

SOCIAL MEDIA USAGE IN SUSTAINABLE MOBILITY

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ABSTRACT

The proposal of this article is to show how the modern technology of ITS-Intelligent Transport Systems and ICT – information and Communication Technologies, coupled with effective concepts use targeted media and social networks, can impact in changing travel behaviour, encouraging people to use less and more rational way their private cars, using more public transportation, more sustainable modes, that used by low-income population resident on the urban fringe, like bicycle and walking the walk and the car sharing.

Much has been said about the mechanisms of Facebook, Twitter, email, Blogs, websites and Youtube, and the idea that we present in this article is how to use the power of new social media to do something that really matters. For this we will use ITS advanced technologies, ICT and research on human behavior that, if considered in conjunction, allow small actions create big changes.

We believe that the force of change can be catalyzed by the well-planned use of media and social networks where everyone-individuals, Governments, service providers, non-governmental organizations and other actors of urban mobility-to be able to connect, inform and discuss in real-time public transportation options (train, subway, ferry, bus, BRT, TRAM, streetcar, cable car), the use of non-motorized alternatives (walking and cycling) as well as stimulate new forms of use of the vehicle (car sharing)by modifying the current urban mobility pattern to make the city more sustainable and healthy in many aspects, from the social to the economic.

Keywords: Social Media, Web 2.0 social networks, urban mobility, public transportation, transit, sustainability, behavior change, ITS, ICT, Digital presence, Dragonfly Effect, Facebook, Twitter, YouTube

MOBILITY AND URBAN SUSTAINABILITY IN BRAZIL

Urban sustainability depends on the quality of mobility, based on proper planning and transit transport, combined with a paradigm shift regarding the use of public transport, non-motorized modes and carsharing car sharing.

This implies changes in behavior and habits of people who, generally speaking, are still heavily directed to dream with the sensations of status and freedom that the individual transport provides. Everyone wants to own your car and go to work every day and this is strongly encouraged by the Government presently in Brazil.

Whereas cities are not prepared to absorb increasing volume size of private vehicles, the traffic jams are constant, negatively impacting on the quality of life for all, both of which have car like other citizens and visitors.

Completing the scenario, the current system of real-time communication and information mobility network, does not allow the knowledge of the possibilities and options for more sustainable choice for commuting, which encourages the accomplishment of offsets using the private car, occupying huge areas of the city that was not prepared to receive such volumes. The energy efficiency of this model is very low and the externalities impair the health of metropolis, in all directions, resulting in considerable economic losses.

The growing mobility of people has caused a high cost to society due to increase in the number of traffic jams, dead and injured, as well as pollution.⁽¹⁾

In Brazil, recent records of traffic jams are recognized by the public authorities as one of their main challenges, since car fleets more than doubled in the last decade in a number of medium-sized and large cities. Traditionally, the solutions to promote sustainable mobility have been based on increasing the infrastructure and/or the offer, or by regulating the use of the vehicles.

Use of Advanced Technologies in Sustainable Mobility (ITS and ICT)

Sussman is one of the authors who proposed a simple yet essential concept about what is considered the greatest goal of intelligent transport systems (ITS): “by marrying the world of high technologies and the dramatic advances with the conventional world of surface transport infrastructure”.⁽²⁾

The technical world is described as one involving areas such as: information, communication systems, sensors and advanced mathematical methods.

In Brazil, ITS starting to give their first steps of development. However, there is no knowledge of smart technological solutions that seek to provide users of public transport and private vehicles intelligent information systems to the user.

The current systems and Rio de Janeiro provide, in real time, estimated time of waiting, only to users who are in the subway station. It is desirable to add facilities for decision making, such as provide passengers of public transportation information about your itinerary, information on congestion and better transit routes.

In this way, the information and communication technologies (ICT) have been viewed as the primary means of support for sustainable mobility. The use of these technologies in transportation infrastructure and vehicles results in so-called intelligent transport systems (ITS).

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These systems have, among other objectives, to provide telecommunication and computing efficient solutions to the problems of urban transit, in order to improve the operation and security of land transport.

