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## Evaluation of the Web 2.0 in the state sites in Mexico\*

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### Introduction

The Web 2.0 represents an evolution in the Internet applications and sites of the unidirectional presentation of contents and information, the creation of applications which allow greater interaction levels among the users of Web contents. They are applications which generate collaboration and supply services which can replace the traditional process of content creation. The Web 2.0 refers to the new Web generation based in the creation of contents produced and shared by users in a Web site. In other words, information consumers have become pro-consumers, that is to say, they produce some of the information they consume<sup>1</sup>.

In this way, the Web 2.0 applications can be considered as the next stage in the development of technologies related with Internet. Some of these applications are the so called social networks, micro formats, social tagging RRS (content syndicalization), blogs, video blogs, podcasts, wikis, forums, etc. Some examples of commercial sites which use these applications are Technorati, Digg, Facebook, Flickr, YouTube, MySpace, Twitter and Del.icio.us, among others. Some government sites are beginning to include some of these applications.

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1 Don Tapscott and Anthony Williams, Wikinomics: How Mass Collaboration Changes Everything, Paidós, 2006.

As part of this study, the use of Web 2.0 tools was evaluated in the government sites of Mexico. The use of Blogs, Wikis, Forums, RSS, Apis (such as Google maps), Podcasts, Videocasts, Social Markers (such as Del.icio.us, Technorati, Facebook or Digg) and social networks was observed.

All of these applications, although they seem very different in their purposes and constitution, share some characteristics, such as generation and classification of the information and contents in a collective way, community integration, production and consumption of socially distributed knowledge.

These common characteristics are the ones which allow to catalog them as Web 2.0 tools and applications. These tools have proved to be efficient mechanisms for the development of political activism activities (maybe the best known case at world level is Barack Obama`s political campaign in the United States), as a tools for handling media relationships such as the case of Twitter, and as alternate diffusion means such as the case of YouTube before social problems or political crisis such as the recent elections in Iran or the coup d`état in Honduras.

In case of government sites, this type of applications Web 2.0 have the potential of generating more interaction between different social actors and consequently a greater participation of citizens in government process, which have recently been denominated Government 2.0. These applications have begun to be used in the three government levels and within different public political areas. A recent study shows that Mexicans between the ages of 18 and 28 years of age, are not satisfied with the way government communicates with them and suggest that Web 2.0 tools can be an effective mechanism for establishing alternate communication channels.<sup>2</sup>

However, these uses are still a little bit incipient and very little is known about the results obtained by these social experiments because there is no investigation about its use and impact. Moreover, although there are some signs that some state government sites in Mexico already have some Web 2.0 tools in operation, an important part of the users still don`t know how these tools work. Based on measures about these technologies in state government sites taken

2 Deloitte, "El Gobierno y la Generación Y. La revolución de su relación"; disponible en <http://www.deloitte.com/dtt/article/0%2C1002%2Ccid%25253D267278%2C00.html>. Consultada el 15 de julio 2009.

in the year 2008, this article shows how much these technologies are being used currently and which are the state government areas where they are more frequently used.

This article is divided into four sections including this brief introduction. The second section shows a brief examination about the literature written about Web 2.0 applications and how they could be implemented in the sites of electronic government as well as the relationship between electronic government, Web sites and Web 2.0. The third section describes the methodology used for gathering data from the Mexican state sites. Finally, the fourth section presents the main conclusions about this work.

