Social networks and Web 2.0 tools as a good complement to the local SDI's

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Abstract

Social networks and Web 2.0 tools for different purposes have advanced significantly in recent years.

The Spatial Data Infrastructures (SDI's) are not easily understood as the infrastructure of gas, water or roads. This fact makes their benefits are not always seen by policy makers and citizens in some places, mainly in local environments.

Consequently, available resources, experiences gained and lessons learned in the Spatial Data Infrastructure field, are not taken into account or undervalued.

The use of Web 2.0 tools and social networks can be of effective help for the understanding of the SDI's and its implementation process, particularly in local environments.

This paper describes experiences in Cuba with respect to local SDI's and applications of the Web 2.0 tools and social networks in local, national and transnational contexts.

The local SDI's experiences in Cuba have taken place after the implementation of the National SDI in the country.

The experiences in social networks and Web 2.0 tools have been implemented for the purpose of information dissemination, training or knowledge management in the context of initiatives or research projects and applied to the Geospatial Information or other issues.

The paper concludes with some considerations concerning local Spatial Data Infrastructures and its benefits, steps for implementation and support that Web 2.0 tools and social networks can offer to this end.

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Keywords: local SDI´s, social networks, Web 2.0, SDI

1. INTRODUCCIÓN

SDIs are not known in the same way as other types of infrastructures; this lack of knowledge, sometimes at decision-making level, has the consequence that SDIs are not valued and in some places there are still no investments in their development.

The evolution of the Web, has increased the means of communication with significant impact on social networks, such as Facebook, Myspace and Twitter.

The evolution of the Internet has given rise to Web 2.0, having expanding the ways of interaction and collaboration in the context of the network.

There has also been a noticeable evolution regarding those who produce Geographic Innformation (GI), thus appearing the figure of "produsers" where the social networks support interaction. The impact of thematic social networks, such as Open Street Map, is indicative of the evolution over recent years.

Regarding GI, new ways of collaboration and interaction in Web 2.0 environment, have become popular forms of communication and dissemination, through distribution lists, groups, blogs, wikis, geoportals and also by means of initiatives such as Google maps, Google Earth, etc.

The constant growth of social networks, highlight the potential that can mean the communication and dissemination of information about SDIs using these networks, characterized by there large number and diversity of members.

The presence of regional, national and local SDIs and related iniciatives has been analyzed empirically, in the context of the social networks: Facebook, Myspace and Twitter.

The presence of SDI in social networks is applicable to any hierarchy of SDI. However, in the context of this paper it has been considered mainly from the perspective of local SDI.

In particular, the case of Cuba has been considerd, due to the fact that this Country has several years of experience in SDI and its Strategic Plan 2010 -2015 is focused towards local SDI, with the participation of universities, other stakeholders and the complementarity of social networks.

2. SOCIAL NETWORKS

According to (Castells, 2000) networks constitute the new social morphology of our societies.

(Castells, 2001) said "...the definition, if you wish, in concrete terms of a network society is a society where the key social structures and activities are organized around electronically processed information networks. So it's not just about networks or social networks, because social networks have been very old forms of social organization. It's about social networks which process and manage information and are using micro-electronic based technologies.

Considering social networks, according the definition given by (Castelles, 2001), these networks are at present one of the most powerful and innovative social structures for online work.

At the beginning, social networks were used mostly for informal communication. They were thought as applications to be used in spare time. But, an important potential was hidden. They could be used with many other objectives, for example the creation of new opportunities.

At presente several companies consider that it is important to be in the social networks. It means to achieve immediate visibility, with no geographical limits, and also the possibility of direct communication.

These opportunities are very attractive for many purposes, but, there are still some obstacles like the digital gap. This digital gap gathers the connectivity limitations and the minimum of digital culture knowledge that is necessary for using these technologies.

According to (Davis & Mintz, 2009) it is possible to distinguish some social web applications characteristics, as follows:

- User-generated social content. Social web applications enable site visitors to submit contents that others can access.
- Social networking. Users of social web applications join together in online groups and relationships, which allow them to see identity-related information about the people to whom they are connected.
- Collaboration. Users engage in conversations, co-creation of content collaborative filtering, and collective action.
- Cross-platform data sharing. Increasingly, sharing content requires that a user be able to transfer data across sites, implying that the site on which the remote content is to be shared can interface correctly with the other site’s data.