The ITS aim to provide various services, among which are the management of highways and public transportation, traffic control and traffic lights, emergency services management, automatic fare collection in public transport, parking and tolls, the fleet tracking of cargo vehicles, public transport and emergency automatic data collection, electronic surveillance, as well as the provision of current information and dynamics that support users in their decision making, among others.

However, it still lacks connect technological systems with the target audience of sustainable mobility, i.e. the people who move in the metropolis and at this point enter the Social Media and Social Networks, which will enable the virtual connection between technology and the public, serving as a "glue" for the development of the important process of awareness and changing habits in the urban displacements, to make the environment better and people happier.

State of the art Virtual Connectivity

The internet has long been incorporated into our lives, so that today many of us would know no longer live without it. Digital natives to the difference between the virtual world and the real world simply does not exist, as well as many other 20th century values and dogma, which begin to be questioned in the new clash of generations. The democratization of access to knowledge and to the cultural and intellectual production is creating new forms of relationships, and the ease and speed of producing and consuming information in this space leveraged the concept of immediacy.

The geographic and social factors are no longer the only ones to draft interest groups; people are grouped by ideological affinity with great ease, and without necessarily being geographically near, or be of the same class or social group. These innovations are changing the forms of articulation of society and politics.

Without internet development in the era of participation would be the equivalent of industrialization without electricity in the industrial age, and without an economics and management based on the internet, any country has little chance of generating the necessary resources to cover their needs for sustainable land development in all respects.

Many things have changed since the classical theory of Montesquieu, where the State needs to be made up of three branches to the perfect balance of the democratic State. In the documentary "The story of stuff" from the Tides Foundation, corporations are presented as a new power, the fourth transnational power. And, from what we can see, not only in Brazil with the movement of the *Mega Not* and *Clean Sheet*, also in the Arab world, is that the society organized and connected has been able to leverage big changes, *the fifth power*, which is also transnational corporate power.

WEB 2.0 Social Networks and Social Media

Social Media is a complex phenomenon, which comprises the set of new communication technologies faster and more popular participatory and social appropriations which were and that are generated around these platforms.

It is a moment of networked *hyperconnect*, where social groups can generate new forms of filtration, circulation and dissemination of information.

O'Reilly assigned this virtual world use format "Web 2.0" and will reach more people more quickly with the social networking sites and maintain connections that act as information channels between actors.

Social networking Sites use social media platforms to create connected networks, where moving information synchronously (as in the talks, for example) and asynchronous (such as in sending messages).

Social networks have become the new media, upon which information moves, is filtered and passed on; connected to the conversation, where it is debated, discussed and thus raises the possibility of new forms of social organization based on interests of collectivities.

These sites reach new potential with the advent of other technologies that increase the mobility of the access to information, such as mobile phones, tablets, smartphones and so on.

Social Networks are streams of relationships between people and, reflecting the era of connection, the networks are the media and messages of Hyperconnect.⁽³⁾

Use of Social Media and Social Network and Changes in Attitudes

Ordinary people can achieve unprecedented results, is to increase a corporate program, save a life or change the world.

Individuals armed with just an internet connection are able to find a compatible bone marrow almost impossible for a friend, get millions for cancer research, create large corporate engagement between consumers and employees and even elect the President of the United States, without using money or force.

Research conducted at Stanford University on time, money and happiness^{(9) (10)} show how small acts create significant changes fuelled by social media.

The definition of happiness changes every 3 to 5 years throughout a person's life.

Happiness has a clear standard, indicating that people are reaching different things throughout their lives. Between 25 to 30 years the money is much associated with happiness, than begins to change such a sense of importance.

In terms of urban mobility, happiness can, for example, be a minor loss of time or their better utilization, a lower total cost of travel, a greater level of confidence in the transport system, with greater comfort and safety.

The idea then is to harness the incredible power of social media to make a difference, creating a platform based on the concept of dragonfly, which just shows how to join the social media usage with consumer psychology insights to achieve a single objective concrete, for example, encourage the effective use of public transport, car sharing and encourage non-motorized transport (cycling and walking) where this is possible.

It is a fast, effective and powerful way to use social media to culturally ingrained habits change, use and possession of the private car and all the power and status that he represents in the collective unconscious.