## **I. Electronic Government and Web 2.0**

There are different definitions about electronic government, but all of them consider the use of Communication and Information Technologies (TIC) for the development of government activities<sup>3</sup>. Some of them emphasize TIC applications for the development of management activities, other for supplying services and some others for the development of democracy. Government sites are an example of this type of applications and its use is getting widespread in Mexico as well as in other countries of the world. For example, according to the last United Nations (UN) report, about electronic government, only 3 of the 192 countries which are members do not have Internet presence.<sup>4</sup>

In Mexico, besides the important presence of the Federal Government on the Internet (it holds position 37 on the last UN classification), all state governments and a great number of municipal governments are present on the Internet. Nowadays the Internet sites are one of the principal means for supplying information, form-filling and services as well as interacting with different government agencies. Web 2.0 tools have the potential of taking these procedures to the next level and modifying the interaction schemes between citizens and its participation in government process and decisions.<sup>5</sup>

3 J. Ramón Gil-García y Luis F. Kuna reyes, "Una Breve Introducción al Gobierno Electrónico: Definición, Aplicaciones y Etapas", en *Revista de Administración Pública*, No. 116, Vol. XLIII, No. 2 (mayo-agosto 2008).

4 UNPAN, "United Nations E-Government Survey 2008: From E-Government to Connected Governance", New York, United Nations, 2008. Available at:

5 Deloitte, loc. cit.

This examination begins with a brief description of the electronic government phenomenon, putting emphasis on the characteristics of government sites as means of communication government-citizen, and later describing different Web 2.0 applications which could be included in these government sites.

*a) Electronic Government and Web sites.*

Although we talk about electronic government for the last 10 years, there still isn't a unified version of the term. From the literature analysis in this area, Gil-García and Luna-Reyes<sup>6</sup> define electronic government as the "selection, implementation and use of information and communication technologies in the government for supplying public services, improving administrative efficiency and promoting democratic values and mechanisms, as well as the creation of a legal frame which eases the development of intense initiatives in the use of information resources and promotes the development of the society of knowledge".

From this perspective, state government sites are only an example of the application of electronic government. The development of these applications is attributed to the pressure of the public for receiving the same services as the private sector, and to the perception of a great variety of potential benefits for public administration<sup>7</sup>. A government site is understood as: "an integrated access door to the internet site of state government with just one point of access in line to state resources and information"<sup>8</sup>.

*b) Government sites as communication systems.*

State sites can be considered as government-citizen communication systems ruled by the computer and the Internet. This communication system through the computer is characterized by the integration of different means and their interactive potential. Multimedia, as it is denominated by Castells<sup>9</sup>, spreads the electronic communication scope through all of life (from house to work, from schools to hospitals, from entertaining to trips). In the middle nineties, governments and com-

6 J. Ramon Gil-García y L. F. Luna-Reyes, art. cit.

7 Luis F. Luna-Reyes, Juan Manuel Hernández García, y J. Ramón Gil-García, "Hacia un modelo de los determinantes de éxito de los portales de gobierno estatal en México", en *Gestión y Política Pública*. Vol. XVIII, No. 2 (Segundo semestre de 2009).

8 Diana Burley Gant, Jon P. Gant, and Craig Johnson, "State Web Portals: delivering and financing E-Service", in *E-Government Series*. Washington: Price-Waterhouse-Coopers IBM Endowment for the Business of Government, 2002.

9 Manuel Castells, *La era de la información: economía, sociedad y cultura*. México, D.F., Siglo XXI, 1998. Vol. 1; pp. 400 y ss.

panies looked for a way of positioning themselves in a convenient place and establish the new system<sup>10</sup>.

Because of the Multimedia novelty, Castells<sup>11</sup> mentions that it is still difficult to value the implications of this system for culture or society. However, in Europe, as well as in America and Asia, Multimedia seems to be supporting a social-cultural model characterized by the following traits:

