



Suggesting frameworks of citizen-sourcing via Government 2.0

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ABSTRACT

Through various platforms enabled by Web 2.0 technologies, citizens can collectively create public information, provide service, and take part in policy processes. Pushed by the Open Government Directive of the Obama administration, citizen-sourcing may be a new mode of government operations in the U.S. This paper suggests two frameworks to examine the emerging mechanism. The first framework provides three dimensions of citizen-sourcing initiatives: purpose (image-making or ideation), collective intelligence type (professional knowledge or innovative ideas), and strategy (contest, wiki, social networking, or social voting). Second, the paper presents a framework for assessing current citizen-sourcing initiatives. Its categories include design evaluation, process evaluation, and outcome evaluation. The performance of citizen-sourcing primarily depends on the appropriateness of the platform design. The effectiveness of the process needs to be evaluated in terms of the Open Government Directive's three pillar goals of transparency, participation, and collaboration. Evaluating the impact of citizen-sourcing will reveal whether citizen-sourcing is rhetorical or if it actually exerts significant effects on society.

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1. Citizen-sourcing as a new wave

The recent emergence of cutting edge information and communication technologies (ICTs), often called Web 2.0, has led to a new trend in the citizen-government relationship (Dutil, Howard, Langford, & Roy, 2007). Web 2.0 includes social networking services (Facebook), social media or multimedia sharing (YouTube), wikis, blogs, micro blogs (Twitter), and mash-ups (Bertot, Jaeger, & Grimes, 2010a; Millard, 2009). These new ICTs are characterized by their bi- and multi-directional digital connections, which enable citizens to engage in collective decision-making and to collaborate on a task via online networks. Some government agencies now base policymaking and service production on input from the public. This phenomenon as a new trend is called *citizen-sourcing*, where *sourcing* refers to “how government departments and agencies obtain the services they need to solve their mission delivery requirements and how those decisions are reached” (Breul, 2010: S193). Only some researchers and practitioners are using the citizen-sourcing concept (Dutton, 2011; Hilgers & Ihl, 2010; Lukensmeyer & Torres, 2008; Torres, 2007), but a variety of practices that we may consider citizen-sourcing are happening on government agency webpages and social media sites.

Citizen-sourcing originates from three roots. First, the key purpose of citizen-sourcing is citizen engagement. Combined with governance and networking, citizen engagement has replaced, to a substantial extent, the New Public Management (NPM). NPM supports out-sourcing

or contracting out conventional governmental missions to the nonprofit or private sector, while citizen engagement draws on the collective knowledge of the public. With an emphasis on technology-enabled participatory democracy, citizen-sourcing has the potential to function as a new mechanism for governments in the post-NPM paradigm. Citizen-sourcing adds two new virtues (*from the people* and *with the people*) to the three classical cornerstone principles of democracy (*of the people*, *by the people*, and *for the people*).

Second, crowd-sourcing in the business sector and free/open-source software development imbue governments with the value of collective intelligence. While crowd-sourcing denotes Internet-driven private-sector efforts that tap into a collective crowd consciousness to design products and create content (Boutin, 2006; Brabham, 2008a, 2008b; Howe, 2006; Lukensmeyer & Torres, 2008; Tapscott & Williams, 2008), the open-source movement has also generated self-organized projects for collecting knowledge from semi-professionals (Bonaccorsi & Rossi, 2004; Ghosh, 1998; Lancashire, 2001). Both mechanisms collect the knowledge that is widely dispersed among the public by means of Web-based technologies.

Last but not least, the presidential leadership and top-down initiatives in the U.S. create an environment where government agencies place high value on collaboration with citizens and learning from the knowledge of crowds. Since taking office on January 21, 2009, President Obama has envisioned a new direction—open government—for the U.S. by signing the *Memorandum on Transparency and Open Government*, which ushered in a new era of transparency, participation, and collaboration (*Executive Office of the President*, 2009). The Open Government Directive promises to equip agencies with the relevant tools and support necessary to leverage the

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knowledge of crowds (McDermott, 2010: 401; Wilson & Linders, 2011: 389). Government 2.0, or government's adoption of Web 2.0 (Johannessen, 2010), is a new way to describe the current use of these technologies to socialize government services, processes, and data (DiMaio, 2009; O'Reilly, 2010). The Obama administration has made citizen-sourcing a priority among the extensive technological support of Government 2.0. Open government and its enabler, Government 2.0, are not just a trend in the U.S. but a global trend in the public sector (Schellong, 2009: 19–20).

Not only is there a flood of compliments, but also concerns from commentators who observe the open government trend. Yet neither academics nor practitioners have analyzed systematically *what* governments are doing in terms of citizen-sourcing and *how* and *why*. A knowledge gap exists between the vision for employing Government 2.0 and the reality (Bronk & Smith, 2010). A growing number of agencies are now working on citizen-sourcing projects, but they have not yet mapped their status.

This paper aims to bridge the knowledge gap and to guide and further promote the citizen-sourcing projects in progress. To that end, and with a focus on the U.S. context, this paper suggests two frameworks to disentangle government-driven efforts to effectively bring citizens into citizen-sourcing projects and help identify strengths and weaknesses of those efforts. The first framework illustrates multiple dimensions to categorize citizen-sourcing initiatives using a set of dimensions that describe their contextual components. The second framework is a preliminary toolset to assess the performance of citizen-sourcing initiatives.

