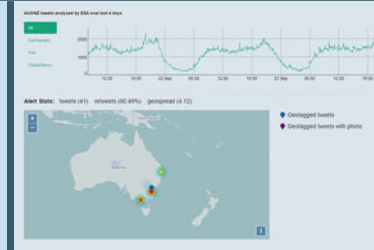
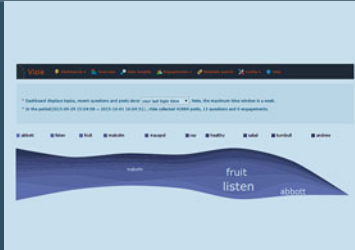
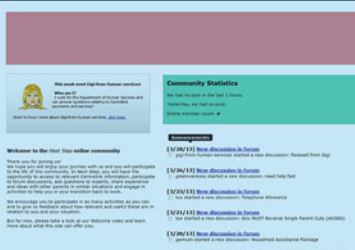


Surya Nepal
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Social Media for Government Services

Social Media for Government Services

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Cover image: Screenshots of systems developed by Data61 at CSIRO This image is taken with the permission of CSIRO Data61 and contains images from the following social media systems: Emergency Situation Awareness (ESA), the Next Step Online Community and Vizie, a social media monitoring tool.

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Preface

Governments at all levels (local, state or federal) are seeking better communication means, greater transparency, more participation from and collaboration with citizens in a range of government activities, ranging from disseminating information to formulating policies and delivering services. In addition, governments are under constant pressure to deliver more with less. In recent times, social media has been particularly appealing to advance these goals because of the increased participation of the population on sites like Facebook, Twitter, YouTube and Flickr. As a result, increasing numbers of government departments and agencies have started using social media as part of their channels of interactions with citizens. Although the use of social media has been increasing rapidly in recent times, there are still a number of significant challenges associated with it regarding citizens' privacy, veracity of content, governance policies and framework, the integration of social media with organisational business processes and risk management plans, to name a few.

Aim and Scope

In this book, we bring together researchers and practitioners and present the state-of-the-art research, development and deployment of social media use by governments through a number of case studies and systems descriptions.

The book covers many research activities CSIRO has done in social media for Australian government agencies, more specifically for the Department of Human Services under the \$16 million 5-year "CSIRO-Centrelink Human Services

Delivery Research Alliance (HSDRA)”¹. Chapters “[Social Media for Government Services: A Case Study of Human Services](#)”, “[Next Step: An Online Community for Delivering Human Services](#)” through to “[Improving Situation Awareness and Reporting Using the Emergency Response Intelligence Capability Tool](#)” report on different activities that were undertaken under HSDRA. In addition, the book contains invited and peer-reviewed chapters from both academic researchers and industry practitioners.

The book is useful and of interest to a wide range of people, including academic researchers, IT industries, developers of government policies and decision makers, communication staff in government departments and agencies, and anyone in the government sector interested in making use of this communication transforming medium of interaction: social media.

Organisation

The book is organised into two parts, namely Part I: Introduction and Case Studies and Part II: Systems and Applications. The book is composed of 17 chapters. Part I contains 8 chapters and Part II contains 9 chapters.

The first chapter, “[Social Media in Government Services: An Introduction](#)”, provides a basic introduction to social media such as a definition, the origin of the term, and the types of social media prevalent in the Internet. In addition, the chapter focuses on the adoption of social media for government services, introducing a number of popular application scenarios. The chapter also describes a few key challenges and issues that must be addressed, and a framework to define guidelines and policies to overcome those challenges. The chapter is then followed by a case study from the Australian Government Department of Human Services. The chapter, “[Social Media for Government Services: A Case Study of Human Services](#)”, illustrates how that department is making use of social media to support its customers and improve service delivery. It provides illustrative examples of some success stories, together with the challenges they had to face. The chapter also presents a governance framework and touches one of the difficult questions to be answered: how to measure the success of social media engagement?

¹ See information about HSDRA and its outcomes in the following websites, all accessed September 29th, 2015:¹ <http://www.csiro.au/en/Research/DPF/Areas/The-digital-economy/Digital-service-delivery>.¹ <https://publications.csiro.au/rpr/download?pid=csiro:EP149489&dsid=DS1>.¹ <https://www.youtube.com/watch?v=lZgwyOSMsw>.¹ https://www.youtube.com/watch?v=CEQX_rGLkKM.¹ <https://www.youtube.com/watch?v=zrMy450eriw>.¹ <https://www.youtube.com/watch?v=caK2bRHcOEs>.¹ <http://www.technologydecisions.com.au/content/gov-tech-review/article/reinventing-government-customer-service-the-social-way-625131602>.

The third chapter, “[Use of Social Media for Internal Communication: A Case Study in a Government Organisation](#)”, provides a case study of using Yammer for internal communication by VicRoads, a Victorian state government authority. The chapter explains the end-to-end processes of establishing social media for internal use, including choosing the right Yammer components, gaining adoption by users, developing the network with the guidance of a community manager, and continuing the growth of the network through engagement strategies. This is followed by a case study from Dubai’s public sector. The chapter, “[The Role of Political Leadership in Driving Citizens’ Engagement Through Social Media: The Case of Dubai’s Public Sector](#)”, examines the use of social media in Dubai’s government from a public policy perspective. The chapter argues that political leadership was found to be a major factor in the successful use of social media in the public sector.

The fifth chapter, “[Social Media Policy in Turkish Municipalities: Disparity Between Awareness and Implementation](#)”, aims to analyse the present state of social media policy implementation and evaluation in Turkish municipalities in the Marmara region. The key message from the chapter is that, although there is an increasing rate of awareness of the benefits of social media use, there is a clear deficiency with regard to implementing and evaluating a social media policy. This chapter is followed by a chapter entitled “[From Social Media to GeoSocial Intelligence: Crowdsourcing Civic Co-management for Flood Response in Jakarta, Indonesia](#)” that describes a use case in the context of flood disaster management. This chapter provides a review of [PetaJakarta.org](#), a system designed to harness social media use in Jakarta for the purpose of exchanging information amongst citizens and between citizens and emergency management agencies about floods.

