

# Social Media Participation: A Narrative Way to Help Urban Planners

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**Abstract.** Social Media Participation can be very important when you have to make an important decision about a topic related to urban planning. Textual analysis to identify the sentiment about a topic or, a user analysis to identify the actors involved on a discussion, can be very important for the persons or institutions that have to take an important decision. In this paper we analyze the case study of the #nuevoaeropuerto in Mexico City to highlight the importance of conducting a study of this nature.

**Keywords:** Twitter · Social media participation · Urban planning · Sentiment analysis · Users analysis · Textual analysis

## 1 Introduction

Urban planning is a technical and political process concerned with the use of land and design of the urban environment, including air and water and infrastructure passing into and out of urban areas such as transportation and distribution networks. In the other hand urban planners are challenged to engage the public in meaningful ways to shape these planning processes [1].

In this paper we explore the idea of the use of social media participation, especially microblogs, such as, Twitter, in order to analyze the way the users interact with these urban topics, understanding who the actors are and how they can help urban planners taking their decisions.

Social Media participation represents one type of tool that can be used to support interaction between groups of people who share a common interest [2–4]. One of the features of many social networking tools is that they allow participants to microblog, the posting of short content, such as phrases, quick comments, images, or links to URLs, photos, audio, or video [5, 6]. According to [7], all this elements generates a small narrative bit (narb) that tells a tiny story about an individual.

All the digital social networking systems (Facebook, Twitter, Instagram, etc.) make an assumption that members would be interested in creating specific identity narratives about themselves. This is facilitated at the time of subscription when new members are requested to provide some basic information about them. All these users that complete their profile provide very important information that can be reused to categorize and classify them [8]. These are often considered ‘demographic’ information that could

include basic attributes like gender and race. The participant is expected to truthfully indicate their specific attributes which are essential to become a member of the social network. The entire process of identity construction is based on information that is deliberately solicited by a digital social network system and disclosed by the one seeking membership in the network.

There are generally two mechanisms that are used to create these short stories. First, a member of any digital social network is asked to complete the basic demographic information at the time of joining the network. The members could also choose to disclose other information ranging from taste in music to political preferences. In combination, these self-disclosures create a “user profile” of the person that could remain relatively stable over long periods of time (Normally nobody change their personal information after their creation). Indeed, some components might never change such as the place where one was born or the date of birth of an individual. Secondly, the member is expected to continuously update specific events in one’s life so that all those connected with the member would remain informed about the specific events in an individual’s life, however banal or commonplace those events might be. Nevertheless, those constant updates could become the pieces that tell the story of a particular individual. These two strategies are shared by most social networking systems and together these strategies offer the opportunity to create a narrative within specific boundaries allowing participants to carefully pick and construct their selves.

Analyzing these narbs we can detect some relevant actors that interact in microblogs. This narb is a construction of an identity that depends on how well a person is able to tell a story about the self.

## 2 Microblogs and Twitter

If Twitter is a conduit for global stream of consciousness, it logically follows that the medium is a barometer for revealing everything, from occurrence of natural disasters to public perception of the city. In this paper we explore the potential awareness of this consciousness through the examination of Twitter and urban planning. Twitter can be understood as a new environment in which people gave their opinion about some problems in the cities.

Twitter is a popular social media service that allows people to share updates, news, and information (known as “tweets”) with people in their Twitter network and beyond. In our approach we used tweets extracted from Twitter. A tweet is a little message of no more than 140 characters that users creates in order to communicate thoughts, feelings, or even participate in conversations. With over 200 million registered users [9] and 13 % of online Americans using Twitter [10], Twitter is one of the most popular social media available. Research has compared Twitter to earlier kinds of social media like blogs [11] and social network sites [12]. Recent analyses of microblogging suggest that the brevity and broadcastability of messages are important affordances of microblogging.

First, and perhaps most promisingly, we believe that microblogging data can offer city planners and developers better information that can be used to improve planning and quality of life in cities. This might include new kinds of metrics for understanding

people's interactions in different parts of a city, new methods of pinpointing problems that people are facing, and new ways of identifying potential opportunities for improving things.

### 3 Text and User Analysis

In this article we will discuss the installation of the new airport in Mexico City as a case of study. This installation represents a major infrastructure project to be performed in the center of Mexico City. This project has some encouraging opinions and some strong criticism. In this article we are interested in discover what people say in Twitter and who are the important users that represent a sort of activists in social networks.

The role of social media during the announcement of installation of the new airport in Mexico City gained great importance because Twitter became the principal media for the youngest people. Our analysis is based on all the tweets collected during this announcement.

