

# ***Social Media in Government***

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## **1. Introduction**

Social media services, such as Facebook, Twitter, LinkedIn, FourSquare, Youtube or Flickr, provide a platform to create online communities to connect people and to share information. People can join, create a page, or create a group. Social media applications build on Web 2.0 technologies that are Internet-based and designed to promote the content generation by the users and to facilitate the sharing and diffusion of information through social linking and interactions among people (O'Reilly 2007).

Table 1 summarizes the basic technologies of the Web 2.0, the characteristic capabilities or functionalities of Web 2.0, and of the social media systems. The Web 2.0 basic technologies include the Internet enabled Web as the native platform equipped with end-user interactivity using a client-based programming framework (e.g. AJAX framework) and server-based dynamic programming. The Web 2.0 is based on light-weight web services, not software applications, and provides browser-based Rich Interaction Application (RIA) experiences for the end users. These technologies enable organizations to achieve productivity through a set of capabilities called SLATES – Search capabilities for employees to effectively locate resources and knowledge; Linking employees and customers to develop social networks ; Authoring by employees and customers to co-create and share contents and knowledge; Tagging to organize and connect content for effective sharing and filtering; Extensions to share complex multi-media content through plug-ins; and Signals to disseminate the content changes (McAfee 2006). We can call these organizations with SLATES capabilities Enterprise 2.0 or Social Enterprises.

Social media (or social web applications) define a set of tools and systems that allow an organization to achieve these social capabilities, hence Social Enterprises. These include blogs, wikis, social networking systems (e.g., Facebook, MySpace), Web-based communication systems (e.g., chatting, chat groups), photo-sharing (e.g., Flickr), video casting and sharing (e.g., YouTube), audio-sharing (e.g. Podcasts),

mashups, widgets, virtual worlds, microblogs (e.g., twitter), social annotation and bookmarking of Web sites, and many more.

Davis and Mintz (2009) distinguish social media applications according to the following characteristics:

- User-generated social content. Social media enables site visitors to submit contents that others can access.
- Social networking. Users of social media join together in online groups and relationships, which allow them to see profile information about the people to whom they are connected and to share information. It provides a digital space for meeting and exchanging ideas, products, and information with others.
- Collaboration. Users engage in conversations, co-creation of content, collaborative filtering, and collective action.
- Cross-platform data sharing. Sharing content by transferring data across sites.

Table 1: Web 2.0 Technologies, Functionalities and Social Media Applications

Web 2.0 Technologies	Web 2.0 Functionalities I	Social Media/Social Web Applications
<p><u>Web as the platform</u></p> <ul style="list-style-type: none"> <li>• No platform-specific software installation but networked services-based</li> <li>• Focus on "the long tail," the collective power of the small sites that make up the bulk of the web's content instead of the "head".</li> </ul> <p><u>Client-side/web browser technologies:</u> AJAX (Asynchronous JavaScript and XML), JSON (JavaScript Object Notation), HTML5, Adobe Flash and Adobe Flex frameworks</p> <p><u>Light-weight programming model</u></p> <ul style="list-style-type: none"> <li>• uses dynamic programming tools (PHP, Ruby, Perl, Python, JSP, and ASP.NET) to generate output in machine-readable formats such as XML (Atom, RSS, etc.) and JSON.</li> <li>• Lightweight XML based RSS and REST-based Web services, preferred over the Web services and SOAP architecture</li> </ul>	<p><u>Rich Internet Applications (RIA)</u></p> <ul style="list-style-type: none"> <li>• improved user interface with browser activities</li> <li>• limit the amount of data (e.g. browser plug-ins) downloaded to minimum, avoiding redownloads every time the page is displayed, reducing application load time, bandwidth requirements, and server load.</li> <li>• Enrich user experience with Multimedia content and rich Graphical user interface (GUI) as in application software.</li> </ul> <p><u>SLATES Functionalities :</u></p> <ul style="list-style-type: none"> <li>• Search,</li> <li>• Linking</li> <li>• Authoring</li> <li>• Tagging,</li> <li>• Extensions (plug-ins for multimedia contents)</li> <li>• Signals (syndications like RSS to notify content changes)</li> </ul>	<p><u>Social Media Tools/Systems</u></p> <ul style="list-style-type: none"> <li>• Blogs</li> <li>• Wikis (content authoring)</li> <li>• Social networking , (e.g., Facebook, MySpace)</li> <li>• Web-based communication (e.g., chatting, chat groups),</li> <li>• photo-sharing (e.g., Flickr),</li> <li>• video casting and sharing (e.g., YouTube),</li> <li>• audio-sharing (e.g. Podcasts),</li> <li>• mashups,</li> <li>• widgets,</li> <li>• virtual worlds,</li> <li>• microblogs (e.g., twitter),</li> <li>• Tagging, social annotation</li> <li>• Social bookmarking</li> <li>• Syndication via RSS feeds</li> <li>• Web content voting</li> </ul>