1. The first trait refers to a great social and cultural difference which leads to the segmentation of users, spectators, readers or auditors. In this case, the messages are not only segmented by the issuers according to the market they are targeted to, but they are more diversified by the users of media, according to their interests and taking advantage of the interactive abilities. A clear example of this diversification is the creation of virtual communities;
2. The second trait refers to a growing stratification among the users. The use of multimedia will depend of time and money of the user for access, the country or region with enough market potential, as well as the cultural and educational differences which will be decisive for taking advantage of the interaction in benefit of each user. Information about what to look for and how to use the message is the essential part for experimenting the Multimedia system, which is very different from the standard mass media. According to Castells, in this multimedia world, population is divided into two: those who interact and those who are interacted, that is to say, those who are capable of choosing their multidirectional communication circuits and those who are given a limited number of pre-packed options. Users of state sites are placed within this last classification of the population;
3. The third trait refers to the communication of every type of message in the same system, even if it is interactive and selective (in fact, it is precisely because of this), it leads to the integration of all messages in a common cognitive model. From the media perspective, the different ways of communication tend to take codes from ones and others; from the user perspective (both receptor and transmitter in an interactive system), the election of various messages under the same communication mode, reduces the mental distance between different sources of participation; and

10 *Ibid.*, p. 402.

11 *Ibidem*.

4. The fourth trait, –according to Castells the most important of Multimedia– is that it captures the most part of the cultural expressions in all its diversity in its domains. In this trait there is an end to distinction and separation between “audiovisual and written means, popular and erudite culture, entertainment and information, education and persuasion”<sup>12</sup>. That is to say, every cultural expression is reunited in this digital universe which connects every past, present and future manifestation of the communicating mind in a historical super-text. Castells mentions that by reuniting all of this in the digital universe, a symbolic environment is built, making virtuality our reality.

In this sense, the state sites are immersed in the new multimedia system, where all cultural expressions are included. In this new type of society, every message functions in a binary way: presence/absence. Presence allows communication and socialization of the message. The communication function is present in all the state sites, but socialization only happens in some of them because not all of them have the tools or applications needed for users and government interaction.

Within the society perspective, communication based on electronics (typographic, audio visual or through a computer) is communication<sup>13</sup>. This implies that the mean –in this case the site– which is immersed in this multimedia universe fulfills the purpose of communicating information to the government. Due to its versatility, multimedia is capable of encompassing all the expressions, as well as interests, values and imaginations, including social conflict expression. The price to be paid is associated with lack of personalization, because the users of the sites must adapt to its logic, language, inputs, codification and de-codification. Due to the different types of social effects, a horizontal multimodal communication network, such as Internet, needs to be developed, not a multimedia system of centralized expeditiousness.

### *c) Evolution of the communication and socialization sites.*

There are different types of models which explain the development and evolution process of Internet sites<sup>14</sup>. For some years now, an

<sup>12</sup> *Ibid.*, p. 405.

<sup>13</sup> *Ibid.*, p. 407.

<sup>14</sup> Karen Layne and Jungwoo Lee, “Developing Fully Functional E-Government: A Four Stage Model”, in *Government Information Quarterly*, Vol 8, No. 2 (2001); y UNPAN, “United Nations E-Government Survey, 2008: Form E-Government to connected Governance”. New York, United Nations Publications, 2009.

evaluation of the state government sites in Mexico has been done taking into consideration these evolution models<sup>15</sup>. The information, interaction, transaction, integration and participation stages are proposed as complementary components not as mutually excluding, and in this way they can be used for characterizing the development of government sites. Moreover, this reference frame can be interpreted from the theoretical point of view of the communication system included on the previous section. Communication given by the interaction between Government and Citizen can be done in different ways, which are explained next.

**Information Stage:** The characteristics of the sites which belong to the information stage are formed by those which only display information about the activities of the public administration. Some examples of these characteristics are news or advertisements about events, as well as service descriptions for the citizens. The communication given between Government and Citizen in this stage is just from sender to receiver, and is done in a horizontal manner, just one way. In this level, as in other development levels of the sites, the receiver plays the two roles mentioned by Castells<sup>16</sup>. He can be an inter-actor by choosing his communication circuit, he decides and chooses the theme and knowledge he wants to obtain, as well as the mean; or he can be and inter-acted, a user who within his abilities and possibilities chooses and searches knowledge within a mean which gives him limited options.

However, the typical characteristics of the information stage limit the interaction capacities of the user, promoting the inter-acted position. The inter-actor, besides using the information shown on the site, will have access to information coming from other media such as radio, television, newspapers, etc.