The tweet allows the communication of texts, videos or pictures by providing a link to it. Some words of the tweet are preceded by the pound sign # (hashtag). By using the hashtag, users can recover, reply (known as retweet) or follow conversations about a certain subject because this hashtag becomes automatically a hyperlink on Twitter. Everyone who clicks on a hashtag has the possibility to view the search results of all other tweets that contains the same hashtag. In our case, we used the hashtag #nuevoaeropuerto, to recover all the conversations, ideas, phrases that were produced during the announcement of the installation of the new airport in Mexico City by the president Enrique Peña Nieto. The tweets that we recovered have different structures. For example:

- A simple phrase like: “La sustentabilidad y el desarrollo económico del aeropuerto deben ir de la mano para lograr el proyecto que tanto necesitamos.” (In English “Sustainability and economic development of the airport should go hand in hand to achieve the project we need.”)
- A phrase containing name(s) of the user(s). For example: “Obras del Aeropuerto de StaMta inician el 1 de febrero @carlosetcaicedo @LINAPALMA @opinioncaribe @OpinaSantamarta @KARYMUCO @ELTIEMPO.” (In English: “Works Airport StaMta initiate February @carlosetcaicedo @LINAPALMA @opinioncaribe @OpinaSantamarta @KARYMUCO @ELTIEMPO”)
- A phrase with links, for example: “Con el Nuevo Aeropuerto, no habrá problemas viales como se piensa <http://t.co/cSnhHJYKZQ>.” (In English: “With the new airport, no traffic problems as you think <http://t.co/cSnhHJYKZQ>”)
- A phrase with retweet RT. For example: “RT @pedestre: Plan de desarrollo urbano del aeropuerto es como Dios: dicen q existe, pero nadie lo ha visto.” (In English: “RT @pedestre: Urban planning of the airport is like God, he exist, but no one has seen him”)
- A phrase with hashtag(s), like: “Y hablando de #impunidad Primero era el problema #Tlatlaya, ahora es el #NuevoAeropuerto.” (In English: “And speaking of #impunity #Tlatlaya was the first problem, now is the #Newairport”)

For this test we used generated 1,400 tweets on September 2, 2014, the date on which the President of Mexico made the announcement of the installation of the new airport in Mexico City. The first reactions on Twitter showed a clear support for the installation of the airport. The following Table 1 shows an analysis of feelings generated tweets held in that period.

This sentiment analysis has been generated using the sentiment viz application developed by Healey and Ramaswamy [13] that is an application to estimate and visualize *sentiment* for short, incomplete text snippets. Sentiment is defined as “an attitude, thought, or judgment prompted by feeling.” The specific goal is a visualization that presents basic emotional properties embodied in the text, together with a measure of the confidence. In the Fig. 1, we can detect that is a big concentration on opinions that are tense, active and alert, this is normally because is a new announcement of the government and all major actors are expecting the media reactions in order to have a real position of the announcement. In Fig. 2, we show the opinion of the same topic but two weeks later. We can see that almost all opinions are augmented and almost all passed of the status bored to the status active. Also, there are a large number of opinions that approve the project. This is due to the big media strategy generated by the government to manipulate the public opinion about the project. This analysis shows how opinion can change of one date to another in order to take a better decision about a topic.

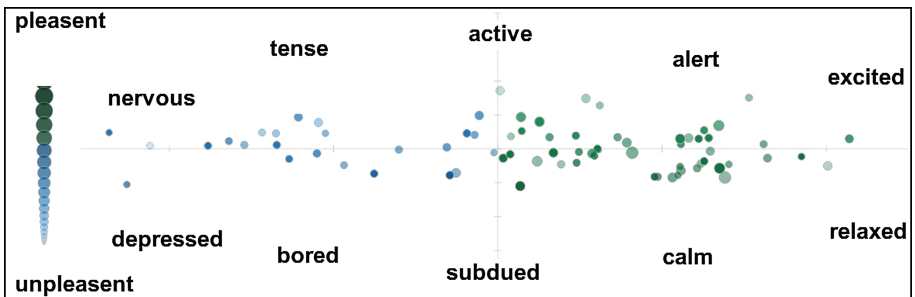


Fig. 1. Sentiment analysis related to the hashtag #nuevoaeropuerto, September 2, 2014.

