile phones are essential communication devices.

The second challenge for Egyptian government was in the beginning of 2011, mainly 25 January. The role of the internet in Egypt's revolution has definitely been overstated. If you look at the available data on the degree of internet penetration in Egypt as well as the number of mobile cellular subscriptions per 100 people, the percentage of population under age 15 and the degree of urbanization, some intriguing facts jump out.

The internet and social networks have made a big difference in Egypt, especially in the young Egyptian revolution as in Fig.4. For years, the country's secret police and state-controlled media have very effectively suppressed most dissident activities. Without the relatively free arena of online social networking sites and tools like Facebook, Twitter and YouTube, young Egyptians like WaelGhonim (Google marketing

executive manager) could not have built the resilient and creative force that finally toppled president of Egypt.



Figure 4. An Egyptian young man holds up a sign praising Facebook, joining other protesters in Cairo's Tahrir Square on February 11 (CNN; February 11, 2011 6:20 p.m. EST)

Finally, if you add a free and open internet and social networks to a society with a large number of young people, give a majority of them mobile phones, and fail to offer them any chance of economic and social advancement, you will have ripened the conditions for changing the world.

VII. SOME CHALLENGES AND ONGOING WORK

Recent technological advances in Internet, SNs, and Web 2.0 technologies promise to revolutionize the communication, development, awareness of societies in the next decades. Though a number of ongoing research efforts are focusing on various technical, economic, and social issues, some technical problems are still need to be resolved in order to have flexible, reliable, secure, and power-efficient SNs and Web 2.0 technologies that suitable for different applications. Finally, we summarize a list of challenge point's research problems which provide more features and advantages of SNs and Web 2.0 systems especially after the last political events and changes in Middle East and all over the world.

- Governmental and political constraints;
- An Internet connection is required (especially a broadband connection);
- Web 2.0 services with GIS;
- Mobile learning (m-learning) to perform online learning activities;
- SNs and Web 2.0 hides behind it a sum of technologies and concepts which are still insufficiently defined;
- There is a need for new web programming languages;
- Spam and malware attacks via social networking sites are on the up, and then some. researchers are working now on these threats from Facebook, Twitter and LinkedIn, etc.
- SNs and Web 2.0 offer free things, in open-source structures, with a rather vague significance;

- SNs and Web 2.0 will lead to a low quality of the actual content, with sites which struggle in deep informational mediocrity;
- SNs and Web 2.0 promote amateurishness by invaluable contents generated by users;
- SNs and Web 2.0 have monetary quantification (the Internet as a business - Google);
- SNs and Web 2.0 are considered a kind of second-hand Web, a medium for persons with low digital abilities;
- SNs and Web 2.0 still have limited security especially against malware;
- The speed of programs is incomparably lower than the one of desktop programs;
- The extremely diversified offer of technologies which can be used and which exist on the market at the moment, make the actual selection process difficult;
- Time and knowledge invested in the SNs and Web 2.0 technologies.

VIII. CONCLUSION

SNs and Web 2.0 technologies are powerful enabling societies to communicate and interact. The focus of this paper was to emerge SNs and Web 2.0 technologies to develop, communicate, and in revolution of countries. We explored social networks and their role in communication people. As well as we presented the main Web 2.0 tools and their functions and uses in daily life over the internet.

According to the findings of this study, modern electronic financial services will depend on Web 2.0 to be more flexible and modular, allowing capabilities to be added as and when required on Web. SNs and Web 2.0 will represent the future of distance education and other forms of education (web based learning, e-learning, online learning etc.). Library professionals must use Web 2.0 tools to offer traditional services in an innovative manner and address the information requirements of the techno-savvy users. As well as, we believe that combining traditional methods with novel Web 2.0 participatory tools notably strengthens participatory urban planning and will eventually empower the role of citizens.

In conclusion, authors would like to emphasize the security issue and the effective role of SNs and Web 2.0 as removing profound communication barriers will play an important and critical role and can be used for governmental movements and political activities.

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