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DAREN C. BRABHAM

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Preface

Just prior to my senior year of high school, I spent one week on the campus of the University of Texas at Austin engaged in a rigorous, hands-on simulation of Texas politics. The camp was Texas Boys State, a civic education and leadership program sponsored by the American Legion, a veterans organization. Since 1940 thousands of high school leaders in Texas and across the country have been able to run through this learn-by-doing experiment, condensing what is in real life about a two-year political process into just one week. Assigned to fictional cities and fictional political parties, students hear speeches from one another and mount campaigns to be elected as mayors, political party chairs, and all the way up to governor and other elected positions. Boys State teaches that involvement in the processes of politics and governance is the obligation of all citizens, and the work of public service is often difficult and messy but frequently satisfying.

I continue to learn from this experience, returning to Texas each year since to serve as a counselor for the program, mentoring tomorrow's leaders. Young people are often dismissed as being distracted by technology and uninterested in politics and governance, but I get to see them light up with enthusiasm, think about big ideas, and experience the slow-moving gears of government as parts of a machine that can, in fact, be moved with enough determination and legwork. They get to see that their voice can actually matter in what shape their world takes.

Boys State is a microcosm that shows that the idealized notion of democratic engagement is not dead, even as partisan rancor today seems to turn

off many citizens from the thought of engaging with government, while new technologies gobble up our attention night and day to where the thought of sitting through a lengthy city council meeting is dreadful. Indeed, direct citizen engagement in government affairs is truly exciting. Technology is helping citizens find new intimate connections to the public sector and allowing government to tap into the energy, intellect, and creativity of its citizens in ever more interesting and efficient ways.

In 2007 I connected this optimism for public engagement to a line of research about the role of crowdsourcing in the public sector, specifically the planning aspect. I teamed up with Thomas W. Sanchez and Keith Bartholomew to put this idea of crowdsourcing and planning into a grant proposal to the Federal Transit Administration. The Next Stop Design project funded by the grant and discussed at some length in this book was born. This moment focused my research program on the potential for crowdsourcing for the public good.

As crowdsourcing in public sector activities became normalized, frequent, and professionalized through associations and consultancies, it became clear that a set of unifying best practices and some practical advice for public managers that were informed by emerging empirical research was needed. The IBM Center for the Business of Government published some of these best practices in *Using Crowdsourcing in Government*. This book grows from that report and in addition injects a deeper level of theory and research from several disciplines, including communication, public administration, and business. This book also brings these best practices to life with insights from a dozen leaders using crowdsourcing in their work with various segments of the public sector.

Perhaps the main point here is that crowdsourcing is a process rather than a tool, a strategic approach rather than a tactical method. Too often the general approach of crowdsourcing—designing systems and arrangements that connect online communities and organizations together to solve specific problems—is conflated with the notion that crowdsourcing is exemplified by one particular tool, whether that is a wiki, a social media platform, or a website. As with any strategic planning model, it is problematic to begin with specific tactics and work backward to a general strategy, so thinking of crowdsourcing as an activity that must be done on a specific platform constrains the ability to conceive of robust and effective communication processes that might be necessary to solve any given problem at hand. The ideas in this book suggest, instead, that public sector professionals should begin with problems they need to solve, then follow a framework

for determining which crowdsourcing approach is best to apply. Only then should they think about the technology tools that would be best suited to implementing that approach. Focusing on the process rather than on the tools of crowdsourcing will ideally de-clutter the topic, strip the buzz from this versatile problem-solving model, and help practitioners navigate a consulting space populated by many self-appointed "gurus."

It is my aim that students and scholars will find value in this book, and also that public administrators hoping to use technology to connect with stakeholders will find these insights useful. Though informed by scholarly literature, this text is written with an eye toward practitioners who need to know how and why certain aspects of crowdsourcing work. Those already working to bring crowdsourcing to the public sector—many of whom were interviewed for this discussion—know that enthusiasm for democratic engagement is still out there, especially among young people comfortable with new technologies. I hope to inspire other public sector organizations to consider crowdsourcing for their needs, reigniting the spirit of civic engagement in their stakeholders and planning and executing public sector crowdsourcing projects with ease.

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Acknowledgments

An earlier and shorter version of this book was published as a report for the IBM Center for the Business of Government. I thank the Center for its financial support of this research, and especially the keen eyes of John Kamensky and Mark A. Abramson, both of whom helped whip into shape my initial thinking on this topic to have it make sense for a practitioner audience. I am also grateful to the Social Sciences and Humanities Research Council of Canada and the US Federal Transit Administration for funding projects focused on the public sector.

Leah Jaramillo of Somers-Jaramillo & Associates provided a first opportunity to publicly present my work on crowdsourcing in urban planning at the conference of the Intermountain chapter of the International Association for Public Participation (IAP2). I am grateful for her professional support and friendship, as well as the tremendous support IAP2 and its members have given my work over the years.

David Sawicki, now professor emeritus at Georgia Tech University, deserves a hearty thanks for encouraging my work and connecting me with Tom Sanchez when he desk-rejected my paper as editor of *Journal of the American Planning Association*. This kind of mentorship—by a journal editor who took time out to provide constructive guidance to a graduate student from an entirely different discipline who had submitted a lackluster paper—is rare, and I strive to be like this in my own editorial and reviewing efforts. He may not know what he did by redirecting my work at that crucial point in its development, but it was influential.

Thanks also to Tom Sanchez, Kurt Ribisl, Joy Pierce, Keith Bartholomew, Michael Davie, Karim Lakhani, Cassandra Van Buren, Tim Larson, Tom Kirchner, John B. Stephens, Beth Noveck, Rodrigo Davies, Tanja Aitamurto, Noah Friedland, Renee Sieber and the Geothink team, and Carlos Nunes Silva, all of whom provided valuable feedback on my public sector crowdsourcing research over the years.

Many of the ideas and best practices in this book were tested through nearly twenty presentations given to diverse audiences, and I am especially grateful for these speaking opportunities and to these audiences for sharpening the thinking in my work. Thanks especially to the Global Forum on Creative Economy in Seoul; the University of Roskilde; the University of Edinburgh Business School; the Christopher Newport University; the University of Southern California; Duke University; the Association of Internet Researchers conference; the Academy of Management conference; the Tenth International Open and User Innovation Workshop; and IAP2, for hosting stimulating conversations that propelled this work forward.

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Finally, I thank my family and friends for their generosity, but especially my amazing wife, Annie Maxfield, who makes everything I do better through her astute scholarly critique and unconditional love. The day after I submitted the first draft of this book we welcomed a baby into our lives. This book is for my wonderful son, Henry, who I hope will inherit a world replete with healthy democratic engagement in which crowdsourcing routinely brings citizens and governments together.

Introduction

Crowdsourcing and Public Participation

The city of Santa Monica, California, launched the Public Electronic Network (PEN) in early 1989. PEN was the first online network operated by a city government for use by the public, and the online community at PEN quickly grew to several hundred, and eventually, a few thousand users. PEN was comprised of three components: a database of public notices, hearings, and schedules; a hub for citizens and city officials to exchange e-mails; and a discussion board for citizens to engage in debates about all kinds of issues facing the city. City officials were surprised to see that the last component, the public discussion space, thrived the most, as citizens actively discussed issues of urban planning, economic development, homelessness, and city services in a kind of ongoing virtual town hall meeting. About 20 to 25 percent of PEN usage came from the use of "public terminals" such as public computers placed in libraries, which enabled "the voices of the otherwise disenfranchised—including the homeless—[to be] heard by the community."[1] Donald Paschal was a homeless Santa Monican who used PEN to help organize the establishment of a shower, washer, and locker facility for the city's homeless in the early 1990s. As Paschal reflected,

> the most remarkable thing about the PEN community is that a City Council member and a pauper can coexist, albeit not always in perfect harmony, but on an equal basis. . . . I do not believe that I could have [helped establish the shower, washer, and locker facility] without participation in PEN. If this

> experience means anything, it is that throughout my battles, I was considered human. To me that is important. On the streets, one is looked on with varying measures of pity, disgust, hatred, and compassion, but almost always as something alien, from another world.
>
> But on PEN, I have been helped, rebuffed, scorned, criticized, considered, and in most cases, respected—as a human. PEN is a great equalizer. Eventually. There are no homeless or homed unless we say we are. We are not one happy family; like most families, we squabble. On any topic, no one can accuse PENners of agreeing fully. But we are communicating, and that is a start.[2]

Ultimately, PEN was credited with forging connections between Santa Monica's citizens—homeless and otherwise—and its elected officials, which eventually resulted in the establishment of additional facilities and services for the homeless, the blocking of a key waterfront hotel development in town, and other substantial public decisions.[3]

PEN was soon heralded as a model for future online deliberative democratic processes, an emerging discourse that opened up utopian democratic possibilities through computer networks where everyday citizens would be empowered to stake a claim in the administration of government.[4] On the other hand, PEN, like many other municipal systems that emerged shortly thereafter, had its own troubles. PEN's designer, Ken Phillips, noted that the goal of PEN was "not to decrease bureaucracy but to increase communication," and many Santa Monica city officials "grumble[d] that they spen[t] too much of their time answering PEN messages from electronically loquacious citizens."[5] While PEN seemed to bring more voices, and more *diverse* voices, and perhaps brought to bear qualitatively more robust citizen input on local issues, it may in fact not have been more administratively efficient. In addition to the volume of messages requiring staff attention, Santa Monica councilmember Kevin McKeown believed the "dark side" of PEN was the persistence of "flaming" (personal attacks in online communities by anonymous users) and sexual harassment and degradation of women in the network by anonymous (male) users.[6] Indeed, some politicians in Santa Monica eventually stopped participating in PEN altogether, "citing the rudeness of many of their correspondents."[7] PEN's discussion capabilities were restructured in 1993 to limit the frequent and often lengthy unmoderated posts by some flamers in the community, a controversial decision that some PENners claimed restricted free speech.[8]

The PEN story is a useful starting point for a discussion of deliberative democracy, e-governance, and online public participation. PEN was a robust cocktail of all that is both good and bad about online public decision making. From censorship and flaming to empowering the marginalized and connecting everyday citizens to the process of governance, the experience with PEN opens many conversations about the effectiveness of deliberation, the design of online discussion spaces, and the pace of public input in a digital era.

By the mid-1990s, just a few years after PEN was born, Americans were rushing to the Internet as companies such as America Online expanded their reach into homes; by 2001 more than half of all US adults were online.[9] People used the platform to express themselves on blogs, upload their photos and videos, and connect with one another and with organizations through e-mail and online bulletin boards, in chat rooms, and, later, via social media tools. Most barriers to technology came down during this time as well. Tech tools like digital cameras constantly improved as prices dropped, and people began to freely share expertise—such as how to compose a good photo—with one another online. All of this convergence led to a rise in "participatory culture," a moment media scholar Henry Jenkins refers to as a "culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices," and where members "believe their contributions matter, and feel some degree of social connection with one another."[10]

In the same time period of the 1990s and early 2000s, President Bill Clinton and Vice President Al Gore enacted sweeping changes in government efficiency through the establishment of a National Performance Review, which included a dramatic reduction in government workers and a streamlining of bureaucracy. The "goal of the National Performance Review was not simply to make government cost less or do less" but rather to "make a government that worked better—providing higher quality services to citizens treated as customers" and often taking advantage of emerging information technologies of the day.[11]

Aneesh Chopra, the first chief technology officer of the United States who served during the Obama Administration, argues that our government is now operating in an even newer paradigm that builds on the vision of the Clinton Administration—and, really, on a few hundred years of thinking in the Jeffersonian democratic tradition—to make government work

smarter and capitalize on the energy and talent of citizens while exploiting cutting-edge technology to connect government with the governed.[12] This new paradigm draws from principles in open innovation and represents a "twenty-first century government that elevates the role of everyday Americans."[13] Legal scholar Beth Simone Noveck calls this arrangement "collaborative democracy" and describes it as

> a new approach for using technology to improve outcomes by soliciting *expertise* (in which expertise is defined broadly to include both scientific knowledge and popular experience) from self-selected peers working together in groups in open networks. By lending their expertise and enthusiasm, volunteer experts can augment the know-how of full-time professionals and coordinate their own strategies. By taking advantage of technology's cost savings, hierarchies can be transformed into collaborative knowledge ecosystems and radically change the culture of government from one of centralized expertise to one in which the public and private sector—organizations and individuals—solve social problems collectively.[14]

As our understanding of new media technologies advances, there is a growing interest in how best to take charge of the creative, productive capabilities of Internet users for specific purposes. In the past decade a number of online businesses have actively recruited individuals in online communities to design products and solve problems for them, often motivating an online community's creative output through the format of an open challenge or competition with various rewards. Organizations that issue specific tasks to online communities in an open call format engage in the practice of "crowdsourcing."