Doan et al. (2011) categorize different crowdsourcing social media systems depending on the activities and behaviors of the participating users and the artifacts they create:

- Evaluating -- reviewing and voting products or users, and tagging web content.
- Sharing -- Building a collection of items, textual or structured knowledge that can be shared among users.
- Networking -- Building social networks
- Building artifacts -- Building physical artifacts such as software, textual knowledge bases, structured knowledge bases, systems
- Task execution – Solve any problem (e.g. Finding extraterrestrials, elections, finding people, content creation

These common social media characteristics, such as end-user participation as co-creation of content and evaluation, collaboration-oriented problem solving through networking activities and content sharing, encourage government agencies to apply social media to achieve the Open Government Directive of the US government, whose three major mandates are transparency, participation and collaboration (The White House 2009; Office of Management and Budget, 2009). Some examples of social media applications in government can be found in Chun et al. (2010).

## 2. Research Areas on Social Media and Government

The *dg.o 2011* conference theme “Digital Government Innovation in Challenging Times” focused on open government, public participation, collaboration, social media and e-Government applications. The theme encompasses opportunities and solutions for government innovations and socio-technical issues as well as solutions for government-citizen interactions and experiences. This special issue focuses on theoretical and empirical studies, addressing “light weight” social media technologies, such as twitter, blogs, wikis, social networks, etc., as catalysts for government innovation for transparent government, and participatory and collaborative government as specified in the Open Government Directive.

In this section, we look at social media as driving forces for transforming citizens, data and government models, and outline some of the research questions. Figure 1 is a schematic representation of how government, citizens and data models interact through social media.

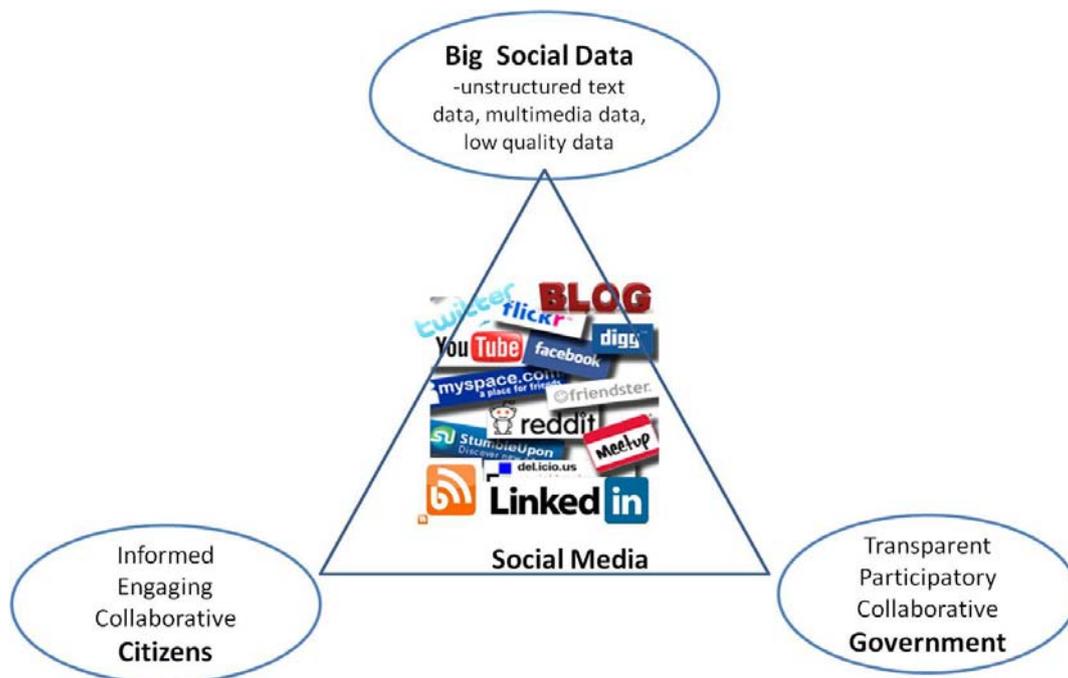


Figure 1 Social Media-based Government, Citizens and Data Models

### **Social Media-based Citizen Engagement Model**

The social media tools can provide information about user opinions, emotions, intentions, behaviors and characteristics. Social media use in government is considered a technological innovation and a transforming agent in generating citizen engagement from campaigns and grassroots-activism to shared governance promoting democracy. The Pew Research Center's Internet & American Life Project (Pew 2011) has conducted a survey to see the social impact of using social networking sites (SNS) like Facebook, LinkedIn, MySpace, and Twitter. The study explores how use of these SNS technologies is related to trust, tolerance, social support, and community and political engagement. The findings on political engagement show that a Facebook user who visits the site multiple times per day is two and a half times more likely to have attended a political rally or meeting, 57% more likely to have tried to convince someone to vote for a specific candidate, and 43% more likely to have said they voted or intended to vote (Pew 2011, p41).