This essay is structured as follows. The next section will discuss potential benefits of citizen-sourcing. The subsequent sections will describe the two frameworks in detail. Finally, the paper concludes with suggested implications for research and practice.

2. Benefits from citizen-sourcing

2.1. Benefits through innovation

2.1.1. Innovation of idea collection

According to the literature on crowd-sourcing (Brabham, 2008a; Brito, 2008; Ghosh, 1998; Hertel, Niedner, & Hermann, 2003; Howe, 2006, 2009; Lévy, 1997), the rationale of collective wisdom is that prudent crowds insist on the presence of non-experts or dabblers, who are neither professionals nor elites. Under the right circumstances, “groups are remarkably intelligent, and are often smarter than the smartest people” (Surowiecki, 2004: xiii). For a problem that requires the wisdom of many, the success of a solution depends on its materialization from a large body of amateur contributors.

Even though collective wisdom is not a concept novel to the digital age, the manner of gathering this wisdom has revolutionarily changed with Web 2.0 technologies. In particular, information sharing, peer creation, and collective deliberation facilitated by Web 2.0 enable the efficient and effective collection of geographically dispersed human wisdom. Overcoming temporal and spatial restrictions in public participation, Web 2.0 helps realize, to some extent, the ideal of direct democracy in ancient Greek polis or agora.

2.1.2. Innovation of information and service production mode

New structures of online network communication can shift the mode of production from one-to-many manufacturing to distributed, participatory, and many-to-many creation. ICTs make a third mode of production possible: peer-to-peer (P2P) collaboration (Peters & Araya, 2008) or social collaboration (Benkler, 2006). Such a collaborative mode enabled by Web 2.0 denies the traditional dichotomy of production vs. consumption by fueling *prosumerism*, which denotes an active role of an individual consumer who becomes more involved in the production process (Steele-Vivas, 1996; Tapscott, 1995; Toffler, 1980). Similarly, the technological transition from Web 1.0 to Web

2.0 has influenced the governmental approach to information production. Web 2.0 enables the “outside-in wisdom of crowds approach” (Chun, Shulman, Sandoval, & Hovy, 2010: 2), where the public, outside of an organizational boundary, creates information through collaborative networking. This approach contrasts with the “inside-out authoritative know-all approach” (Chun et al., 2010: 2) in the Web 1.0 age, where an organization is the key creator and organizer of content and members of the public are merely consumers of the information government produces.

In this sense, citizen-sourcing may impel government and the public to take on alternate roles as providers and consumers of information and services (Bovaird, 2007; Cassia & Magno, 2009). Traditionally, a government provides services to citizens, who consume services without questioning or taking part in decisions over policies that led to the adoption of services. Driven by policy impacts from the Open Government Directive, citizens' roles have shifted, allowing the government to become a consumer to whom citizens provide information and useful professional services via the citizen-sourcing mechanism. Citizen-sourcing, therefore, may change the government's perspective on the public from an understanding of citizens as “users and choosers” of government programs and services to “makers and shapers” of policies and decisions (Lukensmeyer & Torres, 2008: 232).

2.2. Benefits through engagement

Potential benefits of citizen-sourcing include enhanced engagement with citizens, improving the citizen-government relationship, and facilitating policy implementation. First, citizen-sourcing is conducive to civic learning. Lukensmeyer and Torres (2008: 225) lauded its potential for improving citizen competence. A meaningful participatory initiative can “engage individuals in a process of learning from others, opening their minds to different and contested ideas, and reshaping their preferences through that learning” (Shkabatur, 2011: 12). Hence, civic education through participation in citizen-sourcing projects can deepen and enrich citizens' substantive knowledge of issues, broaden their understanding of key actors and the government's role, and hone their civic skills in using governance tools. In Pateman's (1970: 22–44) view, an enhanced level of citizen engagement can lead to an informed and involved citizenry that understands the concerns of a community and possesses tools to resolve them.

Second, citizen-sourcing can strengthen the relationship between citizens and government and soothe the conventional tension between both. When citizens feel less alienated from policy making processes, their perceptions of government policy tend to be more positive (Verba, Schlozman, & Brady, 1995). Participation through citizen-sourcing is not just about providing information to a government agency. According to Shkabatur (2011: 44), it is about political empowerment, a new channel of self-expression, better realization of individual and community values, and a democratic pursuit of one's beliefs and goals. The efficacy raised from direct participation may boost trust and confidence in government (Nye, 1997; Parent, Vandebeek, & Gemino, 2005), especially when government is no longer seen as a distant adversary, but as a partner in joint efforts to improve the quality of life for all citizens.

Finally, citizen-sourcing can ultimately minimize conflicts and thus increase the prospects of successful policy implementation. Shkabatur (2011: 11) argued that those who participate in citizen-sourcing may help government obtain legitimacy and political support to adopt new policies or test novel objectives. Even if the final outcomes that participation generates do not represent participants' individual preferences, studies have demonstrated that participants positively evaluate processes in which they are permitted to participate and in which decision-makers actually consider their views (Farina, 1997: 1027; Lind & Tyler, 1988: 147–172; Tyler, 2006: 3–4).