However, changing habits requires the existence of alternatives, with the necessary information, added to any social catalyst effect that motive to change, for example, the possibility of a better use of time lost in traffic jams, for recreation, be with family, take care of health, ecological aspects such as reducing pollution with the decrease of car on the roads.

The Dragonfly Effect Model

The Dragonfly is the only insect that moves in any direction, with tremendous strength and speed when its four wings work together. This ancient creature, exotic and benign illuminates the importance of an integrated effort.

The Dragonfly Effect, to Jennifer Aaker ⁽⁸⁾, is the elegance and effectiveness of those who through the passionate pursuit of their goal discover they can make a positive impact, not in proportion to their resources.

The coordination of efforts is the key of the dragonfly effect model, where all four wings have to be on the move to take off, gain speed and fly.

Anyone who has ever created a video on You Tube, written a Blog or has tried to join people around a cause on Facebook, knows that just send a request does not guarantee results.

Small actions create big change, and working together maximize their ability to go further faster in any direction you choose.

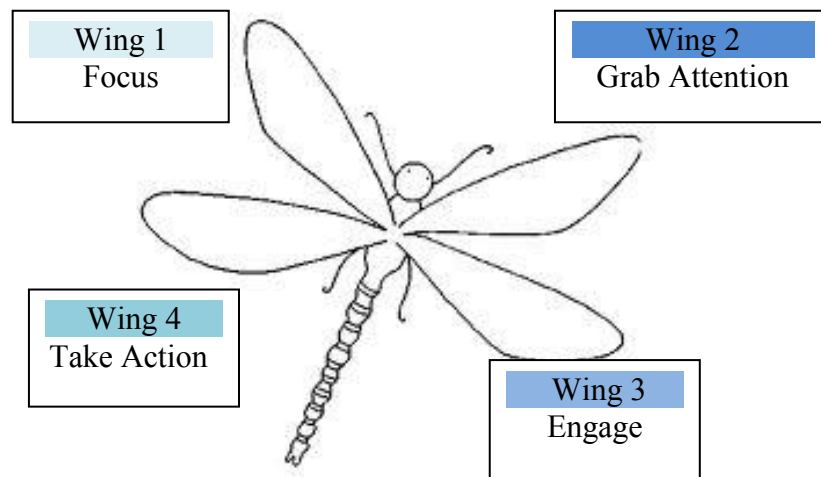


Fig. 1 The Dragonfly Effect⁽⁸⁾

Wing 1: Focus means having a goal that will impact

Change in attitude to a more sustainable mobility, motivating the effective use of public transport, carsharing car sharing and encouraging whenever possible, non-motorized transport (cycling and walking).

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Wing 2: Grab the Attention is to design the goal for a world polluted and crowded with information using modern information and communication technologies to explain the benefits.

Wing 3: Engage represents how to connect people with their goal, using the media and social networks to support the cause of sustainability, pollution reduction, improvement of health, long life and other.

Wing 4: Take Action is to authorize and empower others to act on their own free will and means to stimulate with games, raffles, awards and other forms of recognition.

Stanford University's research showed that, in contrast to what one thinks, the promotion of a personal goal is inherently social.

To succeed, it need to translate their passion into a powerful story and tell it in a way that generates “contagious energy”, for which his audience to reflect with his tweet, blog post or email long after they leave their computers.

This way you create participation, networking, growth and the “wave” effect, forces that combine to form *a movement of which people feel they part of*. The personal goal then becomes collective.

Use of Social Media and Social Networks

The worldwide four most prominent Social Networks are *Facebook, Twitter, YouTube and LinkedIn*.

Facebook has been the leader in growth and currently has more than 1 billion participants. Businesses and governmental and non-governmental entities are using more and more social networks as a direct channel with your audience.

Recent research made in Brazil, Canada, USA and England showed that the greatest benefits of social networks, according to users, are *seeking and maintaining contacts*, both personal and professional networking.

Social Media Sites and online videos have more audience than television in Brazil, according to a survey conducted by Forrester Research.

Currently, the web represents 48 of getting information and entertainment to its users. In 2016, the prediction is that is more than half.