The Obama Administration's commitment to transparency and open government has been a driving force in the growth of crowdsourcing applications and online public participation programs in the United States, and in recent years other countries have also tested open, collaborative governance processes with their citizens.[15] There are now many cases of government crowdsourcing to add to the already large body of business cases of crowdsourcing, yet no coherent set of best practices or recommendations exists for public administrators to use to determine whether and how to go about launching a crowdsourcing endeavor to get public input on a government problem. That is the purpose of this book.

Previous researchers have made the case that crowdsourcing is a versatile tool for problem solving, not merely a model for conducting business,

and there is tremendous promise for it in the public sector to accomplish Noveck's collaborative democracy or what Chopra holds up as representative of a new paradigm in governance.[16] Many other scholars from diverse fields have since championed crowdsourcing for the public sector, including Muki Haklay, Jerry Brito, Tanja Aitamurto, Carlos Nunes Silva, and groups of innovation researchers in Austria and Germany.[17] It should be noted, however, that there is no consensus about what exactly qualifies as crowdsourcing versus what warrants some other term, though the idea of "connecting citizens with organizations through technology to do something productive together" is generally accepted by scholars and practitioners who embrace this mind-set. For example, Noveck makes it clear that collaborative democracy is a more deliberate engagement between government and citizens—often expert or uniquely qualified citizens—to work together to do bigger and better things, while crowdsourcing is a fairly simplistic approach by which an organization outsources or otherwise doles out work to an online community. For simplicity, all of these organization-citizen collaborations might well be called "crowdsourcing," while specific examples can be further subdivided by the kinds of specific problems they aim to solve, since some overarching best practices and principles do govern all of these diverse arrangements.

This book is not so much about exploring semantic differences regarding crowdsourcing, since that subject has already been tackled in a previous volume.[18] Many of the differences of opinion about crowdsourcing can be attributed to siloed academic disciplines that unknowingly write about the same case studies and the same phenomena while using different language and epistemologies and having different things at stake. Without rehashing previous work in too much depth, a clear definition of crowdsourcing is warranted here.

Crowdsourcing is an *online, distributed problem-solving and production model that leverages the collective intelligence or energy of an online community to serve an organizational goal.* Journalists Jeff Howe and Mark Robinson first coined the term "crowdsourcing" in early 2006, and the term appeared in Howe's June 2006 article in *Wired* magazine, where he wrote about a number of now-iconic for-profit crowdsourcing cases, including Threadless and InnoCentive.[19] Peer-reviewed scholarly research that focused specifically on crowdsourcing first appeared in 2008, though the concept is rooted in longer discourses of open innovation, lead-user innovation, new forms of online problem solving, human computation, and participatory culture.[20] Scholarly interest in the term has exploded in the

past six years; according to Google Scholar, today there are more than forty thousand research articles that use the term crowdsourcing, and these mostly come from the computing and business disciplines; indeed, entire interdisciplinary academic conferences and government grant programs are dedicated to the concept.[21]

In an attempt to find some common ground in the debate about what counts as crowdsourcing, a 2012 paper synthesized the scholarly literature on crowdsourcing to come up with an authoritative definition:

> Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken.[22]

Simply put, crowdsourcing happens when an organization has a task it needs to be performed, an online community voluntarily performs the task, and a mutual benefit for the organization and the online community is the result.

One important distinction between crowdsourcing and other similar forms of online participatory culture and user-generated content activities is that crowdsourcing entails the mix of a top-down, traditional, hierarchical management process with a bottom-up, open process involving an online community. In crowdsourcing arrangements the locus of control must reside between the organization and the online community rather than primarily in one or the other (see figure I.1). One example of too much organizational control that makes insufficient use of the online community's input is the typical "vote for your favorite flavor" marketing contest, such as the first iteration of Mountain Dew's DEWmocracy campaign.[23] Examples of too much online community control that lack sufficient organizational directive are Wikipedia or open-source software projects such as Mozilla Firefox. It must be noted that this difference is a fairly controversial point, and one of the sharpest points of disagreement concerns the

exclusion of Wikipedia from consideration as a true crowdsourcing platform. Wikipedia demonstrates the power of the wiki tool for collaborative editing, a tool that in fact finds its way into many public sector crowdsourcing initiatives such as participatory policymaking and participatory budgeting.[24] But Wikipedia is not truly crowdsourcing because there is no singular organization from "above" directing the work of the crowd to produce a common result. Wikipedia does provide an infinite sandbox, and in fact the online community that has formed around Wikipedia has crafted a complex set of rules for self-governance and certain cultural norms. Nevertheless, Wikipedia is an example of what legal scholar Yochai Benkler calls "commons-based peer production," not crowdsourcing.[25] A wall in town may be known as a place for local artists to gather and create beautiful works of graffiti, but unless an art director is in some way directing the work and curating the "exhibit" (i.e., the wall), it is merely a collective public space for (re)creation driven purely by the bottom-up efforts of citizens. The size, visibility, and success of Wikipedia should not automatically qualify it as an example of crowdsourcing. Crowdsourcing is a meeting-in-the-middle of top-down and bottom-up efforts to solve problems.

In the private sector, the boundary between organization and consumer is clearer. Even in the case of open innovation, which blurs this boundary somewhat, it is generally understood that consumers or product users represent one side of the equation and the firm represents the other. Crowdsourcing as defined here specifies a relationship between organization and public for the purpose of meeting the organization's objectives. In the case of the public sector, however, this conceptual distinction is not quite as clear.

In a democratic society, the government is intended to be an extension of citizen will, at least in theory. Public managers and elected officials not only *represent* citizens, they *are part of* the citizenry. This complicates the claim that government directs—or ought to direct—the efforts of citizens in productive ways when crowdsourcing is translated to the public sector. Indeed, the case could be made that citizens ought to direct government business, a reversal of this workflow. However, the operations and management principles of public sector organizations may not be all that different from ones already in operation within the private sector, and the standards of excellence in the business of government map well onto private sector concerns.[26] Whereas a private sector company may focus on minimizing costs and streamlining processes to increase its profit margin, a public sector organization also hopes to reduce costs and streamline processes but

usually to reduce the operational burden on taxpayers. Both sectors are broadly focused on balancing efficiency with high-quality outcomes. This is not to suggest that crowdsourcing can fully replace the thorough, thoughtful, and sometimes slow deliberation processes of a democracy. It also is not to suggest that a sole focus on the logic of efficiency and cost savings in the public sector—whether using crowdsourcing approaches or not—is always best, since sometimes this focus on "doing the same thing, only trying to do it more cheaply" misses the bigger point of implementing systemic and "far-reaching reforms that . . . provide better outcomes."[27] But it is to suggest that it may complement these deliberative processes and generate new and innovative ideas, and that, regarding the business-like dimensions of government services, it may make the business of government more efficient and effective.

It is important to emphasize that crowdsourcing is a process rather than a tool. Crowdsourcing is simply an online way to connect online communities and organizations in pursuit of a product or solution to a problem. Crowdsourcing can be accomplished through any number of new media tools, including wikis, blogs, websites, social networking sites (e.g., Facebook, Twitter), mobile apps, mapping software, and so on. Many tools enable communication, and many tools can make crowdsourcing possible. When an organization embarks on a crowdsourcing venture, it is important that the organization first consider what kind of problem it wants to solve and the kinds of solutions it wants to receive. Only then should the organization consider the tactical means for executing this kind of arrangement. Crowdsourcing is a *strategic* approach to problem solving, while the specific tools (e.g., websites, social media, wikis) are *tactical* implementations of strategies. Many crowdsourcing ventures have been successful using relatively simple websites or existing social media tools. Embracing crowdsourcing means embracing an open way of thinking about a problem in order to bring online communities into the problem-solving process; it is not necessarily about a commitment to any single tool or toolkit. This way of thinking about problems can help government agencies save money and work smarter. Crowdsourcing is only revolutionary in that it allows the basic mode of citizen engagement to move more efficiently into new media. Nick Bowden, the founder of the prominent crowdsourcing platform MindMixer, describes it this way:

> We're not asking cities to change their behavior. We're asking them to change the medium by which they deliver or enact that behavior. . . . We're

> going to make [their] current behavior more efficient and effective. We're not going to change the way [they] do things. . . . Civic institutions, as they should be, are very risk averse . . . so structure is a really important thing to them. They don't want to recreate Reddit with their city logo on it. They want to have a meaningful conversation and ask meaningful questions that citizens can provide meaningful answers to [and] that can help them improve their decision-making and ultimately have a positive impact on citizens.[28]

Ben Berkowitz, founder of the crowdsourcing platform SeeClickFix, agrees:

> Because of the new feeling of empowerment, that definitely comes from the Internet and social media, there is a new expectation from government to be responsive. . . . We can save cities dollars by taking analog conversations and making them digital, and taking one-to-one conversations and making them one-to-many or many-to-many. . . . At a higher level, we're selling a more informed and more engaged citizen population that ultimately will lead to better communities. . . . I think that our expectations have increased in terms of what we want from our communities. I think that government is a big player in enabling that better community.[29]

The confusion between crowdsourcing-as-process and crowdsourcing-as-tool is due in part to the rise of dedicated third-party platforms, such as InnoCentive, Top Coder, and Amazon Mechanical Turk. These platforms function as flexible crowdsourcing spaces for companies to use in launching ad hoc crowdsourcing ventures. For example, a market research firm may turn to Amazon Mechanical Turk for a single project and pay a fee for using the platform to reach an online community of workers ready to perform tasks for money or prizes. This is different from in-house crowdsourcing operations like Threadless, where the crowdsourcing activity occurs on the company's own turf and drives the entire business operation. In the future it is conceivable that third-party, ad hoc crowdsourcing platforms will become normal business vendors in the same way that companies like Xerox are contracted for printing and copying services or McKinsey & Company for management consulting services. Indeed, Chopra contends that this kind of public-private partnership between government entities and third-party crowdsourcing platforms and vendors is crucial for the new paradigm of democratic governance to take hold, and some scholars are hopeful that open standards and architectures for technologies will lead to nonproprietary options.[30] As Neil Takemoto, the co-founder of CSPM

Group, a growing crowdsourcing consulting firm specializing in mixed-use urban development, notes,

> if you just do a public sector-oriented thing, no one's going to implement anything. That's the thing that's always asked at these public engagement meetings: how are we going to implement that stuff? [They say,] "Well, you know, we'll have a committee to talk about that." It's always a little fuzzy. And then [the project] dies. . . . You need to get funding from the private sector for [crowdsourced urban redevelopment]. It's very hard to get funding from the public sector for it. I do think [the ideal is] a public-private partnership.[31]

The *process* of crowdsourcing is a natural extension of democratic engagement and citizen participation, but taken online with new tools. It is an idea whose time in the public sector has come, and the growing collection of case studies of public sector crowdsourcing done right inform the current discussion. While many excellent books and policy white papers have been written on the potential and theoretical basis for crowdsourcing and related technology-driven engagement activities, there is a lack of guidance for how to execute a crowdsourcing endeavor on the ground, from start to finish. These best practices are explained here with a mix of well-known and less well-known cases that serve as exemplars for how crowdsourcing can work at its best.[32]

Chapter 1 lays a conceptual foundation for crowdsourcing as a technology-enabled public participation method within the public sector, and explains how and why crowdsourcing works to solve problems. It also explores the emerging concept of crowdfunding, particularly in its potential application to the public sector. Chapter 2 introduces a problem-based typology for determining if and when to consider using crowdsourcing as a tool for public engagement and explores some notable examples from the private and public sectors that illustrate the different flavors of crowdsourcing. Four distinct approaches to crowdsourcing are presented in the typology: two address information management problems and two address ideation problems. Chapters 3, 4, and 5 explain the various stages involved in planning, implementing, and evaluating a crowdsourcing venture in the public sector, structured around a total of ten best practices drawn from case studies and expert insights. Chapter 3 deals with the planning phase of a crowdsourcing project, emphasizing the importance of clarity in the defini-

tion of a problem, the range of commitments an organization can make to a crowdsourcing outcome, and the importance of understanding how to motivate an online community to participate. Best practices for the implementation of a crowdsourcing activity are highlighted in Chapter 4, including investing in usable tools, considering legal issues, building the online community, the importance of transparency, and letting go of control. Chapter 5 explores how to wrap up a completed crowdsourcing project, with an emphasis on acknowledging contributors and following through on obligations, as well as the benefits of multi-pronged assessment of outcomes. The conclusion takes a look ahead at how to normalize crowdsourcing within a democratic society and what the future holds for crowdsourcing in the public sector.