**Interaction Stage:** Some characteristics of the sites which belong to the interaction stage include applications which allow the interaction between Citizen and Government such as forms for sending questions and consultations, automated forums or applications such as virtual public servers. In this stage, communication between Government and Citizen is

15 R. Sandoval Almazán, J. Ramón Gil-García y Luis F. Luna-Reyes, "Ranking Estatal 2008 de portales de gobierno", M. Castells, óp. cit., p. 404.

16 M. Castells, óp. cit. p. 404.

two-ways, from the sender to the receiver and vice versa, where interaction channels such as e-mail or the ones we have mentioned before are established. In this two way communication, there are more open spaces so the inter actor can choose his communication circuit.

**Transaction Stage:** The characteristics of Internet sites in the transaction stage mainly include what has been called electronic commerce. The main difference between this stage and the interaction stage, is the exchange of services and procedures with a well defined cycle and in some occasion it involves the payment of fees or rights. Communication between Government and Citizen in the transaction stage is done from sender to receiver and vice versa in a very similar way to the Interaction stage. However, because they are services with clearly defined cycles and process, it is more common to find some interest in feed back about their performance. An example of this are on line services that citizens can make.

**Integration Stage:** Some characteristics of the Integration stage make reference to the capacity of the sites for presenting themselves as a unique window for citizen service, making very clear which agency or agencies are in charge of the delivery of services or information. In this stage communication is not only given between Government and Citizen, but between government agencies, who at the same time give information to the citizen, hence creating feedback from Government to Citizen, from Citizen to Government and among government agencies.

For example, municipal government sites which facilitate the task of getting construction permits and licenses which are necessary for beginning a business in just one place; they need that the different agencies which take part in this process are coordinated for offering this type of service to the citizen. This coordination can be done in different ways, from the use of an agent who makes all the necessary procedures asked by the citizen up to the technical integration, from data and process between the different agencies which allows them to offer the service without the need of an agent.



**Participation Stage:** Government sites which have the characteristics of the participation stage offer the citizen the ability of socializing and becoming more and more in the interactor. In this stage, communication is more comprehensive, between Government and Citizen, between agencies, between citizens and all of them receive feedback.

Communication generated through the use of Web 2.0 tools is given according to the type of population and the environment they choose for obtaining the information. As Castells mentioned<sup>17</sup>, Web 2.0 tools are useful applications for obtaining information without searching for it, they allow the user to simplify their job. For example, at the moment of configuring the RSS in a personal page or e-mail, they filter the information, so only the chosen one is available without the need of going to the site where it is generated.

For the particular case of the interacted population, it is easier to search and obtain information from any means thanks to the implementation of these tools within the site. But it is not only important according to the type of population who use this means, it is also important because Web 2.0 is implementing applications which make communication between different actors within a site possible, in spaces where citizens and government can communicate with each other.

#### d) *Internet Sites and Web 2.0 Tools.*

The term Web 2.0 is not yet defined in a way which is accepted by experts in this area. The term was coined by O`Reilly in the year 2005<sup>18</sup>, and he defines it as: "a platform like network, which extends to all the connected devices", although these devices are not limited to being interconnected, but that most of their functions rely in the use of technologies which allow the users to build the contents and formats of the sites. Table 1 shows a comparison made by O`Reilly<sup>19</sup> between Web 2.0 applications and traditional ones.

17 *Ibid.*

18 T. O`Reilly, "What is Web 2.0", 2005. Available on: <http://oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

19 *Ibid.*

**Table 1**  
**Web 1.0 and Web 2.0 Comparative**

Web 1.0	Web 2.0
Doble click.	Google AdSense.
Ofoto.	Flickr.
Akamai.	BitTorrent.
mp3.com.	Napster.
British Encyclopedia Online.	Wikipedia.
Personal Websites.	Blogging.
Screen scraping.	Web services.
Page views.	Cost per Click.
Domain name speculation.	Search engine optimization.
Directories (taxonomy).	tagging ('folksonomy').
Publishing.	Participation.
Content management systems.	Wikis.
Stickiness.	Syndication.