According to the survey, the Brazilians spend approximately 23.8 hours per week on the Internet, and watch only 6.2 hours of TV. During this period, almost 90 remains on social networks, being 81 on Facebook.

The report consulted 4,020 people older than 18 years, 22 Brazilian cities, with access to the web.

Digital Presence of the Transportation Sector in Rio de Janeiro

The Digital Presence of urban mobility industry in the Social Media and Social Networks, in Rio de Janeiro, is still very low .

The Government agencies only have an institutional site, not always with the relevant contents that people seek on transport services, integration between modes, tariff integration, lines, routes and timetables, to make smart mobility choices.

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Utilities also are not yet digitally equipped to offer the public the relevant information and content to allow trusted mobility options.

The table below shows the incipient digital presence of various organs, dealers and public transport companies in Rio de Janeiro.

Table 1 Use of Social Media in Mobility (Rio de Janeiro, Brasil)

Enterprise/Entities	Digital Presence on Social Midia					
	Site	Blog	Twitter	Facebook	YouTube	Flickr
Metro Rio	x		x	x		x
Supervia	x	x	x		x	x
Barcas S.A	x		x			
Fetranspor	x		x	x	x	
Rio Ônibus	x					
Auto Viação 1001	x		x	x	x	
Real Auto Ônibus	x	x	x			
Empresa de Transportes Flores	x		x			
Detran-RJ	x					
RioTrilhos	x					
Central	x					
Detro-RJ	x					
Coderte-RJ	x					
Secretaria de Transportes do Estado do RJ	x					
Secretaria Municipal de Transportes do RJ	x					

The relevance of the information and its permanent update are determining factors for the trust in for part of the population.

Currently the search engine *Google* is the internet site where you will find some of the basic information about offsets by bus and car, however are not complete in their basic needs, such as timetables, fares and integration between modes.

Use of Social Media to improve the Quality of Urban Mobility

In continuation to the research on the Use of Social Media, was held in Nov2012 in Rio de Janeiro a Seminar on the theme, with the participation of the actors responsible and involved in the process.

Several points were raised and discussed, including some basic preliminary recommendations for the future progress of actions relating to the topic below.

The use of Social Networks and Media related to urban mobility is in early stage, especially in relation to mobile platforms (mobile), like information via smartphones, tablets, mobile phones.

The use of social networks even in the embryonic stage, already provides feedback from target audience, that are being used in some cases as a measure of public participation in

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various situations and suggestions of improving the system, as it occurs in the Central System customer Fetranspor, made by telephone, website, blog, Facebook or Twitter.

The road passenger transport sector is already using modern technologies of ITS (GPS in vehicles, monitoring by CCO, cameras inside of vehicles, video screens at the points of embarkation and disembarkation, radios, variable message panels, etc.) that generate relevant information and may be shared with your usual user audience and all others who seek information about the system.

However, there are many concerns of operators, related to the service commitment of some information that is given and cannot be met for reasons beyond their control that could be used against them legal.

The trend of increase in the number of people connected in networks and using Mobile indicate that the development of applications for use on mobility is of great importance and necessity.

One of the most used tools in Europe and in the USA for providing information on public transport are smartphones, called mobiles, for which dozens of applications have been developed and are used by hundreds of thousands of people, being clearly the trend of platform for dissemination of information on public transport.

The discussion about the income of current users of the bus system and commuter trains, and their possible small accessibility to smartphones and the internet, still needs to be deeper searched.

It is important to open the range of information and the use of Social Media for the general public, such as tourists and visitors of our city, which are almost always in doubt of how to move, due to the lack of relevant and reliable information about the transportation system, and in languages like English and Spanish.

It needs to consider *before and after* the major events of the 2014 World Cup and 2016 Olympics and prepare the information and the ubiquitous sharing of information.

It was evidenced in discussion the importance of an Integrated Mobility Network, where all modes (motorized and non-motorized) interact in the same relevant information platform. This demands a joint action to be properly designed.

Integration and expansion of existing applications like MobiRio, Buus, Ciduni and others can be updated, expanded and integrated into common platforms for effective use of the society as a whole.