The seventh chapter, “[Detecting Bursty Topics of Correlated News and Twitter for Government Services](#)”, presents a framework of detecting bursty topics of correlated news and Twitter posts. The authors also explain how the proposed framework can be integrated into government services using the 2012 London Olympic games as an example.

It is well known that all governments are under pressure to deliver better services with reduced costs. The next chapter, “[Webcare in Public Services: Deliver Better with Less?](#)”, describes a case study around webcare, a form of social media that uses online communication with citizens to address client feedback in Dutch public organisations.

The next five chapters, from “[Next Step: An Online Community for Delivering Human Services](#)” through to “[Improving Situation Awareness and Reporting Using the Emergency Response Intelligence Capability Tool](#)”, are drawn from different activities at Data61 within CSIRO. Chapter “[Next Step: An Online Community for Delivering Human Services](#)” presents an online community developed as part of HSDRA. The aim of the community was to provide informational and emotional support to a specific group of welfare recipients. The paper describes the design, development, deployment, trial and results of the community. The success of any online community lies in the engagement of the citizens. In *Next Step*, several techniques were employed for this purpose, including

recommenders, which have been widely used to increase the engagement. Another approach to boost engagement is gamification, the topic of the following chapter “[Gamification on the Social Web](#)”. It provides a brief introduction to gamification and how it has been used in game dynamics. The chapter then presents the experience and observations on using gamification techniques in *Next Step*.

The eleventh chapter, “[Improving Government Services Using Social Media Feedback](#)”, describes a social media monitoring tool, called Vizie. The tool was designed as part of an HSDRA project² to help analysts identify how current government services could be improved by drawing on the commentary and feedback provided in a variety of social media including Twitter and Facebook. This is followed by another chapter from CSIRO on Emergency Situation Awareness (ESA). The chapter “[Using Crowd Sourced Content to Help Manage Emergency Events](#)” presents the ESA platform, which collects tweets from Australia and New Zealand and processes them to identify unexpected incidents. The ESA platform has been trialled by numerous emergency services organisations throughout Australia. Three case studies are outlined in the chapter to explain how ESA is being used as an earthquake, bushfire events and a general all-hazard monitoring tool. This chapter is followed by a chapter entitled “[Improving Situation Awareness and Reporting Using the Emergency Response Intelligence Capability Tool](#)”. It describes the Emergency Response Intelligence Capability (ERIC) tool,³ also developed as part of HSDRA for the Australian Government Department of Human Services. The tool automatically gathers data about emergency events from authoritative web sources, integrates them and presents them on an interactive map. Emergency management teams can use ERIC for intelligence gathering and situation reporting during emergency events.

The fourteenth chapter, “[A Lexical Resource for Identifying Public Services Names on the Social Web](#)”, describes an approach for developing a Lexical Resource for Public Services Names, and how it could be exploited to collect data-related government services. The chapter employs the British and Irish government websites to demonstrate the use of the developed technology, which uses the identified names to track messages in Twitter related to governments. This is followed by chapter “[Transport Policy: Social Media and User-Generated Content in a Changing Information Paradigm](#)”. The chapter describes the challenges in using social media in the transport sector and demonstrates that social media provides a complementary channel for collecting transport data.

The sixteenth chapter, entitled “[‘Garbage Let’s Take Away’: Producing Understandable and Translatable Government Documents: A Case Study from Japan](#)”, describes how a government department can use a technique to produce

² https://www.youtube.com/watch?v=CEQX_rGLkKM.

³ <https://www.youtube.com/watch?v=IZgwyOSMsw>.

documents that can be automatically translated to different languages such that the resulting text is understandable. This is important in countries where the society is homogeneous and minority people do not have access to government information in an understandable form. The chapter describes the proposed technique and demonstrates its effectiveness through a case study for Japan. The tool has application beyond Japan, as many countries are encountering similar issues due to globalisation. Finally, the last chapter, “[Multi-hazard Detection by Integrating Social Media and Physical Sensors](#)”, describes a tool called LITMUS. It combines social media data with data from multiple physical sensors to handle the inherent varied origins and composition of multi-hazards. The results demonstrate that LITMUS detects more landslides than the ones reported by an authoritative source.

Acknowledgement

This book was possible due to the direct and indirect involvement of many researchers, industry practitioners and academics. We acknowledge and thank the contributing authors and their research institutions or government agencies. We offer our special appreciation to Springer and its publishing editor, Dr. Christoph Baumann, and project coordinator Mr. Ravi Vengadachalam, for helping us to bring this book out on time.

Prior technical sources are acknowledged through citations at the appropriate places in each chapter of the book. In case of any errors, we would like to receive feedback so that it could be corrected in the next edition.

We sincerely hope that this book will serve as a valuable source to government agencies who would like to use social media. In addition, we also hope that it will be a valuable reference text for undergraduate and graduate studies, and researchers in this area.

Surya Nepal
Cécile Paris
Dimitrios Georgakopoulos

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Part I
Introduction and Case Studies

Social Media for Government Services: An Introduction

Surya Nepal, Cecile Paris and Dimitrios Georgeakopoulos

Abstract Government agencies and departments all over the world have started using various forms of social media for different purposes. Though the use of social media in public sectors is increasing, the adoption path is not easy and straightforward. Furthermore, in many situations, the use is still in an infancy stage when it is measured against pre-set objectives. The aim of this chapter is multiple folds. The chapter first provides a brief introduction of social media and types of social media. It then describes the adoption process in government. This is followed by some example applications where social media has been successfully used. A few key challenges that are proven to be difficult in adopting social media are given. Finally, the chapter provides a framework to define guidelines and policies to overcome these challenges.