3. The framework of dimensions

This section seeks to create understanding about the contexts in which the aforementioned benefits are made possible. Table 1 suggests a set of three key dimensions to view a variety of citizen-sourcing projects.

3.1. Purpose

As described in Table 2, two main purposes of citizen-sourcing initiatives are identified and may be expressed as cool (making a cool image of government as an adopter of cutting-edge technologies) or hot (fostering citizens' enthusiastic participation in mass collaboration projects).

According to Margetts (2005: 81–84), governments, since the rapid diffusion of ICTs into the whole society, have been at risk of lagging behind in societies where an increasing proportion of citizens and businesses are accustomed to conducting their affairs electronically. Government agencies under pressure to keep pace with citizens and business expectations tend to adopt new technologies to simply demonstrate “we’re doing it too.” The Center for Technology in Government (2009) asked county government professionals in New York State, “What value can your agency gain from using social media tools?” Interestingly, “making a cool agency image” was a typical response, while other frequently given responses indicated that social media tools could enable collaboration, instant information sharing, and virtual community building. The responses related to coolness included increasing public perception of the agency as being “in touch” or “social” and readily able to react quickly to emerging technologies; reaching younger citizens; attracting the next generation of workers; and enhancing the citizenry’s image of government.

Citizen-sourcing also fits other serious purposes. Government agencies can crowd-source their way out of problems. Many agencies begin citizen-sourcing projects with the expectation that citizen-sourced innovative ideas will contribute to improving information, services, solutions or policies. Table 3 shows a shift in the perspective from the traditional government model to the citizen-sourcing model.

One of the primary goals of adopting citizen-sourcing is to involve citizens as co-producers of knowledge and information (Johannessen, 2010; Misuraca, 2009). For example, users of San Francisco’s 311 Twitter service (Twitter.com/SF311) instantly share information about infrastructure problems (e.g., potholes) with other citizens and the city government, and request various non-emergency city services (e.g., street cleaning). The municipal authority immediately responds to each tweet (a post or status update with 140 characters or less on Twitter, a micro-blogging service) and reports on the progress of solutions or repairs. By sending tweets, San Francisco citizens who use Twitter can directly provide the 311 service agency and fellow citizens with updated information and alerts.

Table 1
Dimensions of citizen-sourcing.

Dimension	Category
Purpose	<ul style="list-style-type: none"> • Image making • Information creation • Service coproduction • Problem solving • Policy making
Type of wisdom collected	<ul style="list-style-type: none"> • Professional skills and knowledge • Innovative ideas
Strategy	<ul style="list-style-type: none"> • Contest • Wiki • Social networking • Social voting

Table 2
Citizen-sourcing: cool or hot?

Cool	Hot
Image making (look cool!)	<ul style="list-style-type: none"> • Information creation with citizens • Service improvement with citizens • Solution development with citizens • Policy making with citizens

Furthermore, solutions are deliverables made possible by citizen-sourcing. Collective intelligence can help government agencies to solve some problems that government professionals could not, and at a lower cost. This is what is currently taking place in the National Aeronautics and Space Administration (NASA). Not only can crowd-sourcing provide technological solutions, but also suggestions for solving general problems in societies. For example, Ideas For Seattle (IdeasForSeattle.org) is filled with vigorous debates about diverse metropolitan issues—e.g., permitting on-street parking of scooters, expanding light rail, installing sidewalks, and revitalizing public parks. Seattle citizens share their own ideas about the problems citizens face, evaluate posted ideas, and make comments on them. The city government considers citizens’ postings on the website as potential solutions, and then reflects back to citizens what it learned from posted ideas and comments.

Citizen engagement is introduced into the policy process by using citizen-sourcing to enlarge and enhance policy-advisory processes, policymaking, and policy feedback. Surowiecki (2004) argued that the diversity of experience, opinions, and knowledge within a group can render the whole greater than the sum of its parts. Effective citizen participation can extend the body of evidence available to decision-makers, widen the range of views and experiences considered under policy impact, and harness civic energies of citizens to solve public problems. For some agencies, Government 2.0 may now become a new source of policy advice, enabling policymakers to bring together divergent ideas that would not come from traditional sources of policy advice (Lukensmeyer & Torres, 2008: 211).

3.2. Collective intelligence

Governments can source two types of information from citizens: professional knowledge and innovative ideas. On the one hand, semi-professional knowledge and skills outside a government agency can contribute to problem solving. On the other hand, the public, or the greater population, can provide governments with novel and innovative ideas on a given topic.

Governments solicit semi-professional expertise, a collection of which can become professional knowledge. Collective intelligence can solve given problems in less time and with less money (Howe, 2009). A representative example is NASA’s project to crowd-source solutions. When NASA scientists were stymied in devising a formula to predict solar flares in 2009, they posted their problem online and offered a prize to anyone who could provide a solution. The online contest, which awarded the winning solution entrant with a \$30,000 prize, led NASA to find the best solution. The new approach

Table 3
Paradigm shift to citizen-sourcing.