**Source: O'Reilly, 2005**

O'Reilly says that Web 2.0 is a social and cooperation cohesion mechanism. Recent jobs –like the one from Tapscott and Williams– describe the phenomenon in the following way: “The new Web is fundamentally different in its architecture as in its applications. Instead of being a digital newspaper, it is a color palette, where each dot contributed by each user enriches the newspaper. Where people can create, share and socialize, this is where the Web participates, not only receives information in a passive way”<sup>20</sup>.

In this way, Web 2.0 presents itself as a revolutionary way of collecting, organizing and sharing information. Some of the most known examples are: *Google, Weblogs, Wikipedia, YouTube, MySpace, Twitter and Second Life*. Other authors have mentioned it is a standard platform or model of the current Web sites and that it is not an improved version of the previous Web 1.0 format. Zappen and his colleagues<sup>21</sup> mention some differences:

20 Don Tapscott and Anthony Williams, *op. cit.*, p. 37.

21 James P. Zappen, Teresa M. Harrington and David Watson, “A new Paradigm for Designing E-Government: Web 2.0 and Experience Design”. Paper presented at the Proceedings of the 2008 International Conference on Digital Government Research. Montreal, Canada, 2008.

- Web 2.0 facilitates a flexible design, creative re-use and actualizations;
- Allows an enriched interface with interactivity with the user;
- Allows collaboration in the creation and modification of contents;
- Allows the creation of new applications by using and combining different data and sources;
- Establishes social networks between people with the same interests, and
- Supports collaboration for reuniting collective intelligence.

Murugesan<sup>22</sup> defines Web 2.0 through its different applications: blogs, RSS (Really Simple Syndication), Wiki (website for massive collaboration of content administration) or a system for creating or administering content, Tags (keyword added to articles or blogs shared through social pages), Folksonomy, information taxonomies created by the user as social classification. Finally, another tool are the mashups (Web site which combines services and information from multiple network sources).<sup>23</sup>

For a better understanding of the concept of Web 2.0 tools, we briefly explain some of the most popular:

**RSS (aggregator).** It is considered a data format which updates contents to website subscribers. It allows obtaining information without the need of surfing the net in search for information. This is done through software (it can be a web-browser or a mail user) which rests on the standard XML associated with RSS and is known as diffusion Web or syndication Web.

**Blogs.** Blogs are web-sites which facilitate the administration of contents. The name comes from the Saxon term for daily in Internet (Web-log) and they are spaces where entries are commonly displayed in reverse-chronological order, where the author can maintain whatever he consider appropriate.

22 S. Murugesan, "Understanding Web 2.0", on *IT Professional*, Vol. 9, No. 4 (2007).

23 W. Mei-Ying et al. "A study of Web 2.0 Website Usage Behavior Using Team". Paper presented at the 2008 IEEE Asia-Pacific Services Computing Conference APSCC 2008. Yilan, Taiwan, December 9-12, 2008. Y J: Warner and S A. Chun, "A Citizen Privacy Protection Model for E-Government Mashup Services". Paper presented at the International Conference on Digital Government Research 2008. Montreal, Canada, May 18-21, 2008.

**Wikis.** In technological terms it is a software for creating contents in a collaborative way. The term has its origin in the Hawaiian word “wiki” which means fast. A wiki is used for creating web-pages fast and efficiently in a collaborative way, and allows the inclusion of texts, hyper texts, digital documents, links and other multimedia information.

**Forums.** It is an application where you can leave online messages, opinions and discussions. In general, these forums exist as a complement for a Web site, inviting the users to discuss or share relevant information with the site’s theme.

**API’S.** Application programming interface which includes a set of functions and procedures, is offers some kind of library to be used by some other software. Its main purpose is to give a set of functions of general use, in this way the programmers avoid programming the whole page since the beginning.