The bits of advice offered in this book are drawn from the existing scholarly and professional literature on crowdsourcing, which frequently focuses on single cases. Some of these cases are well known and perhaps well worn, but it is with good reason: they are some of the best documented cases, they were pioneering in a certain way, and they have stood up as successes over the years. Still other research informing the discussion is more narrow and focuses on specific aspects of crowds or specific design choices in building crowdsourcing websites. Some research comes from what is known about online communities in general, because some of the best practices in the management of online communities are relevant to the challenges being addressed. The advice being offered is also bolstered by the insight from original interviews in 2014 with people who have been in the trenches setting up and executing crowdsourcing activities, which includes technology vendors, public participation consultants, and public administrators.

Key Points

- There is a rather long history of online citizen engagement with government, going back at least to the late 1980s in the United States with the Public Electronic Network (PEN) in Santa Monica, California. The creation of this online bulletin board system led to important decisions surrounding land use and services for the homeless.
- The Obama Administration's push for technology-mediated transparency, efficiency, and innovation initiatives for government administration coincided with a phase of online participatory culture and increased use of new technology in the United States.

- Crowdsourcing connects organizations to users, and government is increasingly implementing crowdsourcing to connect with citizens.
- Crowdsourcing is a blend of top-down hierarchical management with a bottom-up open creative process.
- Crowdsourcing is a process or a strategy, not simply a tool or tactic.

1

Crowdsourcing's Conceptual Foundations

A FAMILIARITY with the conceptual foundations of crowdsourcing leads to a more nuanced understanding of how crowdsourcing can work in the public sector and when its use is or is not appropriate. This chapter discusses crowdsourcing's relationship to democratic ideals and the tradition of engagement activities in the public sector, and how crowdsourcing functions as a problem-solving method that draws from the strengths of large and diverse groups. The related concept of crowdfunding and its future in the public sector is also examined.

Because crowdsourcing draws input and insight from individuals in online communities, it has the potential to be a useful digital tool for governance that complements traditional public participation programs.[1] At the most, public participation can be seen as a logical extension of the deliberative democratic process because it engages local citizens in direct and deliberative activities that guide public administrators and planning projects.[2] At the very least, citizen involvement in the planning process can lead to outcomes that are more widely accepted by future users.[3] Tim Bonnemann, the founder of the California-based crowdsourcing consulting firm Intellitics, sums up the rationale for government agencies to conduct meaningful public participation processes:

> Making wrong decisions, making bad decisions, making decisions that you can't sell after the fact because there's no buy-in is a very expensive way to manage your organization or your community.[4]

It has been argued elsewhere that crowdsourcing, or something like it, "might better fit the shape of democracy in the realities of an increasingly networked information society."[5] As society has changed to adapt to new media technologies, so have our expectations for citizen engagement with government. "It is overdue to rethink the legitimacy of attenuated participation in a small number of representative institutions," argues Beth Noveck, and "democratic theory and the design of governing institutions must be rethought for the age of networks."[6] Media theorist Ned Rossiter has also asserted that in an era of "organized networks"—which are, at their core, quite different from merely networked organizations—we ought to focus our energies on "*relational processes* not representational procedures" and we should "abandon the illusion that the myths of representational democracy might be somehow transferred and realized within networked settings. That is not going to happen."[7] This networked existence enables the movement and flow of both ideas and people, as Arjun Appadurai would say.[8] The Internet is "not simply a specific medium but a kind of active implementation of a design technique able to deal with the openness of systems."[9] New media technologies such as the Internet connect people in ways that seem natural and in ways that people expect, that is, closer to one another and seamlessly with organizations and governments. They beckon citizens to participate and create rather than sit idly by and watch their elected representatives fumble through all of the work of governance.

There is a long-standing set of practices in the context of democratic governance (of the representational kind) that are designed to gather public input; these practices have come to be professionalized under the banners of "public participation" or "public engagement." Gene Rowe and Lynn J. Frewer compiled an extensive list of the mechanisms used for public input and proposed a list of engagement types that categorized these mechanisms according to communication, consultation, and participation purposes.[10] Some of the more traditional public engagement methods that have historically had traction in the public sector include: focus groups, by which a small group of citizens are led by a facilitator to engage at length with a particular set of topics; citizen juries, or groups of citizens who meet and review evidence in order to make decisions and recommendations to government; New England–style town hall meetings, which bring together citizens of a specific locale for public comment, debate, and voting to make decisions on an issue; design charrettes, which are intensive problem-solving workshops attended by a small group of citizens in a compressed time frame; and the Delphi method, which is a technique for achieving consen-

sus among a group through a series of independent questionnaires on a particular issue and often focused on forecasting future scenarios through rounds of feedback that work to converge diverse viewpoints on a common vision.[11]

These traditional public participation methods come with their own set of hindrances, including the logistical issues related to holding meetings that are maximally inclusive and account for the realities of peer intimidation, interpersonal dynamics, identity and special-interest politics, and facilitators' influence on meetings.[12] As a mediated alternative that complements traditional participation methods, however, crowdsourcing can ameliorate many of these difficulties while also bringing new insights and innovation to a public problem. An online crowdsourced public engagement activity meets (more) citizens where they are and does not require stilted dialogue in a fluorescent-lit conference room at city hall on a weekday night. Citizens are free to engage at the level at which they feel comfortable and according to their interest in a given issue, to the extent they have time to devote, and whether they have something substantive to contribute. The varying degrees to which one might become involved in a public participation activity have long been thought of as the rungs of a ladder, going from less involved to more involved; more recently it is thought of as a series of concentric circles, like ripples from a rock thrown into a pond, with more involved or affected stakeholders at the "power center" while the apathetic "silent majority" sits at the outer rings.[13] No matter the analogy, all public participation activities acknowledge the varying degrees of influence exerted by affected stakeholders or a population in which all individuals may not be willing or able to meaningfully engage in solving a problem together. But this has an online parallel within a participatory culture and it is not at all surprising. Usability expert Jakob Nielsen famously coined his 90-9-1 rule, which is to say that in most online activities, 90 percent of the people will observe or remain silent ("lurkers"), 9 percent will occasionally contribute content, and 1 percent will do the lion's share of the content creation.[14] Research has shown that this distribution turns up many times over across a diverse array of online activities.[15]

Indeed, groups of citizens contributing their individual voices together make democracy work. In her research, political scientist Hélène Landemore connects the literature on cognitive diversity in problem solving to the core of democratic self-governance.[16] The concept of cognitive diversity explains why sometimes two heads are better than one or why managers assemble work teams comprised of people from diverse functions in an

organization. When solving any problem, each of us brings to the "problem space" or the "task environment" a set of problem-solving heuristics—the shorthand mechanisms or strategies we use to crack tough puzzles.[17] Because every individual has a unique upbringing, a specific viewpoint on the world, and different academic and professional training, every person looks at a problem slightly differently and employs his or her own problem-solving heuristics. Assembling a group of people that is cognitively diverse in this way, then, allows a variety of different methods to be tested on a given problem at the same time. And the larger the group of diverse thinkers, presumably the better. When commenting on the America COMPETES Act (which made it easier for US government entities to use crowdsourcing), Jon Fredrickson, InnoCentive vice president and chief government innovation officer, notes that

> the unfortunate part of [America COMPETES]which everybody has discussed is that the award winners—the payments to the winners—can only be made to US citizens or companies with half their revenue in the United States. And that, by definition, limits you to a population of 300 million people or so, out of 7 billion people. I like my odds better if I can ask more folks. I'd like to add the other 6.7 billion people to the mix, but who's counting, right?[18]

Building on his work with Lu Hong, Scott E. Page makes an elegant and accessible case for understanding cognitive diversity in problem-solving teams in his book *The Difference*.[19] James Surowiecki's book on the subject, *The Wisdom of Crowds*, popularized these and related concepts and extends an even older vision for collective intelligence that cultural theorists, media critics, and computer scientists speculated would be brought about through the rise of networks.[20] Landemore argues that "democracy is a good collective decision-making procedure because, among other things and all things equal otherwise, it maximizes our collective chances to make the right choices."[21] This phenomenon—the good result coming from many people with diverse points of view working together to forge consensus on public decisions—Landemore simply calls "democratic reason."

One of the most notable advantages to online processes like crowdsourcing is that such processes attract different demographics and add more and varied voices to a conversation about policy and public planning issues that have historically been the prerogative of older citizens able to attend face-

to-face public meetings. Surely many people are still without regular access to the Internet and may never choose to participate online even given the technical means to do so. The digital divide persists in the United States and abroad, and no crowdsourcing activity should exist in isolation, even though the broad usage of smart phones in the United States may bridge some of the most long-standing divides.[22] Paul Starr warns that "even though the digital divide has narrowed, any reliance of government on digital technology will put people with less income and education at an inequitable disadvantage because of persistent differences in digital skill as well as access."[23] Crowdsourcing—or any online public sector engagement process—should be seen as a complementary channel to more traditional face-to-face activities.[24] What online processes do add, however, is a more youthful voice to a typically older demographic. Mark Walerysiak, the project manager for successful crowdsourced city planning project **Bristol Rising** in Bristol, Connecticut, explains that town leaders "didn't want to miss the older generation that may not be on Facebook or be social media savvy," so in addition to a big uptick in participants through social media and on the project website, they "included in-person monthly meet-ups." Walerysiak goes on:

> We're trying to get all over the place. We do in-person meet-ups every month where we get consistently thirty people out every time engaging in the process and talking about how we can attract more attention to downtown through events and initiatives. . . . As far as demo[graphic]s go, the demos are way more balanced than a town hall meeting. We're pretty representative of what this public is—a microcosm of it, really. Initially our membership was a little bit older—I would say [people in their] forties, maybe fifties—joining the website, and I think that was just strictly because those are the folks who read the local newspaper [where it was advertised], which no young person reads by the way, around here at least. So it was a little bit older because they are the ones who follow city processes and things like that. But over time, that started really leveling out a bit with younger people getting involved from the online standpoint especially. Our [in-person] meet-ups are mostly more like [people in their] thirties and forties, with a smattering of a couple of younger people. I would say the younger folks are more comfortable behind the computer and the older folks like to get out and in front of people. If I had to break it down, I'd say at least half of our demos are probably in their late thirties, probably closer to sixty-something percent. And then the younger group is less than that.[25]

Likewise, the Next Stop Design project reported a turnout that was more racially and ethnically diverse and much younger than had normally attended traditional face-to-face city planning meetings, with more than half of the participants under the age of thirty.[26] This group was perceived as an improvement over the typical attendees of face-to-face planning meetings who were older, white, and available on a weekday afternoon.

Crowdsourcing can be a remarkably effective way for tapping large and far-flung groups of citizens for input on a particular problem, while traditional methods of public participation have historically drawn from smaller and more localized groups. For already-formed ideas that simply need financial backing, however, crowdfunding, not crowdsourcing, is a better approach.

A clarification should be made between the concepts of crowdsourcing and crowdfunding, which are often conflated. The topic of crowdfunding—in its own right a force to be reckoned with in the public sector—is largely absent here, and for good reason. Though crowdfunding and crowdsourcing share the notion of a "crowd" as the driving force, they are completely different concepts. Crowdfunding is the process by which an organization or individual seeks financial support for a new project from an online community and the community responds by contributing money to help the organization bring that project to market. Whereas crowdsourcing is a blend of top-down managed process and bottom-up open process between an organization and an online community to create new products, develop new ideas or policies, or execute real work, crowdfunding involves simply bringing an already formed idea or product to market through the financial contributions—not the energies and creative talents—of an online community.