The impact of social media for generating democratic participation is building its track record, but one of its challenges is to sustain political interest and activism online over time and to achieve true citizen-government collaborative governance transformation. The governments should constantly evaluate the strategies in choosing proper social media and other digital tools to stimulate the citizens' participation. Research communities should address questions on how these engagement strategies evolved, how social media improve participation and collaborative governance, and what role the industry actors such as Facebook and Twitter play in encouraging online civic participation, among others.

### **Social Media-based Data Sharing Model**

The citizen engagement in public discourse using social media generates a lot of data, often characterized as "big social data" or "dirty" unstructured data, as opposed to the structured transaction data. It is textual as well as multimedia, including images, audio and video data. The data is loaded with emotional, subjective statements, so-called "sentiment" data. It also focuses on the relationship data. The problems and challenges associated with so-called big data, namely, volume, velocity and varieties are inherent in the social media data. Data overload will be a huge challenge for government and citizens for sensible decision making. Efficient storage, processing and analysis of these data to identify key events and sentiments in the social media data will enhance the government to understand their constituencies to reflect their sentiments and opinions on the policies to be an effective government and to achieve true democracy. In addition, to achieve true collaborative decision models with citizens, the government-collected data should be readily available and be integrated with the diverse social media to empower the citizens to understand the big picture of government actions and peer citizen actions and discourse for more meaningful engagement. The data analytics and visualizations become important aspects of social media data understanding.

In addition, the sentiment data often suffers from the low quality, low trust-worthy information. Filtering out and recognizing the main trends in these social sentiment data that is high quality and fidelity for decision making became a big issue for governments. The data visualizations should also focus on the relationship formations to identify who may be the major players and influencers in the

dynamic social interactions. Governments should have data models and strategies to manage and mine the important nuggets of information in a rapid manner and share these insights with the citizens.

### **Social Media-based Real-time Collaborative Government Model**

The promotion of the social media in government has been intended to improve near-real-time interactions with citizens, transform the governments' behavior and practices in information sharing and service provision, change the decision making patterns in government, and force policy changes based on vast input from the citizens. However, the enhanced input through citizens' participation poses various challenges in this new form of government. The purported benefits are not easy to measure and it is hard to see whether the social media implemented in government have been effective. Therefore research questions such as the following need to be addressed to measure the success of new social media based government model:

- Does the government have the regulatory and policy framework to govern the use of social media and other emerging technologies? How does the government develop and employ timely regulatory mandates in its adoption of the rapidly changing technologies and the information generated by them?
- The adoption of social media in government has been explosive, but is there a framework to evaluate the success of transparency, participation and collaboration directed by the Open Government initiative? What are the constructs to measure the effectiveness of Open Government initiative?
- What are the best practices and future trends in the social media-based government innovation, if any? Studies are needed to survey the current and past social media projects to determine the general trends and to assess the impact of the social media on governments.
- How does government deal with the information flood (or tsunami) generated by the social media-based citizen participation? How can a government process and use this information in a meaningful way for enhancing their decision making capabilities while simultaneously trying to reflect the citizens' "voice," i.e. the citizen's emotional and social demands on the government?
- What are the implementation strategies for the social media based citizen participation?
- Does the direct interaction between citizens and government officials using social media change the citizens' attitude towards governments? For instance, does it increase trust in the governments, or does it trigger citizens to demand for government accountability or decision power, and ultimately enhance the democratic process?

### **3. Research Topics in Special Issue**

This special issue features a collection of best papers selected from the 12th International Conference on Digital Government Research (dg.o2011) and one paper on the social media use in health agencies that is an important topic in current time. The selected papers raise these research issues and practical challenges in the deployment of social media for government innovation. Table 2 summarizes the featured articles in this issue. These papers provide the conceptual, socio-technical, managerial and

practical frameworks to develop government, citizen and data models than can be used to describe, explain and evaluate the social media use in governments.