**Podcast and Video Podcast.** It is the creation and presence of sound archives (generally MP3), and videos (Video podcasts), its distribution is through a web syndication system which allows the subscription and use of programs which can be downloaded from the Internet.

**Social Markers.** They are the easiest and most popular way of saving, sharing and classifying Internet or Intranet links. There are general markers in different areas such as books, video, music, shopping, maps, etc. They are also known as Tags.

**Social Networks.** Social structure which can be represented by one or various graphs (vertices) in which the links represent individuals and the vertices the relationships between them. These relationships can be very different, such as financial exchange, friendship, personal relationships or air routes.

Some authors<sup>24</sup> suggest the idea of a second society built from the basis of this platform. These authors present a series of distinctive

24 Johan Van Wamelen and Dennis de Kool, “Web 2.0: a Basis for the Second Society?” Paper presented at the Proceedings of the 2nd International Conference on Theory and Practice of Electronic Governance. Cairo, Egypt, 2008.

characteristics of the platform which oppose to the ones of Web 1.0 as generic vs. specific; ecstastic vs. dynamic, closed vs. open and personal vs. collective. Additionally, they have very clear functions which Web 2.0 applications should cover such as capacity for sharing information, mobility, gathering, support and transaction. Finally, Yamakami<sup>25</sup> suggests that there can also be an evolution of mobile contents towards a mobile content of Web 2.0.

In short, we could say that Web 2.0 could be named social network because its content is generated by the users, as if it were a collective intelligence, by becoming co-producers of the content and not passive individuals who just receive information. The interaction in this platform plays an important role and governments should seriously consider this type of tools<sup>26</sup>. Not only for bureaucracy to reduce its costs and allow a greater flow of information, but as a way of getting closer to citizens and enrich their governmental work.

Although it is something relatively new, some Web 2.0 tools and applications have already been used in governmental sites in some countries around the world such as Germany, where De Kool and Van Wamelen proposed six categories for analyzing electronic government using Web 2.0 and collected some study cases in their country for demonstrating its use.<sup>27</sup> The use of Web 2.0 has also been proposed as a way of solving information transparency problems of the governments. Kubicek proposes the use of a ticket system for supplying services and improving transparency and account rendering through the use of social networks<sup>28</sup>.

Some other studies have presented different cases of electronic government and the use of Web 2.0 tools applied to public administration, such as massive collaboration, digital democracy and the use of cloud computing, as a way for improving attention

25 T. Yamakami, "Mobileweb 2.0: Lessons from Web 2.0 and Past Mobile Internet Development". Paper presented at the Multimedia and Ubiquitous Engineering, 2007, International Conference, 2007.

26 Eric Woods, "Web 2.0 and the Public Sector -Public Sector- Breaking Business and Technology" [s.p.i.]. Disponible en : <http://www.whitehouse.gov/blog/Transparency-Governance/>.

27 D. de Kool and J. Van Wamelen, "Web 2.0: A New Basis for E-Government?" Paper presented at the Information and Communication Technologies: From Theory to Applications, 2008. IOTA 2008. 3rd International Conference, 2008.

28 H. Kubicek, "Next Generation Foi: between Information Management and Web 2.0". Paper presented at the International Conference on Digital Government Research 2008, Montreal, Canada, May 18-21, 2008). Y Warner and Chun, *art. cit.*

and services both at state and municipal levels.<sup>29</sup> Finally, Eliason and Lundberg investigated the use of Web 2.0 specifically in the design of municipal Web sites, using gender as a tool for reducing the complexity of the sites and organize content. These researchers collected data from seven Swiss municipalities for evaluating the impact of this concept and Web 2.0.<sup>30</sup>

Currently, the idea of open government (o-government) or transparent government has begun to use tools such as Web 2.0 for interacting with citizens and asking for their opinion about how much should the Federal Government open to citizens. The initiative of United States President Barack Obama (Memorandum of Transparency and Open Government), and the White House Web site which invites citizens to participate in this initiative through discussion forums where principles are established<sup>31</sup> and proposals are generated for amending regulations,<sup>32</sup> are just some examples of how these technologies can be used by the Governments.<sup>33</sup> These on line alternatives which the United States Government has opened for impelling citizen participation in concrete themes, as well as the generation of a policy, are very innovative for governments and it is the first time they are used as an example of on line government.