Social Networks are sites on the Internet that have a series of simple technological tools, to use and allow the creation of communities of people among which a dynamic exchange with different aims provides spaces for:

- Meeting and exchanging ideas with others.
- Offering products, services and conduct business.
- Sharing and exchanging information in different media.

These networks have a high rate of growth, which is producing a rapid cultural change that is revolutionizing the use of Internet. The statistics show a decrease in the mail and instant messaging, because of the diversity and power of social networks.

The impact of social networks, has become visible in this century. There are now many social networks, among which Facebook, MySpace and Twitter stand out.

2.1 Main characteristics of Facebook, Myspace and Twitter

Facebook

It is a social networking website created in 2004. It ables users to be in contact with others adding them as friends. Once users are friends they can interact in many ways, like sending messages to each other, or update their personal status in order to notify others about their activities. There is also the possibility to join a network to be in contact with people with similar interests.

Users have their profiles with basic information, but also with photos, videos, pages and applications.

They can communicate with other users by sending private messages, or public, written in the user's wall which will allow everybody to see it. There is also a chat feature, and the possibility to leave comments to any user's activity.

However, all of these features can be modified in the privacy settings. This is due to the many critics that Facebook has received about its lack of privacy.

Facebook is free for users, and it is mantained financially by the revenue of advertising.

Facebook has a number of features with which users may interact, such us:

Wall, a space on every user's profile page that allows friends to post messages for the user to see.

Photos and videos, where users can upload albums and photos.

Status, which allows users to inform their friends of their whereabouts and actions.

Twitter

It is a social networking website based on microblogging. This means that each post must be text based and allows only 140 characters. These posts are called *tweets*.

Each user is the publisher of its own twitter website, and may have subscribers, called *followers* or subscribe to other users, or, in other words, may be *following* other twitter users.

Twitter can be used in the computer it the proper twitter website, or in other websites through many *web apps* called *widgets*. It can be also used in the mobile phone. Sometimes the use of twitter can replace the use of SMS.

Twitter has been used with many objectives, some of them unexpected: emergencies, legal proceedings, education, campaigning, news, business, etc.

Myspace

It is a social networking website. Nowadays is has been widely overtaken by its competitor, Facebook.

Each user has its own Myspace site, with basic information and also allows to add multimedia content. Each user can be in contact with others using several of the Myspace features, such as:

Blurbs, blogs, multimedia: Profiles contain: two standard "*blurbs*": "About Me" and "Who I'd Like to Meet" sections.

An "Interests" section and a "Details" section.
A *blog* with standard fields for content, emotion, and media.
MySpace also supports uploading images.

Comments: Below the User's Friends Space (by default) is the "comments" section, wherein the user's friends may leave comments for all viewers to read.

Profile customization (HTML): MySpace allows users to customize their user profile pages by entering HTML. Videos and flash-based content can be included. Users also have the option to add music to their profile pages.

Bulletins: *Bulletins* are posts that are posted on to a "bulletin board" for everyone on a MySpace user's friends list to see. Bulletins can be useful for contacting an entire friends list without resorting to messaging users individually.

Groups: MySpace has a Groups feature which allows a group of users to share a common page and message board. Groups can be created by anybody, and

the moderator of the group can choose for anyone to join, or to approve or deny requests to join.

MySpaceIM: In 2006, MySpace introduced *MySpaceIM*, an instant messenger that uses one's MySpace account as a screen name.Users who use *MySpaceIM* get instant notification of new MySpace messages, friend requests, and comments. *MySpaceIM* was added as an default feature of MySpace by the end of 2009.

MySpaceTV (Video): In early 2007, MySpace introduced *MySpaceTV*, a service similar to the YouTube video sharing website. Since 2009 the service is called *MySpace Video***.**

Applications: In 2008, MySpace introduced an *API* with which users could create applications for other users to post on their profiles. The applications are similar to the Facebook applications. In May 2008, MySpace had added some security options regarding interaction with photos and other media.