Traditional government	Citizen-sourcing
<ul style="list-style-type: none"> • Information dissemination model • Service provision model • Solution purchase model • Policy enforcement model 	<ul style="list-style-type: none"> • Information creation model • Service coproduction model • Solution creation model • Policy making model

Note. Adapted from Chun et al. (2010: 5).

of on-demand problem solving enables NASA to tap into up-and-coming professional knowledge distributed to amateur scientists and external professionals outside the agency in an easier way.

Meanwhile, useful ideas are not confined to positional leaders or experts (Cole, 2009). Concerning a variety of general issues more directly related to improving the quality of living, government agencies would like to hear from the larger population of citizens. The public's ideas are sometimes innovative enough to outperform and outsmart opinion leaders and policy makers. Ordinary people may possess useful information to enhance governmental decision-making, regardless of their professional status (Brabham, 2009a; Noveck, 2009; Rheingold, 2002). Given opportunities to share opinions on government, citizens are able to offer something more than the static responses made available to them in regular voting, opinion polls, and surveys.

3.3. Government 2.0 strategy

According to Wilson and Linders (2011: 387), technology is critical, but it is a tool, not a strategy. Contests, wikis, social networking, and social voting are identified as the main strategies for citizen sourcing that uses technologies. The four strategies are described in terms of *how* a government agency can acquire the wisdom of crowds and from *whom*. Table 4 offers a brief introduction of the strategies.

3.3.1. Contest

Holding contests is a business-oriented strategy drawing from crowd-sourcing, but contests may also be effectively used for government. The motivators for competition-driven citizen-sourcing are quite natural because material incentives and career opportunities invigorate participatory activism (Brabham, 2009b). Cash and prizes function as a powerful extrinsic motivation for active participation in crowd-sourcing contests.

Worthy of attention are certain practices that are already occurring. For example, some federal agencies have asked for citizens' help in creating short videos to inspire community involvement, spread information, and promote action. The Department of Health and Human Services encouraged citizens to generate content for the agency, such as the best H1N1 flu prevention video, by contributing on YouTube. The Environment Protection Agency (EPA) sponsored a video competition (*Our Planet, Our Stuff, Our Choice*) to raise awareness of the connection between the environment and material goods people consume, recycle, and throw away. The General Services Administration (GSA) ran a video contest on USA.gov, asking citizens to submit 30 to 90-second videos that show how its site has made their lives easier.

3.3.2. Wiki

A wiki denotes a collaborative website that can be edited directly using a web browser by anyone with access to it (see en.wiktionary.org/wiki/wiki). Non-monetary reasons motivate participants in wikis. Amateurism (commitment to hobbies) and altruism (voluntary contribution to society) are the two primary motives for wikivism and open-source participation (Bonaccorsi & Rossi, 2004; Ghosh, 1998; Hars & Ou, 2002; Hertel et al., 2003; Moore & Serva, 2007; Nov,

2007; Peddibhotla & Subramani, 2007; Rafaeli & Ariel, 2008). Interpenetrating prior studies, a common finding is that the fun- or hobby-oriented self-motivation of wikivists and open-source collaborators ultimately results in altruistic contributions. Voluntary participation in citizen-sourcing is more likely to be made by altruistic individuals who care about the whole society and their neighbors than by fun-seekers, hobbyists, and hackers.

In the U.S. context, practices of idea sharing via a wiki are shown mostly within federal agencies—Bureaupedia (Federal Bureau of Investigation), Intellipedia (Central Information Agency), Techipedia (Department of Defense), and Diplopedia (Department of State)—but the strategy is now also employed to gain innovative ideas from the public. The White House Open Government Initiative and GSA created a new public engagement tool called ExpertNet, a wiki which enables government officials to pose questions to the public about any topic they are working on and reach citizens with the greatest expertise or enthusiasm for a topic. It is expected that citizens can share their expertise through ExpertNet in ways that are timely, relevant, and informative for policymaking. Another example is the Our Archives wiki for the public, researchers, educators, genealogists, and staff of the National Archives and Records Administration (NARA) to share research tips, subject matter expertise, and knowledge about NARA records. The wiki creates an informal environment for cross-boundary (inside and outside NARA) information sharing.

3.3.3. Social networking

As a new genre for communication, social networking motivates participation primarily through the desire and expectation of forming new relationships and strengthening existing ones (Burke, Marlow, & Lento, 2009). A government's commitment to social networking sites may facilitate the acquisition of grassroots information (Ramos & Piper, 2006). The sites may also provide a forum for discussion and sustain a great deal of interactions (Sæbø et al., 2009: 46). In addition, governmental use of the sites may turn active visitors into fans of governmental agencies. As such, social networking may help government agencies mobilize popular support for what they are now doing and what they plan to do in the future.

For example, NASA has about half million fans on its Facebook page as of July 2011. The site acts not only as a top-down media source to give more people better information about what NASA actually does, but it also becomes a social, interactive medium to engage enthusiasts in chatting and sometimes discussing the agency's policy issues.