Keywords Social media · Social networks · Government services · Social web

1 Social Media

What is Social Media? There are many definitions of social media in the literature. In essence, social media is an online communication tool that enables people to create, share, interact, collaborate and exchange multi-media information with

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other people in virtual communities [1]. Social media tools are built using technologies based on the Web 2.0 [2].

Who coined the term social media? The term emerged in 1990s, but it is in the early 2000s that it gained significant popularity. Jeff Bercovici from Forbes did some investigations to determine who coined the term first, which he reported in his blog in 2010 [3]. He found four key contenders: Tina Sharkey, Ted Leonsis, Darrel Berry and Chris Shipley. All claimed that they were unaware of the use of term when they first used it.

In the technology landscape, social media is a product of the evolution of the Web. Figure 1 shows the evolution of the Web and where social media stands. The first generation web (Web 1.0) was the Web of Content, where static information was shared between web users and web sites. Most users were *consumers* of information. This Web of Content lacked active interactions between information providers and information consumers (users), and amongst the users. A large number of web sites were created during this time. At the beginning of the 21st century, the web evolved from the Web of Content to the Web of Communication (Web 2.0). This provided interactive platforms, like blogs, enabling non-technical users to interact with the web, create content and share with other users. Internet users became both providers and consumers of information, a state sometimes referred as “*prosumers*”. Social media (e.g., Twitter, Facebook, YouTube, etc.) is an example platform developed in this period. Around 2008, we started to see the emergence of semantic web (Web 3.0), or the Web of Context. We are now in the mobile web era (2012–2019), the Web of Things or Internet of Things (IoT). This

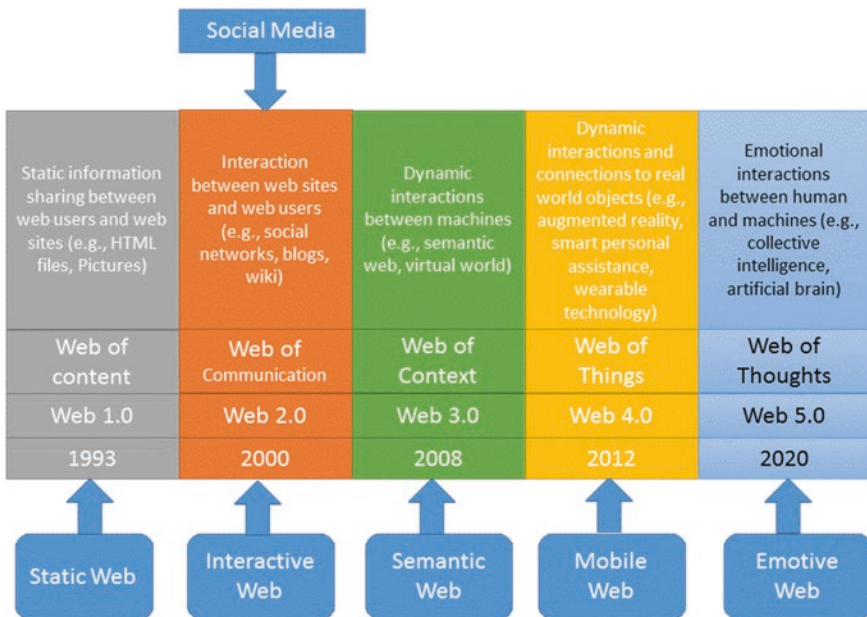


Fig. 1 Social media in the evolution of the web

era is not different than the previous ones, except that the web now has to connect all devices in the real world and the virtual world, in real time. The next web is the emotive web that supports emotional and intelligent interactions between users and the web. This is also called the Web of Thoughts, where human nature meets artificial intelligence [4].

The Federal Web Managers Council has developed the following definition of social media: “Social media and Web 2.0 are umbrella terms that encompass the various activities that integrate technology, social interaction, and content creation. Social media use many technologies and forms, such as blogs, wikis, photo and video sharing, podcasts, social networking, mashups, and virtual worlds” [5].

In terms of functionality, Kietzmann and colleagues defined social media using a honeycomb framework of seven functional building blocks: identity, conversations, sharing, presence, relationships, reputation and groups [6]. Identity represents the way users define, reveal and use their identity in social media. Conversations denote how users communicate with each other on a social media site; for example, conversations could be between individuals (i.e., peer-to-peer) or from an individual to a group. Sharing refers to how users change, distribute and receive social media content. Presence denotes the way a user can make others aware of their availability. Relationships refer to the ways users can relate to each other on social media (e.g., friend, circle, etc.). Reputation is about the way to make users aware of each other’s standing in the community. Finally, groups relate to the way users form communities in a social media site. It is important to note that not all social media supports all seven functional blocks.

2 Social Media Types

Social media is still evolving. There are different types of social media prevalent today. In the following, we briefly describe some popular types of social media.

Social Networks: Social networks are the most popular social media tools. Ellison defines social networks as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” [7]. Example social networks include MySpace, Facebook and Google+. Social networks can be based around friendship, interest (e.g., people sharing a passion for sports), circumstances (e.g., new parents, students, or people with a specific illness) or based on a professional network.

Bookmarking Sites: Social bookmarking sites are online services that enable users to store and share internet bookmarks. In addition to simple store and browse, these sites also provide management tools such as annotations, categorisations, the ability to comment, etc. Examples of popular bookmarking sites include CiteULike [8], BibSonomy [9], Digg [10], Delicious [11], etc.

Social News: Social news websites enable user to post stories, comment and rank the posts, and view the posts based on their popularity. Slashdot [12] and Reddit are examples of such sites.

Media Sharing: Media sharing sites enable users to share media (e.g., pictures, videos) with each other. YouTube [13] and Flickr [14] are currently amongst the most popular examples of media sharing sites.

Microblogging: Microblogging enables a short message to be sent amongst users. Twitter is the most popular microblogging social media platform [15]. Other popular microblogging sites include Tumblr [16] and Weibo [17].