Although the usefulness of Web 2.0 within the government is very promising, the great question is if public sector organizations can commit to this new way of relating with its citizens and improve the user perception of public services. Some risks of the Web 2.0 tools and applications are: data isolation, content exclusion, privacy problems and bad use of information<sup>34</sup>.

## II. Analysis of State Web Sites in Mexico

In this section we present the description of data recollection method and the procedures followed for the analysis of Web 2.0 application

29 Daniel Chenok, "E-Government: The Next Phase". Paper presented at the Proceedings of the 2008 international conference on Digital Government research, Montreal, Canada, 2008. y Zappen, Harrison, and Watson, *loc. cit.*

30 Emma Eliason and Jonas Lundberg, "The appropriateness of Swedish Municipality Web Site Designs". Paper presented at the Proceedings of the 4th Nordic conference on Human-computer interaction: changing roles, Oslo, Norway, 2006.

31 Discussion de principals en lineal Oberon de Estates Undoes, "Governance: How Do We Institutionalize Transparency across All Government Agencies?," <http://www.whitehouse.gov/blog/Transparency-Governance/>

32 *Ibid.*

33 The White House, "Open Government Discussion Web Site", disponible en <http://www.whitehouse.gov/Open/>

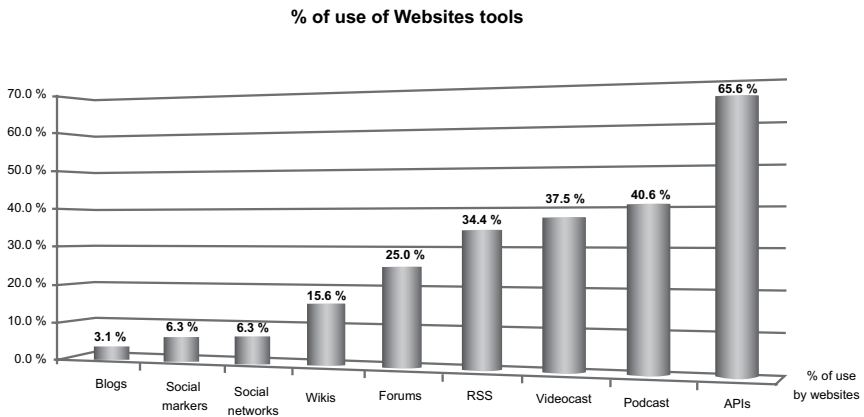
34 D. de Kool and van Wamelen, "Web 2.0: A New Basis for E-Government?," *art. cit.*

in the state websites of Mexico. The target of this analysis were the sites of the 31 states and the Federal District. Government sites were evaluated by three independent observers during the first semester of 2008. Observers used an evaluation guide of the sites in which they included Web 2.0 tools in the state websites, registering which sections used these tools. The observed data were captured and concentrated by each of the observers. For obtaining the results of use and frequency of Web 2.0, first it was determined if Web 2.0 tools are used and then its frequency was determined: that is to say, the number of times a tool is used in sections of the sites of each state.

Data obtained from the first evaluation of the use of Web 2.0 tools for the case of websites of state governments in Mexico are shown on graphic 1, in terms of percentages. As we can see in the graphic, the most used tools are API; 65% of the websites of state governments in Mexico use these tools for presenting dynamic contents to the users.