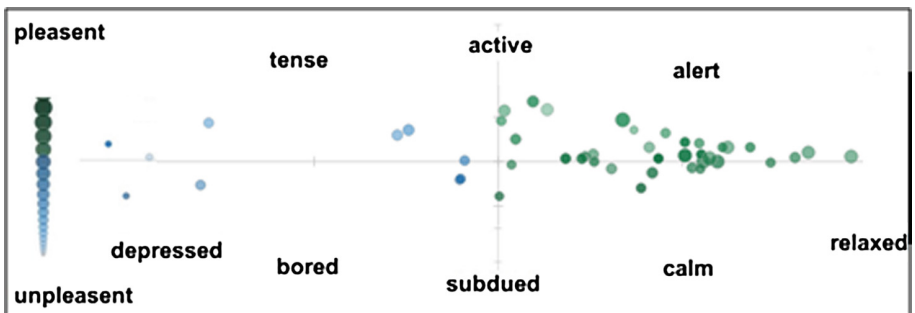


Fig. 2. Sentiment analysis related to the hashtag #nuevoaeropuerto, September 16, 2014.

The second major work in this paper is the identification of users who are participating in this discussion and how we might characterize them. Initially we map the most important actors in the discussion. Here we find several actors, for example : @cghunam, @ecoosfera, @atencofpdt, @galvanochoa, @mvsnoticias, @cgt, @lost-ejemedios, @elva\_contra, @notipaco, @a\_encinas\_r, @padresolalinde, @monitordh, @omarel44, @article19mx, @kmiret, @jscesareo, @komanilel, @sme1914, @atili-oboron. We can see all these actors in Fig. 3.

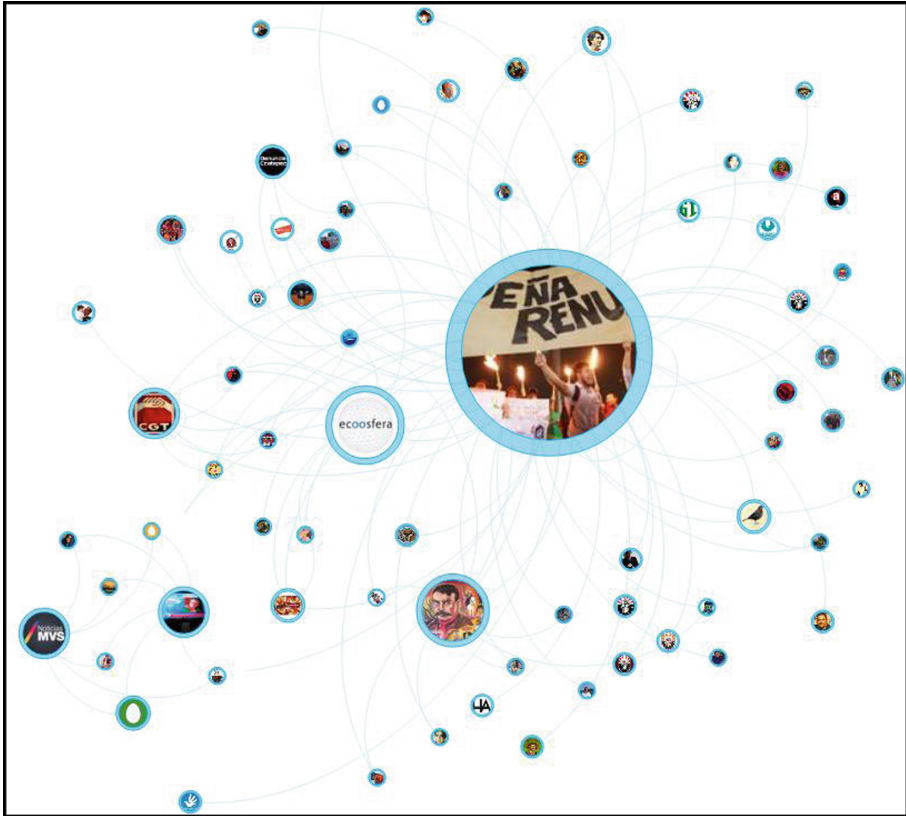


Fig. 3. Major actors associated to the hashtag #nuevoaeropuerto

Despite the fact that the online community being a relatively young phenomenon, some of attempts in classifying internet users have been undertaken. For example Brandtzæg and Heim [14] propose a study that can be well adapted to the urban planning activism developed in this article. According to Brandtzaeg and Haim we can identify 5 different users:

- *Sporadics* visit social network from time to time, mainly to check if somebody contacted them.

- *Lurkers* is the largest group, they do not create any content, but consume and spread the content created by other groups. They are also notable for a propensity to time-killing.
- *Socializers* use social networks to communicate and make interesting comments about a discussion. They need to be read and saw for a multiple users. For example: @galvanochoa, @mvsnoficias and @a\_encinas\_r.
- *Debaters* are a more mature and educated version of socializers. Besides communication, less shallow than in the previous case, they are interested in consumption and discussion of news and other information available in social networks. For example @padresolalinde, @ecoosfera, @kmiret, @jscesareo and @komanilel.
- *Actives* are engaged with all possible types of activity: communication, reading, creating, watching, and establishing groups. They have a strong criticism about a subject. Almost all users can be inside this category. For example @cghunam, @atencofpdt, @cgt, @lostejemedios, @elva\_contra, @notipaco, @monitordh, @sme1914.