Enrique Estellés-Arolas suggests that there are three, perhaps four, primary types of crowdfunding.[27] The first, reward-based crowdfunding, is perhaps the most well known, as much of the news coverage of musicians and movie producers using sites like Kickstarter to crowdfund an album or movie project fits this type. In reward-based crowdfunding, individuals contribute money in exchange for the project being realized but also for some kind of added benefit. These benefits are often spread over different donation levels and might include merchandise, unique experiences with an artist, or acknowledgment in the final project. For example, a musician may seek support through Kickstarter to put out her next album. Fans who contribute at a basic level might get a limited edition pressing of the CD when it is released; those who contribute more might get the CD signed by

the singer; those who contribute much more may also get to enjoy a private backyard concert from the musician; and those who contribute at the top level might get credit in the liner notes of the CD case.

The second type is equity crowdfunding, which looks more like venture capitalist investing. In exchange for financial support, a contributor may earn a share of the company. The Jumpstart Our Business Startups (JOBS) Act was enacted with special provisions for equity crowdsourcing in 2012, but the Securities and Exchange Commission is still developing final rules to govern these kinds of contributions. The law provides a regulatory framework for equity crowdfunding activities in the United States but it has so far been widely criticized for a variety of reasons, including a relaxation of the regulations that have traditionally protected inexperienced investors from financial ruin. Also, the act is simply taking too long to go into effect.[28]

The third type, lending-based crowdfunding, is a simpler form of reward-based crowdfunding: individuals contribute as a way of pre-purchasing the product or the result of a project before the item has even been manufactured. One of the biggest successes of lending-based crowdfunding—and the most successful Kickstarter project to date by the time it concluded in 2010—was the TikTok strap that held an iPod Nano on the user's arm like a wristwatch, which was credited by some as ushering in the now trendy smart watch.[29]

The fourth type of crowdfunding is donation-based or philanthropic crowdfunding, where individuals contribute to a project without any expectation of a reward. This can include crowdfunding campaigns to a charity or to specific individuals seeking donations for expensive medical bills or other needs. There is some disagreement among scholars whether donation-based crowdfunding is truly crowdfunding because it resembles traditional philanthropy techniques long used by nonprofits as well as microlending activities by sites like Kiva. Overall, much of what has been seen in the emerging practice of civic crowdfunding since 2008 fits the donation-based mold, and its sheer impact on public sector operations is worthy of note.[30]

In his groundbreaking research into civic crowdfunding, Rodrigo Davies found that to date there is a "typical" civic crowdfunding project: it is usually a small garden or community park seeking to raise a few thousand dollars.[31] There are larger and more complex successes in the civic crowdfunding space—what he calls "edge cases"—but generally the scope of civic crowdfunding is still quite small. There has been some concern expressed about what crowdfunding may mean for the health of public institutions.

For instance, in the case of public arts funding, which is lately under attack by some constituencies in the United States, a site like Kickstarter demonstrates that if the public wants an artistic product, they are willing to pay for it directly.[32] This may undermine the loftier aspirations of "art for art's sake" or the notion that public goods are public and should remain free and accessible to all, regardless of ability to pay. Davies charts these anxieties, as well as the optimistic hopes for civic crowdfunding, in what he calls "three competing visions of civic crowdfunding":

1. Civic crowdfunding as an expression of community agency;
2. Civic crowdfunding as evidence of the triumph of individual agency; and
3. Civic crowdfunding as emblematic of the erosion of public institutions.[33]

There also are hybrid crowdsourcing/crowdfunding forms, of course. A reward-based crowdfunding project may offer high-dollar contributors the chance to shape the direction of a project, such as the opportunity to create a character for, write dialogue for, or even act in a crowdfunded movie project. As Aitamurto points out, "in equity-based crowdfunding the investors get a share of the company and can have decision-making power to a certain extent."[34] In its intent, though, crowdfunding is not generally meant for seeking public input on the problem itself, but rather to seek public financial support to bring an already-solidified (or nearly solidified) project into being.

Key Points

- Government crowdsourcing maps well onto long-standing concepts of public participation, deliberative democracy, and e-government.
- Crowdsourcing works as a problem-solving model in part by bringing together diverse viewpoints to bear on a single issue.
- Crowdfunding and crowdsourcing are not the same. Crowdfunding brings formed ideas to market, while crowdsourcing involves co-creating goods and services between organizations and citizens. Civic crowdfunding is on the rise.

2

Deciding If and When to Use Crowdsourcing

Many researchers have attempted to develop a grand organizational scheme for understanding crowdsourcing, whether according to functional features, common motivations for participation, or project outcome.[1] And charting the contours of crowdsourcing is surely an academic exercise worthy of continued scholarly debate. But political leaders and public administrators need a practical framework for assessing the appropriateness of crowdsourcing as a possible tool for governance. This chapter proposes a four-part typology and a decision-making scheme for knowing if and when to use crowdsourcing in the public sector.

Research within the discipline of public administration on government networked coproduction (an umbrella term that usually includes crowdsourcing and related technology-mediated activities) has found that coproduction can bring two kinds of added value to government: substitution value and supplementary value.[2] Substitution value is gained when "citizens can perform tasks that also could be performed by government, but they can save government this effort . . . [and] workload of government is reduced."[3] Supplementary value refers to citizens contributing "new knowledge to public service support" by answering "specific questions on the basis of their personal experiences."[4] The distinction, then, is whether citizens share the workload of government or bring something qualitatively different to the process that government employees cannot contribute on their own.

Dennis Linders developed a classification system of citizen-government coproduction that focuses more or less on the locus of control of services and activities, or what direction information flows between citizens and government.[5] The first type is "citizen sourcing." Here the flow of information goes from citizens to government and "the public helps government be more responsive and effective . . . and may even help execute government services on a day-to-day basis."[6] Linders's second type is "government as a platform," where the flow of information from government to citizen entails primarily government making its data, "knowledge[,] and IT infrastructure available to the public that paid for their development."[7] The third type of coproduction, "do it yourself government," connects citizens with each other in a self-organizing way to fulfill some government services on their own, with minimal government support.[8] Based on Linders's typology, however, it is only the first type—"citizen sourcing"—that appears to resemble true crowdsourcing through which government and citizens work in tandem to find solutions and build resources that are mutually beneficial. "Government as a platform" seems a rather passive stance on the part of government in making data and tools available to the public as part of a pure mission of transparency and access but not necessarily to actively find solutions to particular problems. The "do it yourself government" notion, where citizens connect to one another, might be better termed "commons-based peer production" or, really, just grassroots community organizing.[9]

The current focus is on the kind of coproduction that assumes an active exchange between citizens and government and not just on a passive sense of government transparency and openness or on a separate set of grassroots activities that happen outside of government process. What is defined as crowdsourcing or what Linders or other scholars might call "citizen sourcing" is the narrow but growing slice of government coproduction that is full of possibilities and less understood than Linders's other two types.[10] Because crowdsourcing assumes an active exchange between government and citizens that is initiated by government to solve certain problems, a four-part problem-based typology for crowdsourcing was developed, first in a 2009 white paper and refined in recent years.[11] Using this typology a practitioner can assess what kind of problem he or she needs to solve, can identify whether crowdsourcing may help solve the problem, and can decide which type of crowdsourcing approach is most useful. Figure 2.1 illustrates these decision-making steps.

First, it is necessary to determine whether a problem at hand is an information-management problem, where the challenge is to locate or analyze existing knowledge, or an ideation problem, where the challenge is to develop novel ideas or solutions. Within the information-management perspective, the next question is whether the information is outside of the organization and needs to be located, assembled, and organized in a common format, or if the information is already in hand and simply needs to be analyzed or processed. The appropriate crowdsourcing type for the former is the Knowledge Discovery and Management approach, while the latter would be the Distributed Human Intelligence Tasking approach. Within the ideation perspective, the next question is whether the outcome will be empirically, scientifically true or whether the outcome will be an aesthetic result, a policy decision, or a design product that the market or constituency will support. The former points to the Broadcast Search approach and the latter to the Peer-Vetted Creative Production approach. These four problem resolution-based crowdsourcing approaches—Knowledge Discovery and Management (KDM); Distributed Human Intelligence Tasking (DHIT); Broadcast Search; and Peer-Vetted Creative Production (PVCP)—cover the range of problem-solving activities suitable for government to choose to crowdsource (see table 2.1).

These four approaches are addressed in the following sections, but it is worth mentioning that first it must be known if crowdsourcing is even appropriate for a given problem or community. Crowdsourcing is not free to execute and it comes with costs and certainly risks. If a problem is solved easily and inexpensively and will lead to high-quality results through traditional methods, such as hiring a trusted vendor or relying on talented in-house staff or traditional face-to-face participation methods, there may not be much reason to try crowdsourcing. It makes little sense to disrupt a system that works. Some communities may not be big, diverse, or skilled enough to engage a crowdsourcing problem effectively, or timelines or budgetary constraints may make crowdsourcing seem like an unnecessary luxury. The county of Kauai, the jurisdiction of the fourth largest island of the State of Hawaii with a population of just sixty-five thousand, considered crowdsourcing for designing new bus stop shelters for its public bus system. Ultimately, Kauai Bus did not pursue crowdsourcing for a variety of reasons, including the fact that Kauai's population was not as skilled at architectural design software or as connected to the Internet as other jurisdictions in the United States. Jeremy Lee, a program specialist with Kauai Bus, explained:

> The challenge that we had was being able to gather enough qualified individuals to produce design and engineering documents that were going to meet the requirements of the ADA [the Americans with Disabilities Act], building material types, wind load, and things like that. We were getting community feedback like "let's build a shelter out of locally sourced material, thatched roofs made out of palm leaves" . . . the kind of stuff that wasn't going to meet the requirements of this kind of construction project. We also had a compressed timeline to gather the information. So we needed to balance the community input efforts with the timeline needs. As a result, we decided to go with more of the traditional methods of gathering information, which was to hold project update meetings in each of the islands districts, riding the buses, and waiting at the stops to gather the data. Here on the island we might only have a handful of [participants with any architectural experience] compared to what Next Stop Design [or other design competitions] had.[12]

Perhaps more important, however, is contemplating the question of whether something ought to be crowdsourced by government in the first place, particularly regarding substitution value activities where citizens perform the work of government in direct ways. Public administrators play an important role in the business of governments, particularly when it comes to upholding the law. Julie Beckett and Heidi O. Koenig make it clear that

> administrators must understand legal and constitutional obligations. For the general public, the old adage that ignorance of the law is no excuse may be adequate. However, more is expected of public servants. They have the duty to know the law and act in a lawful manner.[13]

Tony Bovaird also argues that public sector coproduction "is not a panacea" and there is concern that it "may dilute public accountability, blurring the boundary between the public, private, and voluntary sectors" and may reinscribe existing power imbalances in society by turning over the work of governance to citizens who may already have disproportionate access to resources and social capital.[14] To handle these potential issues, especially with substitution value work that may have broad impact on society, administrators would be wise to consider involving citizens in crowdsourcing activities in an advisory role. In this way citizens can carry a significant part of the load of government work in a particular area while a public

administrator could closely monitor that work and intervene when necessary, exercising his or her personal judgment, professional expertise, and knowledge of the law. As will be discussed in the next chapter, it is important to know an organization's commitment to the outcomes of a crowdsourcing activity at the beginning (see table 2.1).

Knowledge Discovery and Management (KDM)

In Knowledge Discovery and Management crowdsourcing, government agencies use online communities as a way to extend their capabilities, relying on them to bring new information into play in efficient ways that lead to better decisions and allocation of resources. An organization assigns a clear information-management task to an online community with clear instructions for how that task is to be performed; the online community responds by finding and reporting that information in the specified format.