One example of the successful use of a micro-blogging service for citizen-sourcing is at the Department of Interior's U.S. Geological Survey (USGS). USGS runs the Twitter Earthquake Detector (TED) service (Twitter.com/USGSted) to monitor and report earthquakes, which was selected as one of the best case studies in *Twitter 101 for Business* (Business.Twitter.com/Twitter101/Case_usgs), a guide for getting started on Twitter. The service automatically gathers, summarizes, and maps tweets to provide a rapid overview of what people have experienced during an earthquake (Earle et al., 2010). Its reports often precede the USGS's publicly-released, scientifically-verified alerts. The social software tool is being used for communication with citizens during emergencies, as well as to receive information from citizens in time of a disaster or accident (Center for Technology in Government, 2009).

3.3.4. Social voting

Social voting allows people to post their own ideas, make comments on others' ideas, and rate them. Active participants in this mechanism reveal a unique motivator for engagement: they like to let their voices be heard by other citizens and by the government. Efficacy is a powerful motivator for encouraging their participation. Social voting overcomes drawbacks inherent in the traditional, institutional voting mechanism. An unlimited number of ideas can be evaluated without chronological or spatial constraints. Social voting

Table 4
Strategies to collect the wisdom of crowds.

Strategy	Mechanism	Motivator	Collected wisdom
Contest	Competition	Materials	Professional knowledge or innovative idea
Wiki	Collaboration	Altruism	Professional knowledge
Social networking	Networking	Relationship	Innovative idea
Social voting	Voicing out	Efficacy	Innovative idea

can start without a given agenda, and thus a priority agenda for discussion can also be chosen by vote. Government and participants alike can learn the reasons behind each rating based on others' posts. Many platforms for social voting are currently available as free-ware (e.g., IdeaScale, IdeaStorm, and UserVoice).

For an experiment with direct democracy, the Obama administration launched a suite of online engagement tools on its transition website (Change.gov) in its early months. The *Citizen's Briefing Book* was made to effectively collect ideas from the public to be presented to the president. More than 125,000 participants submitted 44,000 ideas and cast 1.4 million votes. Another democracy experiment on Change.gov, *Open for Questions*, provided American citizens with a direct line to the administration to ask questions about governmental efforts to get the economy back on track. After receiving more than 100,000 questions and 3.6 million ratings in less than 48 hours, President Obama responded to several top questions via an online town hall streamed live on WhiteHouse.gov. It made possible a new type of national issue-oriented town hall meeting enabled by technologies, and thus offered the President and policymakers a better sense of what is on the minds of the American people.

4. The framework for assessing citizen-sourcing

This section presents a framework for assessing how citizen-sourcing projects work. The framework approaches assessment of citizen-sourcing projects from three perspectives: design, process, and outcome. Table 5 summarizes the core criteria of evaluation.

4.1. Design evaluation

The appropriateness and quality of the design of the Government 2.0 platform for citizen-sourcing are vital to the performance of citizen-sourcing. There are four facets of design which need to be considered: sociotechnical design, functional design, procedural design, and Government 2.0 policy design.

Failures in designing Web pages, interfaces, software, or information systems often come from overlooking the organizational and institutional sides of the ICTs used. The ensemble view has challenged such a separate understanding of technical and non-technical sides, highlighting the interactions between social structures and technologies (Gil-Garcia & Hassan, 2008; Orlikowski, 2000; Orlikowski & Iacono, 2001; Orlikowski & Scott, 2008). Fountain (2001) argues, using the Technology Enactment Framework, that objective ICTs

are modified by organizational and institutional factors to become enacted technologies. The design of e-government reflects certain organizational forms and certain institutional arrangements (Cordella & Iannacci, 2010; Gil-Garcia, 2006; Luna-Reyes & Gil-Garcia, 2011). From this ensemble view of e-government, the design of a Government 2.0 platform is inevitably sociotechnical.

In line with the sociotechnical view, Shkabatur (2011) claimed that a vicious cycle is in place, beginning with a faulty institutional design (failure in considering organizational forms and institutional arrangements) and resulting in low performance:

Inadequate institutional design of digital platforms leads to poor results in terms of the quantity and quality of e-participation; poor results compel lack of impact; lack of impact induces further mistrust of participatory mechanisms on the part of potential participants; mistrust grows into apathy and reluctance to participate, which lead to poor performance of e-participatory platforms. (p. 41)

Therefore, problematic for performance is poor design, which may be a result of pressure to appear to be keeping pace with advanced modes, but doing so without any careful consideration of institutional arrangements.

The second basic criterion for design evaluation is to determine whether functional properties of citizen-sourcing platforms are appropriate for citizen participation and consultation. Many participants in the White House's direct democracy experiment addressed functional weaknesses regarding the platform itself instead of responding to given issues for discussion (Bittle, Haller, & Kadlec, 2009: 4). Government agencies need to evaluate the infrastructures of engagement in terms of whether they enable efficient, effective citizen-government interaction and communication. According to Rheingold (2002) and Surowiecki (2004), the working mechanism of networked intelligence that allows crowd-sourcing to deliver smart-sourcing requires knowledgeable crowds. For the "the more the wiser" principle underlying the crowd-sourcing mechanism, functional features of citizen-sourcing must appeal to more people. Ease of use, popularity, and visual appeal are important properties for collective intelligence to work.