With this classification, decision makers may have better decision elements to analyze the behavior of the movement. With this analysis, we can detect who are the main actors or who is more important, even to know who is the leader who has a large number of followers, etc. All these elements define the strategy for the project and how to make better decisions for society.

## 4 Conclusions

The Social Media should be understood and taken as a medium that support the participatory process. In this paper we presented a review of advanced social media analysis method and tools, and an original methodology for textual analysis of Social Media Participation. Methodologies and analysis have been reviewed in order to discover potential suitable approaches for the integration of the Social Media Participation in urban and regional planning.

In this article we sought to understand Twitter's role in activist movements that are related on urban planning by exploring the specific case of the installation of the new airport in Mexico City. Diverse opinions (favorable and unfavorable) were presented in order to evaluate the sentiment associated to an important decision in different time. Also a user analysis is explored in order to categorize the different actors involved on a discussion.

In this article we argue that having all this information (users and sentiment analysis) can be very important in urban planning, because the person or institution that take the decision could have a lot of information and take better decisions. Specially in urban planning because the people is directly involved in this decisions.

In order to use Social Media efficiently for planning practice, it is necessary to encourage inclusion of all groups, through the promotion of systems, rising public awareness, and enabling an access to modern technology; also to choose a right tool, or multiple tools, in addition to the traditional ones. Another important topic is carefully study users of the system in order to determine exactly which group it does represent.

In conclusion, the knowledge of Social Media Participation if proficiently elicited might be used to discover and expose the will of users and could be a valid support for design, analysis and decision-making in urban and regional planning. Further research is definitely needed and Social Media analysis methods and technology should be applied from within real-life urban and regional planning process to proof the full efficacy. Nevertheless, early results are promising and the research agenda challenging.

## References

1. Borge, R., Colombo, C., Welp, Y.: Online and offline participation at the local level: a quantitative analysis of the Catalan Municipalities. *Inf. Commun. Soc.* **12**, 899–928 (2009)
2. Livingstone, S., Bober, M., Helsper, E.: Active participation or just more information? *Inf. Commun. Soc.* **8**, 287–314 (2005)
3. Christakis, N.A., Fowler, J.H.: *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*. Little Brown and Company, New York (2009)
4. Sui, D., Goodchild, M.F.: The convergence of GIS and social media: challenges for GIScience. *Int. J. Geogr. Inf. Sci.* **25**(11), 1737–1748 (2011)
5. Rattenbury T., Good N., Naaman M.: Towards automatic extraction of event and place semantics from flickr tags. In: *Proceeding of the 30th International ACM SIGIR Conference on Research and Development in Information Retrieval*, New York, NY, USA, pp. 103–110 (2007)
6. Lewis, S., Pea, R., Rosen, J.: Beyond participation to co-creation of meaning: mobile social media in generative learning communities. *Soc. Sci. Inf.* **49**, 351–369 (2010)
7. Mitra, Ananda: Creating a presence on social networks via narbs. *Glob. Media J. Am. Ed.* **9**, 1–18 (2010)
8. Ramine, T., Carr, L., Hall, W., Bentwood, J.: Identifying communicator roles in twitter. In: *Proceedings of the 21st International Conference Companion on World Wide Web (WWW 2012 Companion)*, pp. 1161–1168. ACM, New York (2012)
9. Halliday, J.: Guardian Activate 2011 Conference Live Blog. Guardian Activate 2011 Conference (2011). <http://www.guardian.co.uk/media/pda/2011/apr/28/guardian-activate-2011-new-york>. Accessed 2011
10. Smith, A.: *Twitter Update 2011*. Pew Internet & American Life, Washington DC (2011)
11. Java, A., Song, X., Finin, T., Tseng, B.: Why we twitter: understanding microblogging usage and communities. Paper presented at the Joint 9th WEBKDD and 1st SNA-KDD Workshop 2007, San Jose, CA (2007)
12. Gruzd, A., Takhteyev, Y., Wellman, B.: Imagining twitter as an imagined community. *Am. Behav. Sci.* **55**(10), 1294–1318 (2011)
13. Healey, C., Ramaswamy, S.: Visualizing Twitter Sentiment (2010). [http://www.csc.ncsu.edu/faculty/healey/tweet\\_viz/](http://www.csc.ncsu.edu/faculty/healey/tweet_viz/)
14. Brandtzæg, P.B., Heim, J.: A typology of social networking sites users. *Int. J. Web Based Commun.* **7**(1), 28–51 (2011)