SeeClickFix is a kind of "participatory geoweb" platform that demonstrates how the KDM crowdsourcing approach works.[15] The site was born in 2008 when the developer's co-founder, Ben Berkowitz, experienced frustration when he tried to get the city of New Haven, Connecticut, to remove graffiti from his neighbor's door. He figured it made no sense to complain to "this black box in City Hall" as others had surely been doing, and where "there's no record of it." As he put it, "it'd be great if we could make this public."[16] With SeeClickFix, citizens can now report nonemergency issues that arise in their neighborhoods.[17] Such nonemergency issues include clogged storm drains, downed traffic lights and stop signs, potholes in streets, and graffiti on buildings. Citizens report these problems through the Internet or via a mobile phone app to the SeeClickFix website, where city agencies responsible for these problems use the information to track emerging issues and better allocate resources to nip small urban problems in the bud before they escalate. SeeClickFix fills a government need at the city level and provides a convenient and orderly way for citizens to assemble reports in a common format and communicate them to the public works department. The city's ongoing challenge is determining how best to identify these emerging issues early enough to allow the city to target resources better than by embarking on regular rounds through town. SeeClickFix helps cities become more efficient and effective: the online citizen-government communication channel functions like a "trouble ticket" system common in IT departments and the city can indicate when a problem has been resolved. SeeClickFix builds upon a similar site founded

in the United Kingdom in 2007, **FixMyStreet**. The difference between SeeClickFix and FixMyStreet, according to Berkowitz, is that FixMyStreet reports are sent only to government and effectively take the standard 311-style systems online but SeeClickFix alerts "can be sent to anybody, so it's not just governments that are helping us fix problems."[18]

Indeed, many Knowledge Discovery and Management approaches lend themselves to mapping problems. Another example of the KDM approach, again in the participatory geoweb vein, is the US Geological Survey's (USGS) Community Intensity Map, known more fondly as the **"Did You Feel It?"** map.[19] "Did You Feel It?" is a website that automatically maps reports of user-submitted seismic activity. When the first tremors of an earthquake are felt, citizens visit the site and report their locations and an estimate of the intensity of the tremor(s). In combination with a network of sensors around the world, these user-submitted reports allow the USGS to assemble a more nuanced map of the intensity of an earthquake's activity, thereby deepening the agency's understanding of how earthquakes work and informing emergency response planning and modeling budgets for disaster relief. Where SeeClickFix allows citizens to fill information gaps for city maintenance departments and improve government efficiency, the USGS's "Did You Feel It?" project allows citizens to fill information gaps about the impact of earthquakes that sensors cannot fully capture.

One of the most famous of the KDM exemplars, **Ushahidi**, is a platform for the distributed reporting of events on a map via text messages, photos, videos, and other reports, originally conceived as "a way to allow Kenyans to report on violence in the wake of disputed 2007 presidential elections."[20] The name is taken from the Swahili word for "testimony." Ushahidi helps plot on a map any number of things an organization wants to know from a distributed citizen population.[21] The system rose to the attention of most Americans during the Haiti earthquake response, when it was used for a number of emergency response functions.[22] Combining real-time data from smartphones with the ability to add images of disaster devastation makes a system like Ushahidi powerful for public safety.[23] This concept has also rolled out in apps for reporting road hazards, such as one used in a recent deployment by the Utah Department of Transportation.[24]

Mapping activities, which can be as simple as plotting pins on an online map or as complicated as providing extensive notation to accompany such pins, have helped urban planners develop solutions in a KDM crowdsourced way for a number of public issues. One shining example involves planning for bicycle lanes and trails and other safety considerations to

increase biking for day-to-day errands. "As of December 2013, a total of thirty-three US states were found to have used or were currently using crowdsourcing as a strategy to improve various bicycle planning activities," with activities being run by state departments of transportation, municipal governments, nonprofits, and even private companies.[25] For example, the City of Boston, in partnership with Toole Design Group, launched an interactive mapping tool in 2010 for citizens to plot their most used bike routes through the city; Chapel Hill, North Carolina, embarked on a similar process in 2012 during the creation of a bicycle network master plan.[26]

SeeClickFix, "Did You Feel It?," Ushahidi, and the bike-planning cases are instances of KDM crowdsourcing processes that are set up for citizens to conveniently provide simple reports to government in the course of their day-to-day activities, but the US Patent and Trademark Office's (USPTO) **Peer-to-Patent** case illustrates how citizens are willing and skilled enough to undertake serious, time-consuming work in the service of government. Faced with a backlog of patent applications and a staff that did not have the resources or time necessary to properly determine whether patent applications presented truly novel inventions, the USPTO partnered with New York Law School and several major patent-holding companies to launch the Peer-to-Patent Community Patent Review pilot project in 2007. The USPTO posted a small sample of patent applications on the Internet and invited an online community of volunteers to search for evidence of "prior art," which is any evidence that shows a submitted invention has already been created before and is thus not subject to patent protection.[27] This online community of more than twenty-six hundred volunteers reviewed more than two hundred applications during the pilot period and reported their findings to the USPTO, which used the reports to determine whether to issue patents. According to the project's second anniversary report, the USPTO used the online community's prior art reports to reject one or more claims on eighteen different patent applications, preventing possible lawsuits that might have arisen from having effectively issued two patents to two different patent holders for a single technology.[28] The success of Peer-to-Patent led to a second pilot round in 2010 and 2011, and subsequent tests of the approach in Australia, Japan, South Korea, and the UK's patent offices. The approach is likely to remain a part of the regular operations of the USPTO over the long term. The initial challenge for the USPTO, to locate and organize information in a single resource, was accomplished when it mobilized an online community through KDM crowdsourcing and improved the functioning of the agency with public participation.

With the surge of interest in so-called big data applications for government, it is important to distinguish big data analytic techniques from crowdsourcing approaches to problem solving. The term "big data" can mean one of two things: either that the sheer volume of data means "traditional databases and analytical techniques are not capable of effectively analyzing it" or that high-performance computing makes it possible to analyze entire corpuses of data rather than relying on random samples.[29] In popular discourse, big data approaches hold much promise for business, government, health, and other applications, even if the shift toward big data decision making comes with its own caveats regarding privacy and reliable takeaways.[30]

Big data processes involve harvesting massive amounts of information from social media, search engines, mobile data, and other sources, and often these data are deliberately user-generated, such as individuals' tweets on Twitter or search queries on Google. However, just because data are deliberately user generated does not necessarily qualify a big data process as crowdsourcing. Passive collection of user data for analytical purposes is very different from even the most trivial microwork tasks performed by users at a DHIT crowdsourcing site Amazon Mechanical Turk.

Let us consider the case of **Google Flu Trends**. Typically, the CDC relies on outpatient reporting and virological test results supplied by laboratories nationwide to detect flu outbreaks and this "system confirms outbreaks within about two weeks after they begin."[31] Google Flu Trends captures the data trails that users leave behind in their day-to-day queries on Google; these are collected and used to model outbreaks. Monitoring thousands of searches from a specific geographic location at a given time for "How to treat a cold," for instance, is a good way to identify when and where a major flu outbreak might occur. Users are unaware that their online search behaviors are contributing to Google Flu Trends' insights. They are not actively contributing their intellect, creativity, or time either. While Google Flu Trends is certainly useful for public health practitioners, it is an example of data-driven surveillance accelerated by increasingly sophisticated and ubiquitous data-mining tools and clever analytical algorithms. Because of its lack of active user participation in response to an organizational call for solutions, however, Google Flu Trends would not count as crowdsourcing.[32]

Crowdsourcing is a two-party effort requiring an organization and an online community to actively and deliberately work in concert to solve a given problem. Big data analysis, however, can involve an active crowd

working in a crowdsourcing activity, but in many instances big data refers to large-scale data analysis removed from the hands-on efforts of an online community in a crowdsourcing way. All of this is not to dismiss the very promising applications of passive data collection, however. In combination with proactive citizen input, it is conceivable that in the future citizens could opt in to letting their cell phones track their movements through the city and report back to government agencies for research and modeling purposes. This might be useful, for instance, for tracking the commuting patterns of citizens in a city desiring to improve its transit systems. This kind of data gathering and analysis, especially regarding mapping—a prominent feature of many KDM crowdsourcing processes—is also related to volunteered geographical information (VGI), an emerging branch of study in geography and urban planning that examines the use and usefulness of information that is contributed from a specific location.[33] Haklay and colleagues compiled more than two dozen case studies of VGI and disaster recovery mapping programs in use around the world for the World Bank's Global Facility for Disaster Reduction and Recovery, including examples from Mongolia, Indonesia, Nepal, and Somalia.[34] By extension, a touch point of this work concerns the area of citizen science, or the use of individuals, often online, to aid in large-scale science projects.[35] Many citizen science projects involve KDM problem solving and are run by public sector organizations, such as a state natural science museum asking citizens to count butterflies in their neighborhoods. Still other public sector citizen science projects take on more of a DHIT character, such as NASA asking citizens to pore over satellite images looking for specific objects.

Distributed Human Intelligence Tasking (DHIT)

The Distributed Human Intelligence Tasking form of crowdsourcing extends the data-analytic capabilities of government by decomposing and distributing large batches of information to an online community that performs small tasks, often for small financial rewards. Similar to KDM crowdsourcing, DHIT crowdsourcing deals with information management problems, except with DHIT the challenge lies in how to process a batch of data that is already in hand. KDM crowdsourcing is used for finding and assembling information; DHIT crowdsourcing is used for efficiently processing information.

For example, the US Census Bureau released raw digital image files from 1940 census records and made them available to the public for the first

time. The handwriting from seven-decades-old scanned documents required countless hours of manual transcription, since computerized optical character recognition (OCR) was not feasible. Taking a cue from Luis von Ahn and his colleagues' human computation system, **reCAPTCHA**, which revolutionized the digital transcription of books by weaving transcription micro-tasks into security tests on several social networking sites and blog comment functions, Kenton McHenry and his fellow researchers proposed that the government should use a crowdsourcing approach to employ an online community in the rapid, accurate, inexpensive transcription of the census records.[36] The system works by decomposing the massive data set—the entire corpus of scanned records—into smaller tasks and distributing them online to people willing to transcribe a few words or sentences for small monetary rewards, say, transcribing a dozen words for a few pennies.

Amazon's Mechanical Turk platform is a flexible tool for facilitating these large-scale decomposition and distribution data analysis problems to an online community of workers. Dubbed "artificial artificial intelligence," Mechanical Turk allows organizations to offer large batches of all kinds of micro-tasks for which computers are not as effective as simple human intelligence, such as meta-tagging images, transcribing distorted text within images, or finding contact information for a small business online.[37] Mechanical Turk has been proposed as a convenient third-party platform for governments and scholars to transcribe other scanned historical documents and for crowdsourced language translation.[38] Public health departments could use this latter approach for translating health campaign materials into foreign languages, even relatively rare ones, to allow government to reach more constituents who may not speak the dominant languages in a region. Or language translation of tax documents, school enrollment and immunization brochures, and other materials, which is often cost-prohibitive for many government agencies, especially for minority languages, can be crowdsourced as well. The issue of quality control is a common objection to DHIT activities, but some researchers, notably Panagiotis G. Ipeirotis, and some consulting firms, such as CrowdFlower, have devoted considerable attention to resolving this challenge.[39] The solution in many cases is to obtain redundancy. If, for example, a task is doled out to ten people and nine of those people agree in their transcription, there is a high level of confidence that they have the right answer. Projects using Mechanical Turk can also specify which workers can access

certain tasks based on their past work performance, which continues to improve system performance.

The DHIT approach to crowdsourcing may also be useful for governments needing to model citizens' behaviors, such as for predicting the utilization of public transit or other services or for modeling behaviors that could inform public health practitioners and environmental policymakers. Josh Bongard and his team proposed and tested a system where users could pose and answer questions about their body weight and electricity usage in two separate trials.[40] As users proposed new questions, answered existing questions about their various behaviors, and entered information about body mass index and electrical bill information, the system began to develop refined models that could draw connections between these data points. Essentially, their system crowdsourced the generation of variables that could be plugged into behavioral models to help refine the models and uncover new patterns and connections. The system could have tremendous impact for uncovering subtle patterns and predicting health outcomes in areas where energy practices, such as "fracking," are under way and facing public scrutiny about long-term health and environmental effects.

There is also some hope for more controversial applications of DHIT crowdsourcing in the public sector, especially in the areas of police work and search and rescue operations. Two of these cases have made headlines in recent years: the hunt for the Boston Marathon bombers and the search for Malaysian Airlines flight 370. While neither effort resulted in successful outcomes, they demonstrate a proof of concept for DHIT work for future public sector needs.