Online Reviews: An online review site is a website that enables users to post reviews on services, businesses, products, or people. One of the most popular review site for consumers is Epinions [18]. There is now a large number of review sites for different domains; for example, TripAdvisor for travel, WebMD for health, etc.

Question Answering sites: these are dedicated websites where users can pose a question that is answered by another member of the public. For example, Yahoo! Answers is a question answering site. The question-answers pairs present on these websites can be later found by other users with similar questions.

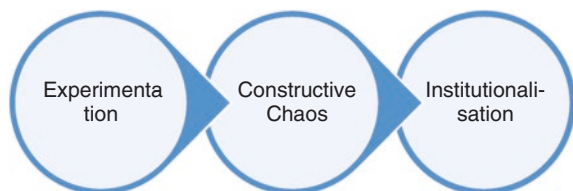
3 Social Media Adoption Process

Governments at all level are increasingly adopting social media for a variety of purposes, ranging from providing accurate information to citizens to participation of citizens in policy formulation and improving internal communications. In this section, we briefly discuss the drivers, approaches and phases of social media adoption reported in the literature.

The adoption of social media in government services passes through similar phases that all new information and communication technologies go through when they are introduced. Mergel and Bretschneider provided a three stages process for social media adoption as shown in Fig. 2 [19]: Experimentation, Constructive Chaos and Institutionalisation. We explain these three phases briefly below.

Experimentation: In this early phase, government agencies use social media as an informal experimentation. This normally starts with someone who likes to explore new technologies, is forward thinking and ready to be a champion for its adoption. In this case, social media use does not necessarily go through the

Fig. 2 Social media adoption process



standard internal processes, and social media is trialled for a specific purpose, for example for a particular service or product. The activities in this phase include information dissemination and collecting feedback on services. In many situations, the agencies run trial projects.

Coordinated chaos: This phase involves developing a business case for social media. Since the use of social media started in an informal way, there will be many accounts in different platforms without proper policies and guidelines developed. At this phase, the agencies see the benefits of using social media. However, they also potentially encounter a number of unintended consequences, such as receiving negative coverage in the press, or a discrepancy between the dissemination of information on its official channels and on social media. In this phase, a solid business case is built to use social media with benefits outweighing the negative consequences. This leads to the third phase.

Institutionalisation: This phase involves developing standard policies and guidelines for the use of social media. In this phase, social media becomes one of the official channels of communication between the agency and citizens, and of delivery for services and products. Typically, at this point, a special team is appointed to look after the social media engagement and issues.

During the institutionalisation phase, agencies can use the honeycomb framework discussed earlier to understand and develop their presence on social media platforms. Along with their framework, Kietzmann and colleagues presented guidelines for developing strategies using 4C: Cognize (recognise and understand the social media landscape), Congruity (suited to different social media functionalities and goals), Curate (how often to chime into the conversation and who should represent the agency) and Chase (understanding the velocity and flow of information) [6].

Mergel studied the adoption of social media in the US federal government and reported his observations in [20]. There are two different approaches prevalent in adopting social media: top-down and bottom up. In the top-down approach, the social media initiative comes from the executive managers to staff. In this approach, the social media enters the institutionalisation phase quite early. In the bottom-up approach, the use of social media comes from the staff at the experimental phase. Mergel also found the following factors played a role in the adoption of social media: drive from stakeholders, need for bi-directional interactions, desire for knowledge sharing, having a presence in social media, better engagement, networking and data mining.

4 Social Media Applications in Government Services

Social media has been used in government services in recent times, and its adoption continues to grow. Magro reviewed social media use in e-government in 2012 [21]. He surveyed the literature from 2007 to 2011 and categorised them in different themes such as disaster management, strategy and policy, citizen trust,

and participation and digital divide. Similarly but more recently, Mainka and colleagues provided an overview of use of social media in the government sector, based on a case study of 31 international cities [22]. They found that Twitter was the most popular platform used by government, followed by YouTube and Facebook. Abdelsalam and colleagues studied the use of social media by the Egyptian government through their websites [23]. The study shows that 23.2 % of the government agencies have a Facebook link in their websites (considering the active websites only). This is followed by Twitter (13.4 %) and YouTube (11.2 %).

There is still scope for more usage of social media in government sector. The study by Kuzma in 2010 found that only 30 % of Asian governments make full use of social media technology to communicate and disseminate information to their citizens [24].

In the following, we present some example applications of social media in the government sectors, in a variety of domains.

4.1 Human Services

The Australian Government Department of Human Services (also referred to as “Human Services”) has been an early adopter of social media, thanks to innovative and forward thinking communication staff and managers who recognised as early as 2009 the potential of social media to support their customers and improve service delivery.

Human Services uses social media to listen to and engage with their customers. They do so through both Twitter and Facebook (where they have their own accounts) as well as joining online communities where appropriate. They have found that social media provides an opportunity to build relationships with citizens online, increasing trust.

Since 2009, Human Services has appointed and trained a (growing) team of communication staff to engage on social media. They have also developed processes and policies to ensure good governance and mitigate the risks inherent to a government engagement on social media. (We refer the interested reader to Chap. 2 for more details.)

4.2 Disaster Management

Disaster management is probably the most highly publicised domain when we consider the use of social media. A large number of scientific literature, news reports and case studies can be found about this topic. Social media was, for example, used extensively in the Taiwan Typhoon Disaster in 2009, during the

earthquake in Haiti in 2010, the Queensland floods in 2012, the Boston Bombing in 2013,¹ and, more recently the earthquake in Nepal, to name a few instances [25–27]. We briefly describe its use in the Taiwan Typhoon and the Haitian earthquake disasters below.