MySpace Mobile: There are a variety of environments in which users can access MySpace content on their mobile phone. MySpace developed a mobile version for a wider range of carriers, including *AT&T*, *Vodafone* and *Roger Wireless*.

MySpace News: In 2007, MySpace launched a service called *MySpaceNews* which displays news from RSS feeds that users submit.

MySpace Classifieds: Full service classified listing offered beginning in August 2006. *MySpace Classifieds* was launched right at the same time the site appeared on the internet.

MySpace forums: MySpace uses an implementation of *Telligent Community* for its forum system.

2.2 Advantages and disadvantages of using social networks

Recent studies present different benefits provided by joining social networks.

Advantages

- Breaks the isolation of many individuals.
- Allows the combination of plurality and community.
- Allows establishment of ties and relationships with people who share the same interests, concerns and needs, as well as continuous updating of contacts.

- With regard to the academic and employment sectors, several innovative experiences are reflected in these networks.
- Employers who use the networks have demonstrated a level of efficiency and successful teamwork, strengthening knowledge management projects.
- Innovative campaigns are proposed daily, with an interesting response from users at very low cost.

Disadvantages

- The invasion of privacy is a problem that occurs in social networks.
- Belonging to a social network is not synonymous of productivity.

3. WEB2.0

Web 2.0 refers to a new generation of the Web where the contents are shared and produced by the users. The term Web 2.0 was first used in 2004 at a conference in which the main issue was the revival and evolution of the Web.

Web 2.0 is an evolution of Web 1.0. This one is the traditional Web we all know which is characterized by the content and information of a site produced by an editor or Webmaster and consumed by visitors to this site.

In the Web 2.0 information and content is produced and shared directly or indirectly by users. (Coleman, et al 2009) express that "What is different with Web 2.0-based contribution initiatives is the more influential role assumed by the community".

The term Web 2.0 embraces collaborative applications and also indicates a "social" approach to generating and distributing Web content.

According to (Maser, I., 2009) the most important differences between Web 1.0 and Web 2.0 can be seen from some contrasting examples which illustrate the interactive and participatory nature of Web 2.0.

Implicit and explicit in many Web 2.0 applications are Social Networks, through which users share and filter content, collaborate, seek information, and interact socially on the Web.

4. SDIs, SOCIAL NETWORKS AND WEB 2.0

(Delgado,T. et al 2009) mention that according to Goodchild, social networking, Web 2.0, and Volunteered Geographic Information (VGI) offer enormous opportunities to develop SDIs for scientific and policy-support purposes which are yet to be exploited.

(Thomas E. et al 2009), referring to the adoption of an inclusive approach to the management of spatial information, regarding Web 2.0, say:

The development of Web 2.0 is enabling contributions to the updating and maintenance of data from any interested party. In the same article, the stakeholders answer some questions related to the Victorian Spatial Information Strategy, expressing that "we can't develop spatial information in isolation from the many developments that are taking place outside the traditional spatial information community and that are enhancing or making use of it, such as social networking, web 2.0, sensors, etc."

(Delgado, T. et al 2009) mention that Web 2.0 has allowed to see SDIs under other paradigm when, additionally to the standardization and the uniformity inherent to top down development, the incremental contributions and the heterogeneity and diversity become crucial.

The ideas previously expressed, highlight the importance of web 2.0 and Social Networks nowadays. However, to take advantage of these, people have to be prepared for its use.

Taking into account that people learn through formal and informal education, many opportunities for training can be developed, through collaborative efforts using ICT and methodologies aimed at distance or blended learning, which act as appropriate complement to the traditional ones. In (Castañeda, L. 2010), the educational possibilities and high potential of social networks are considered.

In a recent research carried out by (Van Oort, et al 2010) related GI datasets three categories of links between users has been studied: (1) producer to user, (2) user to producer and (3) user to user. As one of the results of the research, what is really absent is the user to user interaction. The results of this research show a situation that frequently appears in geospatial environments.

From another point of view the number of people who communicate through social networks is growing at an unprecedented rate. In this context, the need of find out if the main SDIs and related iniciatives, regional, national or local "have a presence in Social networks", was considered.