In the wake of the Boston Marathon bombings, which took place on April 15, 2013, the FBI called upon citizens to submit any and all photos and videos from the scene of the finish line, where the bombs had gone off, in addition to the usual call for any information leading to possible suspects. Tons of data streamed in, and news reports emphasized the sheer volume of evidence the FBI was wading through to find clues about the identities of the attackers. Meanwhile, the online communities at Reddit, a content aggregator site that bills itself as the "front page of the Internet," and at 4chan, a site FoxNews.com called the "rude, raunchy underbelly of the Internet," where crude jokes and memes are the norm, were hard at work on their own kind of investigation.[41] Reddit and 4chan members pored over photos and video clips circulating through the news and social media, annotating figures in the crowd who looked suspicious

or were carrying large backpacks that might have been capable of carrying a bomb.

In the end, the department store Lord & Taylor's security video footage opened up a lead for investigators, and other user-submitted photos provided even clearer images of the two suspects. Unfortunately, the efforts of Reddit and 4chan members only led to false accusations and rumors, which generated considerable controversy.[42]

Two crowdsourcing approaches were in play during the Boston Marathon bombing investigation. Law enforcement launched a KDM crowdsourcing activity by issuing an open call for specific content (photos, videos, other tips) from the public to be submitted to a certain location (a phone and e-mail tip line) concerning a specific event (the Boston Marathon, and specifically near the finish line where the explosions occurred). The Reddit and 4chan communities, on the other hand, deployed their own data analysis process similar to a DHIT crowdsourcing activity, posting visual data to be analyzed and inviting members to analyze images for clues.

While these two processes occurred separately and under the auspices of different organizations, their motives were the same: to figure out a suspect. The Reddit and 4chan activities seemed like irresponsible vigilantism, and perhaps this is true. However, there is a way to bring the activities of police organizations and the motives of concerned citizens together in a single crowdsourcing platform that could have hosted both the KDM activities of the FBI and the DHIT activities of Reddit and 4chan in a single, reputable venue. This platform could be owned by the FBI or some other law enforcement entity and exist as a "dark site" ready to launch in the immediate aftermath of a terrorist attack. The platform could serve as a place for citizens to upload their photos and videos as well as a place for volunteer citizens to comb through the data, looking for clues. Police could oversee some of the data analysis activity, assign specific duties to the online community (e.g., tag all photos containing black backpacks), and officially shut down bogus leads, publicly contradict rumors, or clear innocent people wrongly identified as possible suspects.

When disaster strikes, especially terrorist attacks, most citizens want nothing more than to help in some way. Traditional police tip lines work, but they could work better with the help of many eager citizens. An official crowdsourcing worksite that combines KDM and DHIT methods could be just the solution for putting these citizens to work in helping police solve crimes quickly and efficiently, amplifying investigators' resources online during messy information-management crises.

Consider also the use of **Tomnod** to search for missing Malaysian Airlines Flight 370. When Flight 370 disappeared on March 8, 2014, the website Tomnod posted satellite images of suspected areas in the southern Indian Ocean where it was believed the plane may have crashed. Internet users began poring over these images, flagging possible oil slicks, plane wreckage, or emergency rafts. Nearly a million objects of interest were flagged on the site but no solid leads emerged. The area under examination was a massive tract of ocean, but the collective efforts of Tomnod's users covered most of that terrain. Volunteers who visited the site were given clear, simple instructions for flagging possible clues. The large data set of satellite images to be examined was broken down into small parcels, meaning that each volunteer was tackling the same manageable amount of work task at any given time. Presenting uniform, manageable work tasks to users with clear instructions usually makes for successful crowdsourced data analysis in a DHIT arrangement. Once items were flagged, they were sent to the website managers, fed through algorithms, and otherwise put on a short list for closer inspection, amplifying the efforts of search-and-rescue crews scanning endless miles of remote ocean.

Though the crowd of volunteers produced many fruitless leads, they did something equally important: for every tract of ocean that was not flagged as being an object of interest they were able to rule out many square miles of empty ocean. This indeed may have helped the search teams devote more time to the reliable possible leads rather than spending the time to systematically comb through vast expanses of water.

Shay Har-Noy, co-founder of Tomnod and senior director at Tomnod's parent company, Digital Globe, explains why the Boston Marathon search on Reddit and 4chan was so ineffective, and how a site like Tomnod improves upon the process in analyzing visual imagery:

> I'm not asking for 8 million private investigators. What I'm asking for is 8 million people to independently contribute a small step toward one solution. What happened with the Boston bombing is you had thousands of people on Reddit speculating. You had this mob where they were each trying to become their own FBI analyst. And guess what? They don't have the right information. They don't know all the types of backpacks or sun angles and what other data sources are available. And as such it created this huge mob mentality where . . . they ended up picking out the wrong person. Whereas if you isolate people to just their view and allow them to independently arrive at a conclusion, you could aggregate that and make sense of it. This subtlety

> is super important. Otherwise you have 8 million people pointing in one direction which is wrong because there is no validation, or you have 8 million people pointing in 8 million directions. . . . You're not asking for the final answer. You're asking for a step toward the final answer.[43]

Broadcast Search

Broadcast search crowdsourcing applications help in finding the "needle in the haystack" or the one scientific mind that can see a solution in a difficult ideation problem by widely broadcasting a challenge on the Internet. Government agencies that frequently deal with scientific problems, such as the USGS, NASA, and other agencies that deal with actuarial formulas or specific engineering issues, could take the most advantage of broadcast search crowdsourcing ventures and open the problem-solving process to an online community that is often motivated by the sheer enjoyment of solving difficult problems. In broadcast search, an organization poses a challenge to an online community, often with detailed scientific parameters in the form of a problem brief, and the online community offers up complete, original solutions to address the problem. Many broadcast search crowdsourcing initiatives, as well as PVCP crowdsourcing initiatives, take the form of contests or competitions, and prizes are commonly awarded to winning ideas. For example, the America COMPETES Reauthorization Act added a provision for prize competitions to an existing technology innovation act and gives federal agencies the authority to offer prizes as incentives to spur innovation.[44] At the same time, **Challenge.gov** was launched as a flexible platform for a wide variety of government-sponsored innovation competitions and challenges, even using the language of "seekers" and "solvers" that is typically used by broadcast search crowdsourcing companies like **InnoCentive**.[45] This legal and technological infrastructure has been responsible for a number of US government–sponsored broadcast search competitions from agencies as diverse as the Department of Health and Human Services to NASA.[46]

In 2009, President Obama, in conjunction with the US Office of Management and Budget, awarded the first annual **White House Securing Americans' Value and Efficiency (SAVE) Award**. The award is given to a federal employee who submits the best cost-cutting idea for government operations, focusing on the dollars saved by streamlining specific functions. In addition to the prize, the top ideas are profiled on the White House's SAVE web page. In the past few years more than fifty-six thousand ideas have been submitted, and the winning ideas are projected to save the

government millions of dollars over the long term.[47] The 2012 SAVE Award winner was a proposal that government employees who receive mass transit passes switch to the senior discount rate as soon as eligible; this one change saves government agencies as much as half the cost of the pass program without affecting the employee's received benefits. Small or incremental changes also can add up across large organizations; some have taken root in large companies like Walmart.[48] And individual people, like middle school student Suvir Mirchandani, take it upon themselves to propose incremental cost-savings plans for the government without official challenges being issued. Mirchandani ran a study for his school science fair to estimate the cost savings in ink by simply switching the font used, from an ink-heavy font like Times New Roman to fonts with thinner strokes such as Garamond. He estimated an annual federal savings in the United States of about $234 million from this one simple change.[49] Government agencies broadcasting these kinds of challenges more broadly and deliberately could motivate many citizens, including children, to think creatively to solve scientific problems.

In summer 2013 the Department of the Navy launched a broadcast search crowdsourcing initiative called **Reducing Administrative Distractions** (RAD) to gather input from military and civilian employees on how best to streamline operations. According to the program's website, RAD solicited ideas from employees for which programs could be eliminated, reduced, converted to electronic media, automated, or otherwise made more efficient. The program was a success in 2013 and will be repeated in coming years. An impressive 1,485 ideas were posted in 2013, garnering 7,671 comments and 91,000 votes from 7,350 users. A few dozen ideas were adopted and have begun to streamline Navy operations.[50] For RAD, the Navy used the **IdeaScale** platform, the same platform that handled the White House SAVE Award. Leaders believe the motivators for participation by navy employees are the recognition from the chief of naval operations and the possible cash rewards through the Navy's Beneficial Suggestions (MILCAP) Program. Over the long term the RAD program could save the navy time and money by fixing operational inefficiencies and improving wartime readiness.

While KDM and DHIT crowdsourcing approaches address information management problems, the broadcast search approach solves ideation problems that have empirically "right" answers, such as cost-saving formulas or scientific solutions. Government agencies can ask citizens for novel ideas to solve specific problems and gain demonstrable ends. Broadcast

search works in part because it casts a wide net online, so an organization can reach those "on the margins" of a problem domain who may have unique heuristics, tool kits, or perspectives that could aid in solving a given problem.[51] Research into this marginality factor in problem solving has shown that any number of factors may help "outsiders" perform well in a problem-solving situation. Technical marginality applies to someone on the edges of a discipline who brings a unique perspective to a problem, such as a traffic engineer who solves a difficult geophysical algorithm related to earthquake prediction.[52] Rank marginality refers to lower positions in an organizational chart, such as receptionists and program coordinators, who may solve problems that managers and other experts may not have the skill or necessary perspective to solve.[53]

Government agencies have also used third-party platforms for broadcast search crowdsourcing, most notably InnoCentive, a crowdsourced scientific research and development platform.[54] In 2009 NASA offered a thirty-thousand-dollar prize on the InnoCentive platform for an algorithm for predicting solar flares, and the winner was a retired radio engineer.[55]

Peer-Vetted Creative Production (PVCP)

Not all ideation problems have empirically "right" answers. Policy, aesthetic, and design problems are matters of subjective taste or public support. For these ideation problems, a Peer-Vetter Creative Production approach to crowdsourcing is most appropriate. In PVCP crowdsourcing, an organization issues a challenge to an online community, the community replies with possible solutions, and the community is also empowered to choose among the submitted solutions, often through a commenting and voting mechanism.

The most prominent, classic business case of this form of crowdsourcing is **Threadless**, a clothing company whose members submit graphic t-shirt designs and vote on the designs of peers. The company prints the top-rated designs and sells them back to the online community.[56]

With support from the US Federal Transit Administration and in cooperation with the Utah Transit Authority (UTA), the **Next Stop Design** project, which ran in 2009–2010, was an attempt to replicate the business case of Threadless in a transit planning context. Participants were asked to respond to the challenge of designing an ideal bus stop shelter for a real transit hub in the UTA system. In just a few months and with no tangible reward offered, nearly thirty-two hundred participants registered on the

site, submitting 260 high-quality architectural renderings for bus stop shelter designs and casting more than ten thousand votes in the competition.[57] The Next Stop Design project was replicated in part for the **inTeractive Somerville** project in Somerville, Massachusetts, and the outcomes were equally successful.[58]

In a different example of PVCP for urban planning, Envision Utah launched its 50,000 Strong campaign to try to convince fifty thousand Utah residents to play **an online game** to help plan how the state will handle a population that is projected to double by 2050.[59] Circulated through social media, the game asks players to rank order a set of eleven important issues, ranging from energy and recreation to education and housing. Players then answer a series of questions about how they would handle the effects of growth in relation to these key issues, with the game showing real-time simulations of what each decision would do to other variables in the game. Similar in spirit to **IBM's CityOne game** or even the popular SimCity franchise game, 50,000 Strong funnels the data models from each player's preferred planning scenario to Envision Utah and the governor's office, which will use results to guide choices in the coming years.[60]

Participatory budgeting falls into the category of PVCP in a way that is similar to the Envision Utah game. Participatory budgeting is widespread and not a new concept in public administration. It began in Porto Alegre, Brazil, in the late 1980s, and has steadily spread across much of South America and Europe to the point that it is now commonplace. Participatory budgeting empowers citizens to have a say in how government spends money by voting for particular projects they want to fund using a portion of the total annual budget. Some municipalities have tried online participatory budgeting, verifying votes with voter ID numbers and other means, with considerable success. In Belo Horizonte, Brazil, for instance, 10 percent of the voting population in a city of 1.7 million people cast a vote for how they wanted a portion of the city budget to be spent.[61] Participatory budgeting is relatively new in the United States, and San Francisco leaders recently announced they would attempt an online participatory budgeting process in the near future.[62] No single citizen's grand design submission or single idea for the budget will win out using the Envision Utah planning game or online participatory budgeting, but each individual's preferred vision will inform, in the aggregate, the government's planning and budgeting processes going forward.