Table 2: Research topics and summary of key findings

Topic category	Authors	Title	Key findings and research contributions
Social media citizen model, Theory	D. Linders	From e-Government to We-Government: defining a typology for citizen coproduction in the age of social media	Provides three types of social media based citizen-government relationship models, i.e. C2G (citizen sourcing model), G2C (Government as platform model) and C2C (Do-It-Yourself government model)
Social media citizen model, Empirical study	S. Hong and D. Nadler	The Impact of Social Media and Mass Media: 2012 U.S. Presidential Candidates and their Salience on Twitter	Empirical study supports the minimal effects theory of social media, regardless of the adoption and engagement levels.
Social media citizen model, empirical study	K. Andersen, R. Medaglia and H. Kenriksen	Social Media in Public Health Care: Impact Domain Propositions	Present social media impact study on public healthcare actors, i.e. patients, doctors and policy makers. Social media provides empowerment to patients and expands ability to access health information.
Social media data model, theory	P. Sobkowicz, M. Kaschesky and G. Bouchard	Opinion Mining in Social Media: Modeling, Simulating, and Forecasting Political Opinions in the Web	Present a theory and framework of opinion-based simulation model building based on automatic construction of opinion networks, information flow model and agent influence model. This framework can be applied for simulation of policy impact analysis and predication.
Social media data model, empirical study	A. Kavanaugh, E. Fox, S. Sheetz, S. Yang, D. Shoemaker, L. T. Li, A. Natsev, L. Xie	Social Media Use by Government: From the Routine to the Critical	Social media are rich, but overwhelming sources of information in crisis situations Visualizations and data mining techniques help users make sense of social media
Social media Government model, theory	G. Lee and Y. Kwak	An Open Government Maturity Model for Social Media-Based Public Engagement	Five-level Open Government Maturity Model is proposed in an effective implementation of social media-based public engagement initiatives. Each maturity level provides guidelines on the project focus, capabilities to build, processes, best practices and challenges.
Social media Government model, Empirical study	S. Picazo-Vela, I. Gutiérrez-Martínez and L. Luna-Reyes	Understanding Risks, Benefits, and Strategic Alternatives of Social Media Applications in the Public Sector	Present the perceived risks, benefits and strategic guidelines about applying social media in government. Practical guidelines include to have a good implementation strategy, update laws, and change culture and practices.

Dennis Linders address the social media and web 2.0-based citizen model, discussing the role of citizens as a coproduction partner, not merely as a passive customer of government information and services. Social media and online collaboration platforms offer a number of advantages for fostering collective action, including the fact that it is much easier to discover and attract members with shared interests; exchange information; make group decisions at a larger scale; integrate individual contributions; supervise a group with less need for hierarchy; and manage group logistics better due to elimination of time and space constraints. The research question is whether and how these advantages are able to impact the government-citizen relationship. This paper provides a unifying typology of the social media-based citizen models with three categories "Citizen Sourcing (citizen to government model)" "Government as a Platform (government to citizen model)," and "Do-It-Yourself Government (citizen to citizen model)." This new citizens role and relationship models or categories will provide a unifying

analytical framework and common terminology for the research communities in studying and analyzing the social media impact on citizen-government relationships, and discussing the potential implications for public administration.

Hong and Nadler undertake an empirical study of measuring the impact of social media use in the presidential candidates. They test two competing theories of media's effect – namely, the 'minimal effects hypothesis' which claims the competitive edge of a media or a new technology is minimizing as adoptions spread, and the other hypothesis where the media can control, frame or influence public opinions. They define the concept of "candidate salience" as the extent to which candidates are discussed online by the public in an election campaign. They quantify this salience by counting the number of mentions presidential candidates receive on the social media site, Twitter. The results show that high levels of social media activity on the part of presidential candidates (candidates' level of engagement) shows the minimal effects theory on the amount of public attention they receive online, even though social media does substantially expand the possible modes and methods of election campaigning.

Sobkowicz, Kaschesky and Bouchard present a opinion formation framework to understand how online opinions emerge, diffuse, and gain momentum by analyzing the social media data. An automated content analysis of social media data facilitates identification of emerging societal trends in views, dispositions, moods, attitudes and expectations of stakeholder groups or the general public. This opinion analysis of online communication data in turn help developing more realistic socio-psychological simulation models to understand the likely impacts of policy measures, and to better communicate expected benefits and consequences. In addition, the opinion formation model can also predict the evolution of communication patterns on a specific policy issue within a region or cross-regionally for global comparison. This opinion formation model framework suggests the richer simulation model that are based on not only the opinions automatically mined from the social data but also social structure data (such as the social network topology and evolution such as the birth of new communities) and temporal patterns of communication and group/individual activities (e.g. burstiness of communications and decay or persistence of reactions to events)