The Taiwan Morakot Typhoon Disaster—Huang and colleagues presented a case study on typhoon Morakot which occurred during 8–10 August 2009 in Taiwan [28]. The typhoon caused widespread damage, leaving 600 people dead and 24,950 people displaced. As soon as the typhoon started to hit Taiwan, people reported information about the real-time situation in the forum PTT,² one of the most popular social networks in Taiwan, which has more than 1.2 million registered users. Concerned PTT users created an unofficial Disaster Report Center, where people from affected areas could not only report the situation in real-time but also request assistance. While this is not an example of social media use by a government agency, it is an interesting case of social media being used in emergency management, complementing government activity. During the initial hours of the disaster, when the government services were overloaded, this unofficial center helped to co-ordinate the activities using local volunteers. The web site was integrated later into the local government’s communication system to provide an official response to the people.

Haitian Earthquake—Yates and Paquette present a case study of the 2010 Haitian Earthquake to understand the role of social media in emergency knowledge management in [26]. The US took a lead in the rescue efforts after the 2010 Haiti Earthquake involving the United Nations, US agencies and many other countries. This was the first time the US government used social media technologies such as wiki and collaborative workspaces as the main tools for sharing information and knowledge. A SharePoint system was used for knowledge sharing across the traditional boundaries and helped create a transient collaborative space.

4.3 Beyond Disaster Management: Building Disaster Resilience

Government agencies also use social media to build disaster resilient communities. Three core elements form disaster resilience, as shown in Fig. 3 taken from [29]: Emergency Management is one element, but Disaster Risk Reduction and Community Development are also required. Social media can be used as a tool to achieve goals in these three elements.

Emergency management: one of the goals for disaster resilience is to build safe communities through shared responsibility. Social media can help in different

¹<http://www.govtech.com/public-safety/Social-Media-Big-Lessons-from-the-Boston-Marathon-Bombing.html>.

²<http://pttemergency.pixnet.net/blog>.

Fig. 3 Three elements of disaster resilience



ways. For example, it can be used to *generate alerts* by listening to social media and detecting potential emergencies (e.g., the ESA system described in Chap. 12); to *disseminate information* about disaster *preparedness* to the targeted communities, to *coordinate community responses and recovery* by creating social media sites targeted for an event (e.g., Nepal Earthquake³).

Disaster risk reduction: the goal here is to minimise the residual risk. The social media's capability to disseminate information can be used to achieve this goal by providing information about disaster risks, supporting discussions on forums on ways of minimising risk, providing post-event information about the lessons learned and improving the resilience capacity, etc.

Community development: this is about building a community, so that it can provide informational and emotion support during and after disaster. The core idea behind this is to increase the social capital. The *Next Step* online community, described as part of Chap. 2 and more fully in Chap. 9, is an example of how government agencies can build a targetted community to increase social capital [30].

4.4 Transport

In general, social media is used quite heavily in the transport sector. Social media applications are helping users in a range of activities from finding the best route to travel from point A to point B, navigating through cities, to finding interesting places. It is worth noting that public transport is itself the third highest location (26 %) where social media is used after home (93 %) and work (32 %) [31]. A comprehensive study of the use of social media in transportation is presented in [32]. The study reported the results of the survey done for 34 transit operators in

³See, for example: <http://social-media-for-development.org/nepal-earthquake-how-social-media-has-been-used-in-the-aftermath/>.

USA and Canada. 85 % of these agencies are using social media to increase customer satisfaction and 76 % to increase the image of the agency. They use social media in a wide range of activities, such as posting agency news, providing real time service alerts, service information, and meetings and event notices. The report also identified some of the barriers in adopting social media. Two key barriers reported are: lack of staff to look after the social media activities and the use of social media by customers to vent their frustration and anger (i.e., criticising the agency).

Another comprehensive work on the use of social media for transport sector is presented in [33]. It provides numerous case examples of how social media has been used by agencies for various purposes, including how to develop policies and procedures, drawn from industry practices. The case examples include all modes of transportation, such as mass transit, highways, aviation, ferries, bicycling, and walking. Similarly, the use of Twitter messages based tools to move people in New York City is reported in [34]. The use of social media tools in the transport sector is getting popular for a number of reasons: (a) social media platforms are free, (b) their reach and coverage are very wide, i.e., the message can cover the wide area and reach a large number of people, (c) the platforms provide near real time delivery of messages, which is helpful to convey alerts and thus direct traffic appropriately, and (d) social media provides a platform for crowdsourcing (citizens can create share content—e.g., show pictures of a problem in situ).

Government agencies also often exploit social media to communicate with their customers, for example to provide real-time road closures and traffic alerts, to disseminate information on planned roads closures and events, or to give road safety messages. For example, the state of NSW in Australia uses a social media page to inform, motivate and engage citizens through a number of social media platforms (<http://www.transportnsw.info/en/travelling-with-us/keep-updated/social.page>) such as Twitter, Facebook and YouTube. They have different accounts for different modes of transports as well as different geographical regions. There are nearly 34K people following the metro traffic in the Twitter. Similarly, VicRoads (the transport authority in Victoria, Australia) uses social media extensively—see <https://www.vicroads.vic.gov.au/about-vicroads/how-we-use-social-media>. In a nutshell, the goals of social media in transportation are to inform, motivate, and engage citizens in real time to improve transportation services.

4.5 Policy and Planning

Social media has also been used in the *planning* of government activities: from seeking new ideas for developments to seeking feedback on existing government activities. For example, the Obama administration used social media (change.gov)

to inform policy through the participation of citizens during the transition phase from November 2008 to January 2009 [35]. In Australia, ACT Senator Kate Lundley launched “Public Sphere”⁴ in 2009 to encourage public debate and solicit comments, as a step towards an open government through Gov 2.0. A “Public Sphere”, according to Habermas [36], is a space that “...through the vehicle of public opinion it puts the state in touch with the needs of society”.