Third, there are many design issues regarding procedure. The issues include who determines the agenda and what problems should have priority (Lukensmeyer & Torres, 2008: 228). Government staff members involved in the design of a website may set up agendas and procedures in advance without citizens' feedback. Shkabatur (2011) found that dialogs on many e-participation websites lack discussion about which points of view are legitimate, relevant, and thereby merit inclusion. Obviously, a procedural problem in that situation is the lack of site moderation. *Citizens' Briefing Book* is an example of the procedural problem. In that forum, a remarkable number of comments did not fit the topic of discussion. Moreover, optional anonymity provided the possibility for inappropriate comments and insults. Bittle et al. (2009: 4) observed "early submission bias;" that is, an idea that held an early lead in the social voting remained in the top position from the beginning and throughout the process. Again, problems in discussion-based citizen-sourcing arose from the lack of effective moderation, but another problematic situation may also arise if moderation extends to some level of censorship, which is contrary to the value of open discussion that underpins citizen-sourcing.

Another side of design evaluation is whether agencies have enforceable Government 2.0 policies, which could be the way to handle procedural problems. Hrdinová et al.'s social media policy report (2010: 2) claimed that developing a social media policy is an important first step for government agencies that are considering the use of social media, and ultimately serves as a key enabler for responsibly and effectively leveraging social media tools. Given the emergent nature of various Government 2.0 tools, relatively few U.S. governments

Table 5
Evaluation criteria.

Focus	Criteria
Design evaluation	<ul style="list-style-type: none"> • Sociotechnical design • Functional design • Procedural design • Government 2.0 policy design
Process evaluation	<ul style="list-style-type: none"> • Transparency • Openness of information about operations and decisions of government • Openness of information for participation and collaboration • Openness of participation and collaboration processes • Participation • Inclusiveness • Representativeness • Diversity • Collaboration • Communication • Partnership • Deliberation
Outcome evaluation	<ul style="list-style-type: none"> • Effectiveness • Impact

have actually established a formalized set of policies to guide their own efforts. Government agencies are faced with reinterpreting and applying old policies or creating completely new policies. One of those policy arrangements is to build and enforce strict rules that prohibit and eliminate inappropriate words. For example, the City of Seattle specifies language not allowed on its social media site articles and comments by banning the following (Hrdinová, Helbig, & Peters, 2010: 13): comments not topically related to the particular social medium article being commented upon, comments in support of or oppositional to political campaigns, profane language or content, sexual content, solicitations of commerce, and information that may threaten the safety or security of the public or public systems.

4.2. Process evaluation

The process for citizen-sourcing projects also needs to be evaluated in terms of the three pillar goals of the Open Government Directive. The basic description of the three principles is drawn from the *Memorandum for the Heads of Executive Departments and Agencies* (Obama, 2009).

4.2.1. Transparency

The selection of criteria for gauging transparency in citizen-sourcing needs to begin by taking a close look at the practical meaning of transparency for open government, as described by President Obama:

Government should be transparent. Transparency promotes accountability and provides information for citizens about what their Government is doing. Information maintained by the Federal Government is a national asset. My Administration will take appropriate action, consistent with law and policy, to disclose information rapidly in forms that the public can readily find and use. Executive departments and agencies should harness new technologies to put information about their operations and decisions online and readily available to the public. Executive departments and agencies should also solicit public feedback to identify information of greatest use to the public. (Obama, 2009)

As explained above, there are several components of transparency, a primary goal of open government. Regarding Government 2.0, the main discussion on transparency tends to address only issues of data and information. Transparent and comprehensive popular information is indeed necessary for e-participation in citizen-sourcing, but placing massive datasets on a website is not a guarantee for transparency (Fung, Graham, & Weil, 2007: 53). The Memorandum above extends the scope of technology-enabled transparency to government operations and decisions. In this sense, attention should also be directed toward transparency of information about collaborative and participatory processes for citizen-sourcing.

Government 2.0 can serve as a vehicle for crowd-sourcing transparency (Bertot, Jaeger, & Grimes, 2010a, 2010b). By means of new technologies, governments can make sure to release information immediately and make it available to the public for informed discussions and participation (Chun et al., 2010: 2). The informed dialog, in turn, will promote the collaborative decision making process. Citizen-sourcing projects require more than the existing transparency efforts, which include complying with the Freedom of Information Act, holding online meetings, and soliciting online comments to get feedback on proposed policies and regulations. Transparency should enhance citizens' participation and collaboration. According to Jaeger and Bertot (2010: 374–375), Government 2.0 has the potential to enable “citizen-centered transparency.” The origins of the emphasis on transparency center on the idea of an informed citizenry that engages in political discourse and shapes the future directions of government.