5. CARRIED OUT AND ONGOING EXPERIENCES

Regarding the minimum of digital culture knowledge that is necessary for using social networks and owing to the necessity of capacity building in Web 2.0, various actions are carried out in different places and environments. Examples of this are:

Project: A/024521/09

The Project entitled "Training and knowledge management in Web 2.0 tools, for university teaching, administrative and educational management in rural communities and Continuing Professional Development, in Argentina, Chile and Ecuador", is financed by AECID-Spain and carried out, under the direction of the Universidad Nacional de Educacion a Distancia - Madrid (Spain) and with the participation of the Universidad Nacional de la Patagonia San Juan Bosco - Argentina, Universidad de Concepción - Chile and Escuela Politécnica del Ejército - Ecuador.

This project, will develop in the second half of 2010 a training program, targeted at the three lines of the Project: 1) University teaching, 2) Continuous Professional Development and 3) Administrative and educational management in rural communities. E-Learning courses regarding Web 2.0 tools will be developed for the three lines above mentioned; e-Seminars through videoconferencing technology will be developed for lines 1) and 2). The themes of line 2) will be Geographic Information and SDIs.

Project: PI 803 UNPSJB

The Project entitled "Promoting the use of ICT in teaching, research and communication" includes members of three universities of the Argentine Patagonia: Universidad Nacional de la Patagonia San Juan Bosco, Universidad Nacional del Comahue and Universidad Nacional de la Patagonia Austral.

This project includes among its objectives, the use of Web 2.0 tools and various forms of interaction and collaborative networking.

Among the activities carried out can be mentioned:

- Web development for university teaching.
- Video to spread the academic offer of Geography careers, conducted as a collaborative effort among various stakeholders.
- Tools and methodologies for using old digital cartogaphy available in repositories.
- Use of various ICT applied to university courses, Web-oriented tools and content distribution management are part of ongoing activities.

Regarding information about SDIs in Social Networks, an empirical analysis inside Facebook, Myspace and Twitter was carried out. To this aim a sample of 100 SDIs and related iniciatives, considering: regional, national and local SDIs covering all continents, were analised.

The searches were conducted through the social networks and using external search engines.

The following results were obtained:

9 SDIs and related initiatives are present in social networks.
Of these, 8 correspond to Facebook, 0 to Myspace and 5 to Twitter.

Of these:
7 SDIs and related initiatives are present in only one social network.
3 SDIs and related initiatives are present in two social networks.
0 SDIs and related initiatives are present in more than two social networks.

6. LOCAL SDI´s

According to (McDougall et al, 2009), local government must be viewed as an equal partner in SDI development to engender trust and facilitate data sharing on an equitable basis.

Nowadays several geospatial applications are beginning to change their approach, shifting from isolated GIS application to Web Services provided from the SDI. This is an important step in order to share the geographical information for decisions making in an collaborative enviroment at interinstitutional level. The use of SDI services made possible the fast implementation of complex tools, and consequently the reduction of data duplication, the possibility to save resources and the simplification of the cartography and future services.

At national level the National Commission of Spatial Data Infrastructure of the Republic of Cuba (CIDERC) has given important steps to deliver information and services in support to decisions making with an important geospatial component. Nevertheless, this process must be continued. It is a need to decentralize and expand it towards the provinces and municipalities, in order to achieve a harmonic work for sharing the most quantity of geographical data in favor of communities and citizens.

At local level it is necessary to provide resources that allow incorporation of more and more users in the process of development of information and communication technologies of proper society and in this context it is necessary to stimulate the geoinformation sector.

The culture of the Web 2.0 is diversifying in products driven user that every time are more popular.

6.1 Municipal SDI´s as a key priority in Cuba for the period 2010-2015

According to the lessons learnt during its previous strategic period (2005-2009), the Spatial Data Infrastructure of the Republic of Cuba (IDERC) has projected among its priorities the deployment of SDIs at local (municipal) level.

During the last 5 years, the focus into the IDERC was aimed at strengthening the Legal Framework and the institutional SDIs, from the providers, in order to make the core data and services available for the society.