The use of social media is not limited to federal/central governments. Local governments are also using social media to provide more engaging planning experience to citizens. For example, Future Melbourne⁵ engaged people in the design and strategy of the future shape of their city. The city of Wellington in New Zealand introduced E-petitions to improve citizen participation [37]. In these initiatives, citizens are encouraged to contribute to the design of government policies and have a voice. Fredericks and Forth presented the study of participatory planning in the four local government areas of Brisbane City Council, Gold Coast City Council, Redland City Council and Toowoomba Regional Council in South East Queensland, Australia [38]. They also observed that the use of social media can avoid political backlash of policies by giving ownership to the citizens through active participation in the planning process. Though social media does not replace physical settings like town hall meetings, it creates avenues for participation that complement existing participatory planning processes.

One interesting example of people’s participation in economic activity through social media technology is the Italian project Kublai [39]. Kublai is a small online community that provides people in creative industries an opportunity to develop projects by discussing them with like-minded people. The project had over 1600 registered users discussing 250 creative projects of which 60 have produced written documents. The main tool in the project was developed using Ning.⁶

We have so far discussed in this section how social media platforms can be used to engage citizens to help with planning and with the development of policies, and to obtain feedback on current policies. In these approaches, governments initiate the discussion topics and motivate citizen to participate. A different approach is to collect content from different social media about a certain topic (e.g., “listening to social media”), analysing the content, performing analyses to extract useful information to formulate policy. One such approach is proposed by Charalabidis et al. [40]. This is a bottom-up approach, consisting of four stages: Listen, Analyse, Receive and Act as shown in Fig. 4. In the listen phase, the policy makers listen to different social media and monitor what citizens are discussing on a certain topic. The analyse phase involves extracting positions and opinions. The receive phase deals with getting all relevant data and displaying it for effective use and exploitation. The final phase is to act on it by posting relevant policies

⁴<http://cpd.org.au/2009/09/case-study-public-sphere-as-a-gov-2-0-example-of-open-government/>—accessed September 29th, 2015.

⁵<http://www.futuremelbourne.com.au/wiki/view/FMPlan>.

⁶<http://www.ning.com/>.

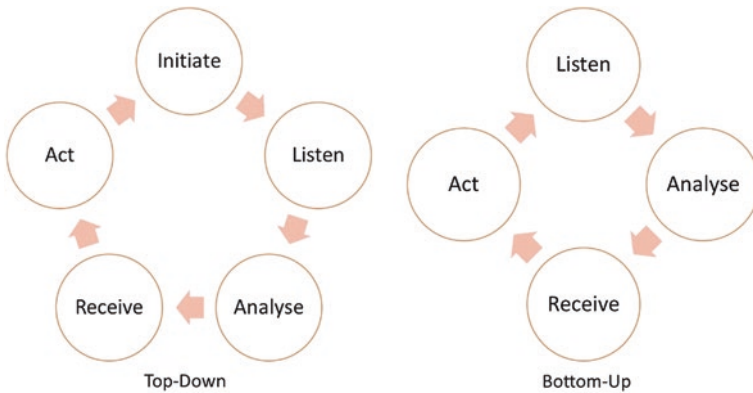


Fig. 4 Two approaches on using social media for policy formulation

and initiating discussions to collect feedback. The first three steps are called passive crowdsourcing, whereas the final step is active crowdsourcing on a particular topic or policy. When a government agency listens to its citizenry by listening to social media, it essentially performs the first three phases of this approach (see, for example, this use of social media by the Australian Government Department of Human Services in Chap. 2, facilitated by the tool presented in Chap. 11).

The second approach is a top-down approach, as shown in Fig. 4, where the process starts with active crowdsourcing on a specific topic. Staff at a government agency may probe the public by posing questions on social media. They then listen to the on-going discussions, analyse them and act on the content by formulating the policy. The formulated policy is then fed back to the citizens to get feedback. The process continues until the policy decision is made.

4.6 Government Transformation

Social media has a big impact not only in government sectors, but also on governments themselves. The impact of social media in transforming governments in North Africa and Middle East from Autocracy to Democracy in 2011 has been well recognised and noted in the literature as Arab Spring [41]. According to Ghannam [42], social media played a vital role in informing, mobilising and creating communities, increasing transparency and seeking to hold government accountable. As social media is used by millions of people, it becomes a tool for raising public awareness as well as gathering public opinion. The expectation is that there would be more than 100 million Arab users soon who are engaging on the Internet. In addition to popular global social media, people are using and engaging in locally created social media sites such as NowLebanon.com based in Beirut, and Aramram.com, 7iber.com, Ammannet.net, and AmmonNews.net,

all based in Amman. Social media has also been used in activism and war. Some examples noted in the literature includes the use of social media to make the world aware of the shooting of Neda in Tehran in June 2009; and its use by Hezbollah in 2006 to create a perception of failure for Israel, etc. [43].

4.7 Campaigning

Finally, social media can of course be used by individuals in government, to inform citizens of their whereabouts and actions, and for campaigning purposes. Politicians now use Twitter, Facebook and other social media platforms extensively to keep the public informed and to connect with their constituency. They also use these platforms for campaigning purposes. The use of the social media to interact with citizens during Obama's first election in 2008 was unprecedented. He established the Barackobama.com site in which every page had links to social media sites like Facebook, MySpace, YouTube, Flickr, Digg, Twitter, Eventful, LinkedIn, Blackplanet, Fainbase, Eons, Glee, MiGente, MyBatanga, AsianAve and DNC Partybuilder [44]. Other examples of the use of social media for campaigning and elections are discussed in [45–48].