4.2.2. Participation

The Memorandum describes the direction toward citizen participation:

Government should be participatory. Public engagement enhances the Government's effectiveness and improves the quality of its decisions. Knowledge is widely dispersed in society, and public officials benefit from having access to that dispersed knowledge. Executive departments and agencies should offer Americans increased opportunities to participate in policymaking and to provide their Government with the benefits of their collective expertise and information. Executive departments and agencies should also solicit public input on how we can increase and improve opportunities for public participation in Government. (Obama, 2009)

As described above, knowledge is widely dispersed in society. Knowledge-based participatory inputs, therefore, should be extracted from various representative segments of the population. Virtues of participation in citizen-sourcing include inclusiveness, representativeness, and diversity. According to Bertot, Jaeger, Munson, and Glaisyer (2010: 57), one hurdle to widespread use of social media technologies for open government involves ensuring that those technologies are inclusive and accessible. Sæbø et al. (2008: 414) suggest that the demographic composition of citizen participation is an important criterion for e-participation evaluation.

Regarding the level of participatory representativeness in citizen-sourcing, optimism and skepticism coexist. Thousands of previously excluded people may now openly express and exchange their opinions and ideas, creating a vivid community of participation (Peristeras, Mentzas, Tarabanis, & Abecker, 2009: 17). However, poorly-designed and poorly-managed platforms for citizen participation are vulnerable to “mischiefs of factions” and “a majority rule running amok” (Madison, 1961: 79). Previous studies (Sanders, 1997: 351–354; Sunstein, 2000: 111–113) have found that such processes may reinforce social inequalities and further disempower groups who are supposed to gain a voice as part of the process. The historical pattern of civic and political participation in the U.S. has shown participatory inequality (Mossberger, Tolbert, & McNeal, 2008, 2003, Mossberger, Tolbert, & Stansbury, 2003), termed *ascriptive hierarchy* by Smith (1993), which implies that participatory inequality is attributed to socioeconomic classes. Citizen-sourcing may be subject to the *democratic divide*—“a divergence between people who do and do not use digital resources to engage, mobilize, and participate in public life” (Norris, 2001: 4). More recent findings focus on this concern about the gap in representativeness. Hindman (2007: 199) argued that regular bloggers discussing political and social issues are typically from socially elite backgrounds, both in terms of education and occupation. According to Shkabatur (2011: 37), some e-participation projects tap a specific form of expertise, especially programming skills, possessed by a narrow group of individuals, which results in a select and unrepresentative group of experts capable of participating in deliberation who are able to exercise a significant impact on decision making.

In addition, online participation behavior may decrease diversity in participation. Cole (2009) is concerned with the possibility of self-selection for online participation in social networking/media sites of government agencies. The fact that 96% of cyber readers only follow blogs that agree with their personal opinions indicates the self-selection phenomenon (Cole, 2009). Such a tendency generates a separation of blogospheres. Mossberger et al. (2008) found that e-participation tends to be popular among citizens who are already interested in government and thus have more experiences in visiting government-related websites. Government agencies should investigate whether this tendency occurs in citizen-sourcing and should conduct further research to determine whom they engage when they source their citizenry for policy innovation.

4.2.3. Collaboration

Collaboration in citizen-sourcing occurs between citizens and government, and among citizens. The following guidelines highlight the use of innovative ways to arrange collaboration:

Government should be collaborative. Collaboration actively engages Americans in the work of their Government. Executive departments and agencies should use innovative tools, methods, and systems to cooperate among themselves, across all levels of Government, and with nonprofit organizations, businesses, and individuals in the private sector. Executive departments and agencies should solicit public feedback to assess and improve their level of collaboration and to identify new opportunities for cooperation. (Obama, 2009)

The evaluation of collaboration should relate to *how* citizen-sourcing engages citizens in the work of government agencies. The three crucial principles—communication, partnership, and public deliberation—are drawn from recent literature. Collaboration criteria stress qualitative issues of citizen engagement. Sæbø et al. (2008: 414–415) argue that the quality of digital-mediated communication—for example, the tone and style of online postings—influences the performance of engagement. According to Wimmer (2007: 92), e-collaboration is about “partnering with the public via enhanced two-way communication channel.” Chun et al. (2010: 2) viewed the principle of collaboration more broadly: partnerships and cooperation among federal government agencies, across all levels of government, and with individual citizens to improve the effectiveness of government. In reality, the process of gathering innovative ideas from ordinary citizens is oftentimes not collaborative. In Hindman's (2007: 195–198) observation, when influential experts and a number of citizens participate together, professional elites likely become opinion leaders who are influential in formulating initial agendas, setting goals, and resolving disputes.

Collaboration in citizen-sourcing requires public deliberation and a positive attitude (or tolerance) for deliberation. According to Wilson and Linders (2011: 391), public deliberation promotes collaboration to tap into the wisdom of crowds while avoiding politically-motivated intrusions. Without collaboration by deliberation, discrepancies across individual political preferences would lead to time-consuming debates and would not reach any fruitful conclusion. The operating logic behind open collaboration is self-organizing and self-structuring without a leader, a presiding chairperson, or a moderator. However, mass collaboration in open discussion often allows people to expend their energy on less important issues or problems, thereby impeding productive deliberation. For these reasons, Shkabatur (2011) evaluated deliberation of current e-participation projects as weak overall.