PVCP crowdsourcing is ideal for spurring innovative new products, particularly software applications, that can benefit the public. Backed by

First Lady Michelle Obama, the Apps for Healthy Kids contest was a US Department of Agriculture project to crowdsource the development of a new phone app to encourage youth to eat healthy and exercise.[63] Several years before the Apps for Healthy Kids contest, this kind of PVCP project was under way in the State of Gujarat in India. From 2005 to 2007, college students across Gujarat competed to develop new software applications to streamline a variety of e-governance services in the Initiative to Nurture a Vibrant Information Technology Ecosystem (INVITE). After several rounds of competition over two years, three applications—an employment portal, a resource for artists, and a hospital information management system—were considered for deployment in Gujarat.[64] Notably, the finalists in the competition rounds ended up being from a variety of colleges in the state, not just from the most prestigious ones, suggesting that PVCP competitions may help meritorious ideas stand out in a crowd.

Another PVCP crowdsourcing process that concluded in 2009 was a joint project between the Intelligent Transportation Society of America (ITS), IBM, Spencer Trask Collaborative Innovations, and other partners, with the goal of devising a technological solution to alleviate traffic congestion, a problem that wastes countless environmental resources and costs millions of dollars annually. The winning idea, chosen by user voting from among a finalist pool, was **iCarpool.com**, a collection of tools and dashboards to help citizens make driving choices beyond solo commuting.[65]

PVCP crowdsourcing approaches enable what some consider a holy grail for online public participation: true democratic deliberation and debate. The case of Finland's off-road traffic law is a shining example of how deliberation can take place in online, collaboratively produced legislation.[66] The Finnish government came under pressure by citizens to reform the law governing off-road traffic—mostly that of snowmobiles and ATVs—to handle an increase in off-road vehicle traffic during the summer months. Legislation was proposed in the traditional manner, but it stalled due to public controversy. The Finnish Ministry of Environment decided to open the legislation process up to the crowd and allowed citizens to discuss relevant issues and propose new topics for discussion through a few rounds of debate. Ultimately, after some refinement and voting on the site, some consensus emerged.

Other adventures in crowdsourcing policy have found some success but have been just as important for pushing forward the idea of open policymaking within the popular imagination. The first known use of a wiki to

solicit public input on the wording of a law was the New Zealand Policing Act of 2008. The process invited citizens to directly edit the proposed wording of an outdated law regarding police conduct. The open part of the process lasted less than two weeks but it demonstrated that the words of everyday citizens could be useful in crafting legislation online.[67] The law passed.

Even more well known was the attempt to crowdsource a new Icelandic constitution in the wake of the country's 2008 financial collapse. Represented by a rather obscure collection of citizens who used the Internet to reach out for public input, a new constitution was drafted and put to a referendum vote in 2009. The vote failed, but the process was important. As Hélène Landemore writes,

> Iceland's experiment of peacetime re-drafting of its constitution is unprecedented and revolutionary in many respects, but especially because, for the first time in human history, a country's foundational text (or at least a draft proposal for it) was written with the more or less direct participation of its people. Iceland, arguably the oldest parliamentary democracy in the world, indeed came close to being the first to pass into law the world's first most inclusively and transparently written constitutional text.[68]

More recently, a bill introduced in the Philippine Senate, called the Crowdsourcing Act of 2013,was an attempt to "create better laws by allowing more people to participate in the lawmaking process with the use of the Internet."[69] In addition it was meant to "enhance democracy by giving Filipinos additional avenues to exercise his/her right and duty as a citizen, while maintaining the existing ways of participating in the law-making process[,] like physically attending hearings and talking to legislators."[70] The bill detailed full transparency for proposed legislation in its various stages of debate and refinement, allowed for citizens to record their commentary, and called for citizen commentary to appear in committee reports of the legislation. While not mandating the degree of influence that citizen comments would have on specific legislation, requiring citizen comments to be seen throughout the process will undoubtedly affect the tone of debate and direction of legislation.

PVCP crowdsourcing applications can help government agencies solicit from online communities ideas and solutions that require broad-based public support but do not truly have empirically "right" answers. By allowing

citizens to both submit ideas and vote on the ideas of their peers, the PVCP process mirrors closely the deliberative democratic process inherent in traditional face-to-face public participation programs.

Key Points

- Crowdsourcing represents one particular kind of government coproduction, a concept long explored in public administration research.
- A problem-based typology can help public managers decide if, when, and how to use crowdsourcing.
- Two types—the knowledge discovery and management approach and the distributed human intelligence tasking approach—are suitable for information management problems.
- Two other types—the broadcast search approach and the peer-vetted creative production approach—are suitable for ideation problems.

3

The Planning Phase

Some of the most important work of any public sector crowdsourcing venture happens early on, before any websites are launched or citizens are sought. A well-designed system will alleviate many headaches later on. The design of the crowdsourcing process entails both technical design of any tools that will be used—apps, websites, wikis, and so on—as well as general planning for the work to be done and the desired outcomes. Policies—including proper conduct that is expected from participants in the process—also serve an important role in facilitating a smooth operation. The subsequent chapters cover some of these considerations in the form of best practice statements.

Best Practice 1. Clearly define the problem and solution parameters

For any crowdsourcing venture to be successful, the online community needs a clear directive. The problem needs to be well framed and specifically defined, and the online community needs to be given clear parameters for how they will contribute to the project. This first step is perhaps the most crucial for any crowdsourcing endeavor, public or private, large or small. With information-management problems (solved using KDM and DHIT approaches) or broadcast search problems, a vague directive will certainly result in muddy results. Broadcast search problems are usually presented with detailed technical briefs describing exactly what needs to be done by the

online community. At InnoCentive, for instance, some briefs run for several pages and would be difficult for a nonscientist to understand. Broadcast search activities are apropos when a technical problem is too difficult to be solved with existing resources or the missing piece to a solution is just out of reach for the organization. In these cases it is important to show a provenance of thinking, so to speak, so that the online community can be briefed, as it were, on what is known and unknown about a given scientific challenge so that they may contribute a precise and useful answer. Naturally, it is important to make it clear what kind of knowledge the organization seeks in KDM situations, and with DHIT processes it is even more obvious: individuals are presented with narrow work tasks and clear instructions for accomplishing them correctly. Without clear instructions at Mechanical Turk, for example, the organization seeking the results of the Turkers' efforts will be presented with a range of contributions, many of them unacceptable.

Asking an overly broad question of an online community—such as "What is your vision for the city in ten years?"—will generate interesting responses and may turn out to be quite a valuable exercise in public participation and long-term visioning for the city. But it is also almost certain that the broad question will solicit from citizens a wide range of responses, many of them vague and few of them feasible, which will present city administrators with the problem of selecting the best ideas from a mixed bag of apples and oranges, especially when it comes to PVCP-type problems where the answers are not clear cut. Posing a more specific question—such as "What kinds of sports facilities would you like to see in the new downtown public park?"—will draw more specific responses that better serve city planners. Both types of questions can be useful for public participation programs, but only a specific question will effectively engage citizens in the co-creation of a useful information resource or new actionable idea. As Ines Mergel and Kevin Desouza found in their analysis of Challenge.gov, "crowdsourced solutions are often quixotic; solutions might not be readily implementable or may not advance all desired objectives. . . . The lack of clear problem specifications on the part of an agency is a primary reason why submitted solutions do not meet expectations."[1]

In its work with government agencies, InnoCentive brings a particular viewpoint to the consultation that has become influential in its own right, similar to the way the federal government thinks about crowdsourcing. Jon Fredrickson, InnoCentive vice president and chief government innovation officer, explains:

> This is one of the hallmarks and huge value points we bring to a client. We do this with a methodology called "challenge driven innovation." It's so widely used it's like saying Kleenex now because the federal government uses our trademark "challenge driven innovation" as a way to talk about actually getting the question right. I use a phrase, "if you get the correct answer to the wrong question, you're probably going in the opposite direction you want to go." We help the client tell us what they believe the problem is and where they believe they're strong and where they're stuck, and then we try to understand their beliefs, because beliefs are the hardest things to change. . . . Our task is really to help determine where and what the problem is, then how best to articulate the problem, and typically take it out of its normal context so that you can get people who look at those kinds of issues to look at it differently. . . . We try to offer more than the site where people come to solve problems. What we really do is give the ability—through the methodology—to present the best question to the widest number of people to create the potential for best results for what the real issue is.[2]

Clarity of the problem goes hand-in-hand with the need for well-defined user parameters. At crowdsourced clothing company Threadless, users may submit silk-screened graphic t-shirt designs but they must do so using a predefined Adobe Illustrator template and are made aware of the range of t-shirt colors available. Without making the template, a design brief, and the terms of service accessible on the website—all of which effectively constrain the kind of submission users can make—users would be free to submit all kinds of graphic design ideas that would not be producible or sellable.

The same is true of other crowdsourcing approaches. Tomnod's various image-notation projects include clear instructions for how users can contribute. In a recent example, Tomnod asked users to tag specific instances on satellite images of the flooding in Serbia and Bosnia, including blocked roads and bridges, flooded industrial and commercial buildings, and flooded residences. Each came with example images to help users know what to look for. Users then were limited in what they could do when they tagged part of an image—they simply dropped a tag on the map. Constraining this input and providing this kind of clear description of the problem is paramount. Public sector crowdsourcing ventures must make it equally clear to citizens how they are expected to contribute their ideas in terms of technical formatting and content or topical requirements.

Sometimes the boundaries of the problem and the solution parameters can be defined and enforced by laying clear ground rules upfront, then folding these guidelines into terms of use for the website. Mark Walerysiak, the project manager for Bristol Rising, described how his company focuses contributions:

> We came up with something known as the crowdsourcing agreement, and that allowed for just some basic ground rules. Because the important thing to factor in is that the city had a vision before [the development company] came to town that they wanted to get multi-story buildings, walkability, mixed use going again, in a traditional downtown sense in this area. . . . They had enacted a number of zoning changes that were in place to encourage this kind of development. . . . So something like people proposing building a Wal-Mart downtown wasn't appropriate for the downtown zone, because it's a single-use building, a massive footprint, and requires a sea of parking all around it rather than just having more downtown-like parking structures or angled parking out on the street. So we wanted to be clear about what was most appropriate downtown so that people weren't wasting their time suggesting those kinds of things. They could suggest an urban-format Wal-Mart, sure, but if they were suggesting a *bunch* of single-use, 'big box' buildings, those would have zero chance of being developed downtown. . . . It had to be something that made sense in a downtown environment. So with those basic ground rules, something people agreed to work within, we moved forward from there just fine.[3]

Organizations can develop specialized training for educating the crowd on the proper way to contribute, or they can just learn to be comfortable with less-than-ideal contributions. Large-scale crowdsourcing activities may generate enough participation to push poor contributions to the margins as statistical outliers. Darlene Cavalier, founder of citizen science website SciStarter, which hosts a number of government-sponsored crowdsourcing projects, describes how different government agencies perceive the value of crowdsourcing based on the cleanliness of the data they hope to receive:

> Some federal agencies seem to truly understand the value of working with, and supporting, public participation, without regard to formal degrees and traditional representations of expertise. Participatory experiences, in such cases, include everything from informing the research agenda, designing

methodologies, building appropriate tools, translating data, and presenting outcomes to policymakers.

In more typical scenarios, the approach is top-down and follows the deficit model: in short, people are asked to collect or classify a lot of data. Because of the amount of data involved in these scenarios, expertise can matter less as "bad" data is often greatly outnumbered by the "good" data. NASA, for example, employs this click-worker method and it's effective. They've also started to embark on a progressive participatory model to engage people in technology assessment discussion directly related to emerging policies.