The following tools are Podcasts (40.6%) and Video Podcasts (37.5%). It is worth mentioning that in this first evaluation, any kind of content with audio or video present in the website were considered as Podcasts or Video Casts, whether they talk about tourism, general information or are simply promotional of the sate or from the Governor in turn.

**Graphic 1**  
**Percentage of use of Web 2.0 tools**  
**in the state websites in Mexico**



Source: Personal elaboration.

Only 34% of state government websites use aggregators RSS for distributing news or events content. The least used mechanisms were forums (25%), wikis (15.6%), social markers and social networks (6.3%) and just 3.1% of the evaluated websites use blogs. In this sense, it is very clear that the electronic government state websites are more concentrated in showing information context in writing, video and audio (Podcasts, Video Podcasts and RSS) than applications which permit an easy communication between public servers and citizens.

In regard to the frequency of use of these Web 2.0 tools in the different sections of the website, we found that in general these tools are more used in the “Citizen” section, followed by the sections “Government” and “Tourism”. In the “Citizen” section, the API’s are the most used tool, which suggests that the states are more interested in creating interactive applications in this website section.

The section “Government” is the one which has more variety in the use of tools, which reflects a diversity of interests on behalf of the states as to the type of communication they want to establish with the citizens. The “Tourism” section presents an inclusion pattern of multimedia information in the way of audio and video. This same pattern is observed less frequently in the “Culture” section. It is very interesting to see that just a couple of websites use RSS content syndication services in the press area.

**Chart 2**  
**Sections with Web 2.0 tools**

Tools/ Section	Government	Citizen	Tourism	Culture	Appl and Services	Transpa- rancy	Press	Other
Podcast	1	1	6	2	1	0	0	2
Rss	3	4	0	1	0	0	2	0
Blogs	1	0	0	0	0	0	0	0
Foros	1	1	0	0	0	0	0	0
Videocast	1	0	4	2	0	1	1	0
Chat	1	1	0	0	1	0	0	0
Api	4	17	0	0	0	0	0	0
Red Social	0	1	0	0	0	0	0	1
TOTAL	12	25	10	5	2	1	3	3

**Fuente: Personal elaboration.**



## Conclusions

The Web 2.0 tools and applications are very important alternatives for governments and their Websites in the near future. The now called Government 2.0 has the potential of bringing government and citizens closer in a simple and effective way. This type of tools will allow greater citizen participation as well as the transmission of more and better information by the government agencies.

However, it is also very clear that these tools and applications are not being used currently at their full potential in state websites. This evaluation shows preliminary data about the use of Web 2.0 in the websites of the state government in Mexico. Due to the speed rate at which Web 2.0 tools change and their availability in Internet, a lot of the websites could be using them now. This initial data offer a first approach to this phenomenon and will serve as foundation for future studies about this theme.

As to the implementation of Web 2.0 tools, the advance in state websites in Mexico is moving slowly. It looks like the website administrators are considering the use of these applications for having a closer interaction and integration with the citizen through the presence and functionality of such tools, but a lot of them have not been implemented yet. Under the communication point of view, Web 2.0 applications fulfill the purpose of communicating according to the characteristics of tools, but some of them also allow greater socialization, through social networks or markers, between users and government.

A future study could focus in knowing the users opinion about the functioning and use of the websites, with the finality of complementing and considering aspects which were probably not included in this evaluation. In this way there would be a better vision from the citizen point of view in regard to adaptation and usefulness of the communication channels put to their disposition.

Another line of investigation would be the evaluation of advantages and disadvantages for state governments of having a Website with Web 2.0 characteristics due to the costs and time it can imply for some of them, in contrasts of the benefits it could generate.

Finally, the use of Web 2.0 tools in electronic government websites is not reduced to installing the tool. A first step is to include tools and

applications in the websites, but there has to be a clear strategy and point of view about its scope. Government 2.0 has a great potential for transforming and improving the relationship between government, citizens, companies and other groups, but these tools have to be combined with a clear vision and effective strategies so their effects are valuable and significant for governments and citizens and society as a whole.

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