4.3. Outcome evaluation

A remaining concern in evaluating citizen-sourcing is its outcome. Two key components should be evaluated. The primary one is the effectiveness of a final product itself (idea, solution, or policy draft) created by citizen-sourcing. The lexicographic definition of *effectiveness* denotes “producing a result that is wanted” (Merriam-Webster Dictionary) or more specifically “the degree to which objectives are achieved and the extent to which targeted problems are solved” (www.businessdictionary.com). Breul (2010: S198) introduced key guiding principles of sourcing policy, the top of which is “support agency missions, goals, and objectives.” Hence, to evaluate the effectiveness of citizen-sourcing, government agencies should examine the extent to which its outcomes are aligned to their missions, goals, and objectives. The performance of citizen-sourcing should be evaluated in terms of its intended purpose—information creation, service delivery, problem solving, or policy making.

Second, whether the product exerts an impact on government should be examined. In other words, the impact of participatory inputs on the work of government should be assessed. If citizen-sourcing is only initiated to create the appearance of keeping pace with citizens who use new technologies, its impact would hardly be of central importance. Wilson and Linders (2011: 391), analyzing the Open Government plans in federal agencies, found that “a lack of clear direction on intended policy outcomes has encouraged agencies to resort to blindly complying with the Open Government Directive's rather proscriptive technology focused milestones.” If a government agency does not take into consideration how the collective wisdom derived from civic-sourcing can influence the workings of government, then simply launching various Government 2.0 tools would seem like nothing more than rhetoric to citizen participants. The belief that participation would ultimately contribute to a better society, community, government and country can lead citizens to devote their time and energy to citizen-sourcing. Citizens would like to know to what extent their contributed ideas are actually considered and put into practice by the government. In turn, government agencies are responsible for letting citizens know the actual impacts of citizen-sourcing.

5. Implications and conclusion

This paper proposed two frameworks to provide an analytic and practical view on technology-enabled opportunities for citizen engagement in information creation, service production, problem solving, and policy making. The framework of multidimensional citizen-sourcing and the framework of citizen-sourcing evaluation criteria are expected to help improve the understanding of citizen-sourcing in the public sector. Seeing citizen-sourcing through both frameworks can demonstrate where government agencies adopt citizen-sourcing, for what purpose, and how citizen-sourcing is designed to fit into the workings of government. Using the frameworks offers some implications for both research and practice.

For researchers, the set of multiple dimensions provides a frame to identify contexts in which citizen-sourcing is involved. Based on the framework of core dimensions, researchers can shape an all-encompassing map of citizen-sourcing projects in progress. For a case analysis, the framework can also be used for categorization of practices. Alternatively, the assessment framework can act as a model for a comparative study of multiple projects. The framework is not for scoring current citizen-sourcing projects; rather, it can be used to comprehensively analyze those projects in terms of various perspectives.

For practitioners, both frameworks provide the concepts and categories needed for review, diagnosis, evaluation, and assessment of citizen-sourcing efforts. The multidimensional framework is an initial checklist for government agencies conducting citizen-sourcing initiatives that connects strategies, purposes, and products. The assessment framework could be a preliminary tool for selecting the best practices of citizen-sourcing. Furthermore, government practitioners can identify what they are doing well or poorly by assessing citizen-sourcing projects through the framework. The framework helps government practitioners pinpoint problems and weaknesses.

Both frameworks can help practitioners and researchers to know whether citizen-sourcing is a good fit for open government and how citizen-sourcing could be better implemented for its intended purposes. Discussing possible uses of the frameworks, this paper equally valued caution against and enthusiasm for citizen-sourcing. Using the frameworks can lead government to recognize the challenges and opportunities of citizen-sourcing. Citizen-sourcing initiatives as part of open government efforts in the U.S. are highly experimental, which means citizen-sourcing is still in its infancy. According to Mintz (2008), while some citizen-sourcing projects now generate visible outcomes, others are centered on hype. Not all citizen-sourcing products such as innovative ideas, policy proposals,

and solutions are feasible and doable for government agencies. Given this reality, the frameworks are not only a lens to look back on what government agencies have performed so far to improve citizen engagement, but also a practical guide to help them put forward citizen-sourcing projects in the future, when newer technologies will keep enriching opportunities for collecting more inputs from citizens. Viewing the current phenomenon through the frameworks also offers timely agendas for rich discussion of citizen sourcing—what citizen-sourcing contributes to government, how it could do more and better things for government, and how government could manage citizen-sourcing to make sure achievement of intended outcomes.

The frameworks have some limitations. This paper based the frameworks on observations of what has occurred in the U.S. government. Citizen-sourcing in other countries may show distinct characteristics and patterns of citizen engagement enabled and empowered by technologies because of differences in the contexts where citizen-sourcing is initiated and proceeded. The paper presented current examples of mostly federal agencies in the U.S. government, but seeing what happens in different levels of government may increase the applicability of the frameworks. Disparities in institutional and cultural settings surrounding government agencies can create differences in processes and the ultimate results of citizen-sourcing. In this sense, the frameworks are preliminary. A remaining task is to develop the frameworks as more generalizable or broadly applicable. More research is needed to enhance our understanding of citizen-sourcing in diverse contexts. A next step for this work is to explore various comparable cases—with attributes that are neither similar in everything nor dissimilar in everything and are shared in part and unique in part (Sartori, 1994)—at multiple levels of government in multiple countries and then adjust the frameworks to various contexts.

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