5 Challenges in Using Social Media Government Services

Sobaci and Karkin studied whether the use of Twitter by mayors in Turkey provided better public services [49]. They observed that Twitter was largely used for information sharing and personal messages, and that its use for transparent, participatory and citizen-oriented public service delivery was not common. This is potentially problematic, as the use of social media can set expectations of a two-way communication and of being listened to. This brings us to the challenges of employing social media in the government sector. Some of these have been identified by government agencies who trialled the use of social media for some specific purposes,⁷ others have been pointed out by researchers who studied the use of social media in the government sector. Issues include privacy, security, data management, accessibility, social inclusion and governance [50]. Challenges include resourcing the social media activities, acting on the insights gained, setting up

⁷See, for example, “lessons learnt” from the FutureMelbourne experiment: http://www.futuremelbourne.com.au/wiki/pub/FMPlan/WebHome/Future_Melbourne_Wiki_Post_Implementation_.pdf— accessed September 29th, 2015, or the experience of the Australian Department for Human Services in Chap. 2.

guidelines and policies, and evaluating success. We now briefly describe some of these issues and challenges.

5.1 Privacy, Security and Data Management

The privacy of an individual has become one of the critical challenges in the use of social media in general. The issue is even more important in government services as governments have a duty of care towards their citizens. Both social media providers and users, whether individuals or organisations, are struggling to deal with the privacy issues.

There are typically two views on the privacy issue in social media. Some people think that individual privacy is not an issue as people are willingly sharing information on social media [51]. This argument is led by Facebook founder Mark Zuckerberg and other social media service providers. The argument is that, if sensitive and private data is easily accessible in social media, it is because users have voluntarily submitted it, and thus it is not an issue. For example, people share their physical location, photos of family holidays and children, intimate details of their struggle and triumphs. This suggests that social media users are not concerned about individual privacy. There is also a widespread perception and belief that the new “digital generation” is not concerned about privacy.

In contrast, some believe that privacy is even more important than before. Some users are deeply concerned about personal information being easily accessible and shared on social media [52]. Users do not know where the information is stored, who can access it for what purpose, and what the rules and laws govern the information. Research also shows that a significant portion of users who share personal information on social media regrets it later [53], as sometimes the disclosure of information carries significant consequences such as losing a relationship or a job [54].

The privacy setting in social media is typically left to the users, who often struggle to understand the privacy setting in the social media sites like Facebook and their consequences [55]. Addressing this issue requires a better privacy-aware interface design, where users are visually aware of what they are sharing with whom. In addition, many social media platforms like Facebook and Twitter support a large number of third party applications. These third party applications can extract identifiable information from Facebook and share it with advertisers [56]. The protection of users’ privacy from third party is tricky and often difficult to control.

Governments around the world have tightened their privacy laws to protect individual privacy. For example, the Australian Privacy Principle (APP) 11 in the Australian Privacy Act 2012 deals with data breaches that requires organisations that hold personal information to take reasonable steps to protect the information from misuse, interference and loss, and from unauthorised access, modification or disclosure. However, voluntarily submitted citizens’ data is not directly protected by APPs; this thus includes the publicly available social media data (such as

Twitter, Facebook, etc.) and data stored by overseas companies. In the USA, there are a number of acts that cover the privacy of individuals, such as the Children's Online Privacy Protection Act (COPPA) and the Federal Information Security Management Act (FISMA) [50]. Yet, privacy issues are still challenging.

Security and data management are issues related to privacy. Having collected data from the public through listening to social media passively or through active crowd sourcing, how is the data securely managed and stored, if it is considered to potentially contain sensitive data? Finally, the large volume of data that might be acquired can compound the problem of storing it securely and managing it efficiently.

5.2 Resourcing Social Media Engagement

When an agency decides to engage with the public on social media, it must resource the activity(ies) appropriately. People who participate in social media conversations typically expect a prompt response to a question, regular updates, etc. An agency engaging in social media is expected to behave in the same way: in particular, it is expected to engage frequently and answer questions rapidly. It is also expected to provide useful and accurate information. This requires the agency to make the resources available for these tasks (e.g., not treat the task as an add-on to someone's existing job), and potentially train staff on how to engage in social media and behave appropriately. Some staff might find it difficult to engage with new technologies and processes, or be fearful of public failure. This must be handled with care and sensitivity.

Many government departments have policies which prevent their staff from using social media at work. As a result, staff do not have access to the internet and to social media through their normal IT systems. This clearly poses a challenge to enable some staff to access social media for the purpose of having the agency engaging in social media.

Policies and processes must be in place, for example to ensure the accuracy of the information provided, or to govern and mediate the many voices that provide input into a crowd sourcing activity.

None of these tasks are straightforward. We discuss the issues and challenges of establishing guidelines, policies and processes below. The Australian Department of Human Services also discuss these issues in their context in Chap. 2.

Finally, when engaging in social media, one needs to deal with potentially very large volume of information ("big data"). This clearly poses the challenges of processing it efficiently and effectively in order to gain the insights that were sought and to properly engage with the public. Computational tools must be employed to help with this task. While there are a number of commercial and research tools available to help with the task of dealing with social media, choosing a tool to use is not easy, as tools typically support different tasks to various degrees.

5.3 Having Patience and Establishing Trust

Developing a social media presence takes both resources and time. There is a need to recognise that an online community develops overtime, through constant engagement and care. As an example, one does not get a large number of followers immediately upon setting up a Twitter account or a Facebook page. This occurs when people realise that it is worth following the account.

Government agencies who want to use social media not only as a way to disseminate information but also as a way to listen to citizens must build a trust relationship with the public (to avoid being seen as “big brother”). Once trust is established, and an online community has formed, there is a need to protect it or the investment that was made might be lost.

5.4 Understanding the Reach of Social Media Engagement: Inclusion

While many people are now using social media, one must be aware that not everyone will obtain their information from social media and engage with it, if only because of access issues (e.g., not everyone one might have access to the internet, or know how to engage with social media). It is thus important to recognise that social media is one channel of communication amongst others, and try to reach people who might not be included in the social media engagement through other means. Especially for a government, inclusion is key.

5.5 Acting upon the Information Gathered

When an agency engages with the public to obtain ideas for or feedback on policies, it must do justice to people’s time, effort and expertise, and act on the ideas and feedback received. This should be done in a transparent manner, or it will be at risk of a backlash from the public.