It is important and necessary to get sponsorships from the private sector and research funding bodies, with the purpose of ensuring the development of the network of mobility and the integration and expansion of current and future applications.

Expand the range of options for use of Information and Communications Technologies - TIC, using the media and social networks can be a strategic point for the change in the mobility behavior of the inhabitants of the village, as well as to effective orientation for the mobility of tourists and visitors.

Examples of successful cases as LeiSecaRJ and the Rio Operations Center, showed how the sharing of information with and between people can be useful and even crucial for urban

mobility, due to the speed with which external information coming to social networks (Facebook and Twitter, mostly) and are replicated to the large audience that can, using alternative travel decisions, save hours and stress lost in transit if a path becomes congested due to some extra occurrence.

Conclusions

To make the urban mobility sustainable it is necessary to change the paradigm regarding the use of the automobile for certain travel patterns, especially those performed daily at peak hours, and it depends basically of changes in behavior and habits of people, accustomed to the sensations of "status" and "freedom", which the individual transport provides them.

To the extent that people feel satisfied to move more sustainable by having at your disposal a wide variety of mobility options, that fit their values and lifestyle, a new paradigm of sustainable urban mobility can be achieved.

We believe that the power of change lies in the use of Social Media (platforms) and Social Networks (networking).

The use of *mobiles*, with developing applications for smartphones, gamification models should be strongly encouraged, with a view not only to improve the quality of mobility of the resident population, as all the millions of visitors to Rio de Janeiro, today and with the arrival of the big events of the 2014 World Cup and the 2016 Olympics.

In addition to the basic information, various themes can be discussed in the Social Media, such the integration between modes of public transport, congestion and the ways to take advantage of the time currently wasted in productive activities, the costs involved, as well as sharing experiences and suggestions on the best real-time offset options (online, ontime, alltime).

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References

1. OWEN, David . "Green Metropolis - Why Living Smaller, Living Closer, and Driving Less are the Keys to Sustainability. Riverhead Books, 2009
2. SUSSMAN, J. - Perspectives on Intelligent Transportation Systems. New York, USA: Springer, 2005.
3. CASTELLS, Manuel (2003). A galáxia da internet - Rio de Janeiro,RJ: Jorge Zahar
4. Ana Brambilla et all - Para Entender as Mídias Sociais , ebook abril 2011
5. CASTELLS, Manuel (2011) . A Sociedade em Rede – São Paulo, 6ª. Edição: PAZ E TERRA
3. SACHS, Ignacy – Desenvolvimento Incluído, Sustentável e Sustentado. EWditora Garamond Ltda. , 2008
4. A Binsted and R Hutchins - The Role of Social Networking Sites in Changing Travel Behaviors – TRL/PPR599, 2012
5. Uses of Social Media in Public Transportation- S Bregman – TRB/TCRP Synthesis 99

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6. RAMALHO, Jose A. *Mídias Sociais na Prática*. Elsevier Editora Ltda, 2010
7. LIMA JUNIOR, Walter Lima. *Mídia Social Conectada: produção colaborativa de informação de relevância social em ambiente tecnológico digital*. Líbero (FACASPER), v. XII, 2009.
8. AAKER, Jennyfer, SMITH Andy, with Adler Carlie - "The Dragonfly Effect". Published by Jossey-Bass. A Wiley Imprint, 2010, CA.
9. Aaker, J. , Mogilner, C. , Kamvar S. " How Happiness Affects Choice". 2011 by JOURNAL OF CONSUMER RESEARCH, Inc. Vol. 39 , August 2012
10. Aaker, J. , Rudd, M. , Mogilner, C. "If money does not make you happy, consider time". *Journal of Consumer Psychology* 21 (2011) 126–130
- MEEHAN, C. "Technology and Society: The Power of Social Technology at Stanford Business School". Posted on Blog The Technological Citizen, 2010. <http://thetechnologicalcitizen.com/?p=2854>
11. Vieira V., Fialho A., Martinez V., Brito J., Brito L. and Duran A. - An Exploratory Study on the Use of Collaborative Riding based on Gamification as a Support to Public Transportation. UFBA - Federal University of Bahia, 2012 Brazilian Symposium on Collaborative Systems.