Kavanaugh and her colleagues tackle the user generated social media data stream that suffers from the information overloads for the officials to make sense for crisis management situation for faster and real-time awareness and response. They collected data from social media sites of civic organization, performed semantic analysis of the data to detect meaningful patterns and trends, and important events, and to decipher event meaning and consequences through tracking changes in content and public sentiment. The visualization tools are used to make greater sense of large amounts of data more quickly and easily. The findings include that the recognizing a significant event in huge volume of data is a challenge, thus, there is a great need for rapid analytic tools for understanding the events, patterns and changes, and interactive visualization tools with digital library to make sense of the data quickly.

Lee and Kwak propose an Open Government Maturity Model that can be used to assess and guide in the implementation of social media-based public engagement initiatives. The model consists of five maturity

levels: initial conditions (Level 1), data transparency (Level 2), open participation (Level 3), open collaboration (Level 4), and ubiquitous engagement (Level 5). Governments can achieve an effective social media-based open government implementation by following the guidelines on the focuses, organizational and technological capabilities, processes, outcomes, challenges, best practices, and metrics prescribed for each maturity level. The model also can serve as a standardized tool for benchmarking as well as a common language and framework for open government planning and implementation. The proposed model is based on the analysis of field studies of U.S. federal healthcare administration agencies.

While social media bring out potential strategic advantage for an innovation and transformation in public administration through new communication channels between governments and citizens as well as among citizens, social media applications in government may fail. The authors, Picazo-Vela, Gutiérrez-Martínez and Luna-Reyes, analyze the perceptions of potential risks and benefits in a multi-layer framework. The analysis layers include: general context, institutions, interorganizational collaboration and networks, organizational structures and processes, information and data, and technology. The perceived risks and benefits as well as potential strategic areas in each layer are identified from the survey results on social media applications in Mexico governments that are gathered from 250 public servants from Central Mexico. From the analysis, the authors cautions that a good implementation strategy is necessary to realize the benefits and to avoid risks in government's employing social media; that it is important to update laws and regulations on the social media use; and that changes in government culture and organizational practices may be necessary.

Using the case of the Danish public health care sector which is heavily regulated and funded by government, Kenriksen, Medaglia and Andersen analyze the impacts of social media in the heavily linked environment where patients, health professionals and institutions interact via technologies to access and exchange health records. Using the IT impact study framework, the authors look at the social media impact on capabilities (ability for quality health data access, efficiency for task completion, effective decision making, etc.), on interactions (relationships among patients, doctors and policy makers, control and collaboration), on orientations (Information search prior to consultations, check of social information about the patient) and on value distribution (improved standard of health, safety and well-being, sharing private information). The study looks at the impact domains on patients, health care providers and national policy makers. Findings include: social media transform the access to health-related information for patients and general practitioners; the social media use can be a cost driver rather than cost saver; social media provide empowerment to patients; and the uptake of social media is hindered by legal and privacy concerns.

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## References

- [1] O'Reilly, T. What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software, *Communications & Strategies*, No. 1, p. 17, First Quarter, 2007
- [2] McAfee, A. Enterprise 2.0: The Dawn of Emergent Collaboration. *MIT Sloan Management review*. Vol. 47, No. 3, 2006 p. 21–28.
- [3] Doan A., Ramakrishnan, R. and Halevy, A. Crowdsourcing systems on the World-Wide Web. *Communications of ACM* 54(4), 2011:86-96.
- [4] Davis, T. & Mintz, M., (2009). "Design features for the Social Web: The Architecture of Deme", *Proceedings of 8th Int'l Workshop on Web-Oriented Software Technologies (IWWOST 2009)*, 2009.
- [5] Office of Management and Budget, Open Government Directive, Memorandum for for the Heads of Executive Departments and Agencies, Dec 8 2009.  
  
[http://www.whitehouse.gov/omb/assets/memoranda\\_2010/m10-06.pdf](http://www.whitehouse.gov/omb/assets/memoranda_2010/m10-06.pdf)
- [6] The White House, Transparency and Open Government, Memorandum for the Heads of Executive Departments and Agencies. Jan 21, 2009  
[http://www.whitehouse.gov/the\\_press\\_office/TransparencyandOpenGovernment/](http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment/)
- [7] Soon Ae Chun, Stuart Shulman, Rodrigo Sandoval and Eduard Hovy, Government 2.0: Making Connections between Citizens, Data and Government, *Information Polity* Vol. 15 (1 & 2), 2010: pp 1-9.