This is potentially a challenge for a government agency, if it had an a priori idea of what it wanted to implement and was not totally open to new ideas, or if it received many different opinions. In the latter case, processes must be in place to be able to decide how to bring all the ideas into a coherent whole, or which idea to favour (if it is not based purely through a democratic process), and to be able to explain to the public how the decision was made.

6 Guidelines and Policies

A large number of governments departments and agencies have started using social media as a medium to disseminate information to citizens and interact with them. As the social media tools are evolving, there are many unknowns about the effect of social media including reputation of the departments or even governments when things go astray or wrongly. In the early days of social media adoption by governments, social media was used without the development of guidelines or policies specific to social media use. As it was recognised that traditional communication policies are not always applicable to this new medium, new policies and guidelines started to be established. These are still evolving, as public sector staff obtain more experience with this new communication medium.

A large number of government organisations have developed the policies and have made them publicly available. The Center for Technology in Government has reviewed the publically available policies and guidelines and identified eight essential elements [57], as shown in Fig. 5: (1) employee access, (2) account management, (3) acceptable use, (4) employee conduct, (5) content, (6) security, (7) legal issues, (8) citizen conduct. We explain them briefly below:

Employee access: this element covers who can access which sites. Though the access to social media was denied to employees at the beginning, when it was feared that social media would be used for personal reasons rather than work-related, this is no longer valid when social media access becomes a part of someone's work. A social media policy must thus clearly state which social media sites can be accessed by whom and for what in the workplace.

Fig. 5 Eight essential elements for developing social media guidelines and policies



Account management: this element covers all aspects of social media accounts under the name of the agencies, including who can create, maintain and post from these accounts. It is important to keep track of all social media accounts and make them publicly available. It is also important to record the purpose of each account.

Acceptable use: this elements covers the circumstances under which an employee can use office resources for personal and private usage, and penalties for violating the policies. Clear boundaries between personal and professional uses need to be drawn so that employees know what is expected from them.

Employee conduct: this element covers the ethical code of conduct for the employee and sets out policies on what are the right and wrong behaviours of employees when engaging on social media. Most organisations have existing policies on ethical behaviour and use them as guidelines. In some cases, new guidelines needs to be developed to target social media specific cases such as online bullying.

Content: this element deals with content: who is allowed to post content in the official social media sites, who is responsible for content creation, verification (i.e., ensure its accuracy) and production, etc. Depending on the nature of the work and the sensitivity of the content, different government department and agencies may choose different strategies from minimum editorial control to assigned editorial person.

Security: this element deals with the security issues related to using social media. It covers two aspects of security: technical and behavioural. The technical aspect deals with the policies of managing user names and passwords of different social media accounts. The behaviour aspect deals with threats pertaining to certain type of behaviours by users in social media, more specifically spear phishing and social engineering.

Legal Issues: this element deals with policies to ensure that all activities in social media are following existing laws and regulations such as privacy, freedom of information, public disclosure and accessibility. For example, posts in social media site should be accompanied by relevant disclaimers.

Citizen conduct: this element deals with policies and guidelines related to citizen's participation on social media sites. As social media provides a two way communication between the government agencies and citizens, agencies should have a clear policy about whether citizen can participate, whether what they contribute is moderated or not. There is also a need for clear instructions for citizens regarding their behaviour on the agency social media site, etc.

Developing the policies for the use of social media in public sector within existing rules and regulation poses many challenges. There is a need to harmonise the policies. Consider for example engaging in social media in the process of formulating a policy. An agency might be soliciting comments on the new emerging policy. Citizens thus engage with the agency, and, through this engagement, they might ask specific questions about the policy, which the agency cannot answer due to laws preventing it from responding to questions during the notice and comment period. This is clearly problematic, as the expectation of citizens using social media is to get the response immediately. Unless such policies are harmonised,

citizens may feel ignored during a critical time. Jaeger et al. also identified accessibility and equity of access as key issues in the context of social media [58]. Social media platforms may not comply with the governments accessibility policies as many social media platforms are not built for disabled people.

6.1 Maturity

The use of social media in government services has been reported many times in the literature, with a key aspect being citizen participation and transparency (and openness) of government. However, various studies report that this is still in the infancy level [59]. In their work, Lee and Kwak present an open government maturity model for social media in [60].

6.2 Cost of Democratisation

There are costs associated with the adoption of social media in government services, as has already been pointed out above (e.g., resources required). Modelling that cost is a challenge. Bryer has presented a way of modelling cost in social media [61]. We briefly describe his model below.

As social media is about the participation of citizens using information and communication technology (ICT), there are four costs associated with public participation as shown in Fig. 6: production cost, participation cost, ICT cost and the democratisation cost.

The production cost refers to the cost to the agency related to development and implementation of the social media activities. This includes staff cost, facility use, cost for generating content and verifying it, etc. The participation cost is the cost that has to be borne by the citizens to participate in social media activities. This includes internet, computer or mobile device costs. The third cost is the ICT cost. This includes ICT support cost related to the implementation, deployment and

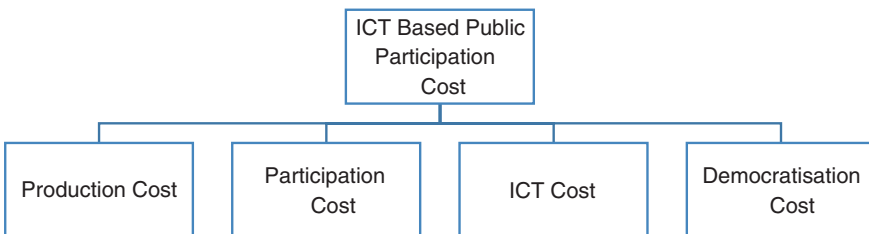


Fig. 6 Cost of adopting the ICT based public participation technology like social media