The four key principles of the IDERC ´s Strategy 2010-2015 are the following:

1. Oriented to the needs.
2. Bottom-Up approach.
3. Cooperation
4. Institutionalization

To be aligned to these principles, the Executive Secretary of the Spatial Data Infrastructure is leading a Program to strengthen the capacity of the local stakeholders in order to build users-driven SDIs at municipalities.

This program includes two objectives:

- To make a diagnostic study to determine the SDI readiness in the 169 municipalities of Cuba.
- To advise the local responsible people in the way to reach their own SDIs oriented to their own problems and needs, by means of capacity building and the provision of guidelines, standards, as well as the socialization of the best practices accumulated by the IDERC.

To instrument this program, the National Commission of the Spatial Data Infrastructure of the Republic of Cuba (CIDERC), has established important links with other organizations which are looking at local development. Two of the most important organizations into this cooperation are the Ministry of Higher Education (MES) and the National Centre of Local Development (CEDEL) adscript to the Ministry of Science, Technology and Environment.

Regarding the education cooperation, they could act as an important articulator for the program, considering the deployment of Universities in all the municipalities of Cuba.

Each venue of the University at municipality (SUM) is in charge of the capacity building of the main need of the territory, so they should play an important role disseminating the necessary culture of SDI addressed to the main stakeholders involved.

Provincial Universities also play a crucial role, because they are incorporating new initiatives (Specialized profiles of Geoinformation, Geomatics Labs, Post-graduate courses, among others) to support the process.

The whole educational branch is coordinated by the Executive Secretary of CIDERC directly with the Science and Technology Direction of the Ministry of Higher Education.

In the case of the cooperation with the National Centre of Local Development, it coordinates a program for Local Development including international cooperation with 20 selected municipalities. The IDERC is involved in carrying out a survey in these 20 municipalities. As the result of this Diagnostic, some of them will be chosen to strengthen their capacities in order to push the implementation of SDIs for the municipal governments.

The schedule for this program will allow having important measures at the end of this year 2010. The first sustainable SDIs for municipalities in Cuba should be operational in 2011.

As part of this process, a pilot project to increase the participation of citizens and other entities not directly involved with the coordinator group of the SDI is beginning its first steps. In this sense, new trends of ICT derived from Web 2.0 as Cloud Computing, Collective Intelligence and Social Networks are being incorporated.

7. CONCLUSIONS

Communication and dissemination of SDIs and related themes generally takes place through various media.

In the communication and dissemination of SDIs using social networks, can be distinguished two types of networks:

Thematic social networks, regarding SDIs and related themes.

Social networks, in a wide sense, like Facebook, Myspace and Twitter.

In the Thematic Social Networks, communication and dissemination, through geoportals and Web 2.0 tools such as distribution lists, blogs, wikis, newsletters and magazines, are something that has been growing over the last years.

Communication and dissemination of SDI through social networks, in a wide sense, is starting.

From the analysis carried out on social networks: Facebook, Myspace and Twitter, concerning the communication and dissemination of SDIs and related iniciatives, it is observed that it is scarce.

For the activities that are being carried out at present in the context of projects, their findings will be available at the end of 2010.

In the case of Cuba:
The Spatial Data Infrastructure of the Republic of Cuba (IDERC) has projected among its priorities the deployment of SDIs at local (municipal) level. Consequently Municipality SDI´s has been seen as a key priority in Cuba for the period 2010-2015.

The schedule for this program will allow having important measures at the end of this year 2010. The first sustainable SDIs for municipalities in Cuba should be operational in 2011.

As part of this process, a pilot project to increase the participation of citizens and other entities not directly involved with the coordinator group of the SDI is beginning its first steps. In this sense, new trends of ICT derived from Web 2.0 as Cloud Computing, Collective Intelligence and Social Networks are being incorporated.

The popularity and the incessant growth of social networks indicate that these are a good complement to communicate and disseminate SDIs to the society.

While this type of communication and dissemination is applicable to any SDI, local SDIs for their size and the possibility of direct interaction among stakeholders, can be considered as an appropriate scope to complement the communication and dissemination with Web tools 2.0. tools and social networks.

Likewise, the communication and dissemination of SDIs in social networks, can contribute as an effective way to spread the SDIs and related matters, and thus reduce the lack of knowledge that many citizens still have regarding this type of Infrastructure.

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