The EPA [US Environmental Protection Agency] has different issues to consider regarding public input. There is a concern that when someone might be one of a few people observing air or water or soil quality in a particular location, and their findings are wrong, it's too risky to include that data in an official database. EPA and community groups are working together to design and calibrate tools, collaborate to design training workshops, and learn from each other to share and translate data so it's responsive to the needs of the people.[4]

Best Practice 2. Determine the level of commitment to the outcomes received

The application of any crowdsourcing process requires an organization to communicate to the online community exactly how much impact user-submitted ideas and labor will have on the organization's actions. Government agencies should make known upfront the degree to which the online community's ideas will be put to use. A spectrum for thinking about the level of commitment to crowdsourcing outcomes is shown here, ranging from as-is implementation on one end to viewing crowdsourcing activities as merely consultative (see figure 3.1).

On the as-is implementation end of the spectrum, the government agency is committed to using the online community's ideas or labor wholesale. This means that in a contest format, the winning idea selected by the online community will be implemented. The benefit here is that by embracing this stance, government is communicating to the online community a level of trust to come up with good ideas, and as a result the level of public participation may be higher because citizens will feel their input will matter. The

obvious downside, though, is that the government may not be pleased with the outcome because it may undo effective long-standing policy, is not financially feasible, or is simply nonsense. The Obama Administration faced this problem with the "Citizen's Briefing Book," an online initiative to solicit policy proposals from the public between Obama's election in November 2008 and before he took office in January 2009. More than 1.4 million votes on forty-four thousand proposals led to winning ideas that included legalizing marijuana, legalizing online poker, and revoking the Church of Scientology's tax-exempt status; all of those proposals did not align with the Obama Administration's policy hopes.[5] The Obama Administration downplayed the results and was no doubt thankful it had not committed to as-is implementation. Comedian Stephen Colbert has hijacked naming contests for a Hungarian bridge and a NASA module on the International Space Station.[6] The Hungarian government reneged when the name "Colbert" won the contest, choosing instead a name that was not even a finalist; NASA also reneged, but it showed a sense of humor by naming a treadmill onboard the Space Station after the comedian.[7] It is difficult to identify cases when the government truly committed to an online community's ideas in an as-is way, though the closest example might be **We the People**, the Obama Administration's public petition system. At We the People anyone can create an online petition and any petition gaining a certain number of signatures within a given time frame is guaranteed an official White House response, though critics have noted that the threshold of signatures needed shifts over time.[8] While a guaranteed response from the White House for a qualifying petition does not constitute a commitment to pursue the policies proposed in that petition—and it rarely does—the guarantee of an official government response is in the spirit of an as-is implementation.

At the consultative end of the spectrum, government would not make any promise to use any of the ideas that come from a crowdsourcing venture. Instead, the online community's outcomes are used only if the agency decides they make sense. The advantage favors the government here, which does not have to risk anything by running the crowdsourcing venture; the disadvantage is that the online community may not be as motivated to participate if it does not sense its work will matter. In the Next Stop Design case there was no compensation promised to the winners, nor any commitment that the winning bus stop shelter would eventually be built. Despite this, however, the project enjoyed a relatively high level of participation even though some participants inquired after the conclusion of the contest when the winning design would be built and were disappointed to find out

it may never be built, which suggests they may not have participated as robustly had they known that fact in advance.[9] Sometimes a consultative commitment can go quite badly for the sponsoring organization. In 2010 the Coalition government in the United Kingdom welcomed nearly ten thousand comments from the public on various policies. Despite many valid criticisms, the government responded by dismissing every suggestion and keeping to the party line. Speaking with the *Guardian* about the story, Simon Burall, director of Involve, a group advising bodies on consultation, said:

> You have to give the government some credit for trying to do this, but badly design consultations like this are worse than no consultations at all. They diminish trust and reduce the prospect that people will engage again. This is a dangerous problem for a government that is going to have to take people with them when they make very difficult decisions.[10]

The middle ground between the as-is and the consultative extremes is perhaps a more reasonable place for government crowdsourcing ventures to reside. A shared selection process ensures that the online community has a substantial say in the outcome but the government still maintains a level of control over the process that offers a way out if the venture goes awry. For example, if a government agency were to take on a PVCP design competition, it might allow the online community to vote for the top ten designs but the agency could retain the final choice among finalist designs. Or the other opposite could be true: the government agency could select the top ten user-submitted designs but then turn the voting over to the online community and commit to the outcome. Another middle ground option might involve a mix of citizens, design experts, and government agency staffs jurying all user-submitted designs in combination with weighted votes from the online community. No matter the level of commitment on this spectrum, the government agency sponsoring the venture must truly commit to the selection mechanism and keep the process transparent, or citizens may grow suspicious of the project and be discouraged from participating in governance later.

Best Practice 3. Know the online community and its motivations

It is important to know in advance whether a given crowdsourcing application will be appealing for participants. An online community only exists when people show up and show an eagerness to contribute. Understanding

the various motivations for participation among online community members, especially regarding their willingness to contribute user-generated content and ideas, is paramount. The emerging empirical research on motivations for participation in crowdsourcing more or less confirms what we know about why people blog, why YouTube members post videos, why Wikipedians contribute to the online encyclopedia project, and why people tag content on the photo-sharing site Flickr.[11] The range of reasons are a mixed bag of altruistic and extrinsic factors, including the opportunity to earn money or build a portfolio to get future work; to socialize, make friends, pass the time when bored, or have fun; and to contribute to a large project of common interest and challenge oneself with solving a tough problem.

Still, we know relatively little about exactly which motivators are in play in a given crowdsourcing application or why participants are drawn to specific projects. We know even less about how individuals motivated for different reasons perform differently in crowdsourcing activities, that is, whether or not an individual in an online community who is participating for a given reason will be more or less likely to contribute a valuable solution compared to someone else in the community who is participating for entirely different reasons. This is the frontier of the crowdsourcing research.

It is no doubt a combination of factors: each individual contributor participates for his or her own reasons, though additional research may help tailor a crowdsourcing venture to those who are motivated by certain things. Public administrators should be mindful of this mosaic of motivators and should design government crowdsourcing ventures that are tuned to the type of citizen they hope to attract and the kind of responses they hope to elicit. Ongoing research and good online community management, discussed in the next chapter, are key. One concrete recommendation for addressing these varying motivations is that crowdsourcing activities should include a number of outlets for engagement—between organization and community and among individual community members—only if it makes sense to do so. For example, including a message board or a discussion space for citizens to connect with one another and workshop their ideas together, even if that is not the exact focus of a particular venture, may provide an incentive for people seeking connection to fellow citizens or wanting to be seen and recognized for their ideas. Without the inclusion of this design element—the message board—these particular motivators (the need to connect with peers, a sense of community, peer recognition, and the like) may go unrealized and these participants may not show up to contribute. Message boards and comment spaces will alter how well par-

ticular designs perform in a PVCP competition, since communicative interaction affects how participants perceive the merits of different ideas.[12]

Key Points

- In the planning phase of a crowdsourcing project, consider clearly defining the problem and solution parameters, determine the organization's level of commitment to the outcomes, and know the online community and what motivates it to participate.
- Clarity of problem and desired solution formats are key to preventing muddy data.
- Government may commit wholeheartedly to the crowd's work in crowdsourcing, may choose not to commit upfront, or may find middle ground. Each level of commitment has its pros and cons.
- Crowds are motivated to participate for a variety of reasons. Public managers need to understand citizens and what they might want from a crowdsourcing arrangement.

4

The Implementation Phase

Once the high-level design considerations have been made, additional planning and design takes place at more of a ground level as a crowdsourcing website—or whatever the tool—is built for the project. This chapter covers the ground-level issues for consideration when implementing a crowdsourcing project, leading up to the launch and management of a crowdsourcing endeavor.

Best Practice 4. Invest in usable, interesting, well-designed tools

One of the most surprising findings to emerge in a series of interviews with participants from the Next Stop Design case was that users were drawn to the project because the website was well designed, intuitive, and easy to use.[1] The need for sound usability in government websites is nothing new, and US government sites are required to be maximally accessible to people of all physical abilities. But the fact that good design motivates participation in crowdsourcing plus the fact that participants take note of good design is important to remember.[2] Easy-to-use websites and submission systems should be in place for any public sector crowdsourcing venture, and that likely means hiring professional, third-party web design experts. Crowdsourcing may be an efficient means for decision making, but good crowdsourcing is not usually entirely free to implement.

As Aneesh Chopra suggests, government agencies should learn to relax the rigid and costly procurement process and seek more streamlined

partnerships with the private sector in more of an entrepreneurial, start-up spirit.[3] There are now several companies that provide specific services to facilitate public participation online for urban planning activities, policymaking, budgeting, and other things for which government agencies seek citizen input. Smaller niches within this industry focus exclusively on the implementation of one kind of tool or even one kind of service, such as guaranteeing a user's qualifications for participation in the first place or for land-use planning activities among people who live in a specific ZIP code only. Of course, full-fledged platforms like InnoCentive have turned their attention to government clients as well, offering a complementary service to traditional procurement methods. Jon Fredrickson, InnoCentive vice president and chief government innovation officer, explains:

> What we really do with crowdsourcing or open innovation isn't to replace normal structures like grants, like funded research projects at universities, or the way that government procures things through the normal course of doing what they do. My role is really to say "we may be a better tool [that] can dramatically shift how the funding for necessary programs or R&D can be amplified."[4]

There is little need to reinvent the wheel, either. Many tools are low cost or free to use and require very little technical expertise to establish. At their core, many crowdsourcing applications are just content management systems or simple databases that allow users to upload content or to comment and rate content from peers. Indeed, a broadcast search activity could be facilitated through e-mail only: a problem brief is posted on a basic website and users e-mail written solutions. InnoCentive and Amazon Mechanical Turk take relatively small cuts of prize money and payments and offer slick, ready-to-use platforms. Platforms like Ushahidi are free and open source, and the **source code for the Next Stop Design project** is available free online as well. Just a few years ago, relatively little research existed to support design decisions and a city manager hoping to dabble in crowdsourcing might have been forced to secure many thousands of dollars—no small feat for any city budget these days—for the expert IT support needed to design and implement a site. He or she might have had to fight an in-house organizational culture that viewed this kind of experiment with suspicion. Today a multitude of technology tools and plenty of free and low-cost options are available, as well as many experienced consultants, a growing

body of research, and a changing organizational culture and attitude toward open government, all of which combine to make crowdsourcing a natural next step for government agencies. This makes the design or selection of sharp-looking tools easier to accomplish. Urban planning scholar Robert Goodspeed maintains a database of some of these tools, sortable by cost, **on his website**. SeeClickFix founder Ben Berkowitz remarks,

> Don't try to create it yourself. See what's out there and evaluate if it's working or not and then go from there, because this space has evolved quite a bit in the last five years. It's likely someone has taken a stab at it already, so seek them out and work with them. . . . [Government agencies] should be prepared to purchase software. It will be cheaper, it will be better, it will be more sustainable [if they use a third-party vendor]. They should be prepared to purchase from vendors who do not have four hundred clients [as is the expectation in traditional government procurement and vetting of vendors], but if possible, try to [use a start-up. But] be at least the second one to go with a vendor, because it might be risky. I wouldn't want my government to do that [go with a first-time product] personally. Someone has got to go first, but I just wouldn't want it to be my government. . . . If it's an application for your citizens, make sure it's an application your citizens actually like using and . . . call on other government [agencies]. They're more than happy usually to make referrals.[5]

Best Practice 5. Craft policies in line with the legal needs of the organization and the online community

Crowdsourcing brings with it a slew of potential legal problems, both for participants and for the organizations sponsoring the ventures. Legal questions tend to cluster around issues of preserving free speech, controlling who is allowed to participate, and navigating copyright and intellectual property. These issues, however, are manageable if the venture is implemented with some foresight.

Free speech is not only a core tenet of democratic governance; it is also essential for fostering innovation and solving problems.[6] With any government-sponsored project, public dissent is inevitable, and preserving the integrity of a crowdsourcing venture while upholding the rights of citizens to speak out against something with which they disagree is always a question. When online communities lash out about crowdsourcing platforms,

which Jeff Howe cleverly calls "crowdslapping," government agencies must choose how to respond.[7]

Broadly, crowdslapping or crowd resistance can be categorized into four kinds: disruptive crowdslapping, destructive crowdslapping, cracking, and ignoring.[8] Disruptive crowdslapping consists of peaceful protest and rational arguments posted by a citizen to a crowdsourcing site. This is the ideal kind of dissent for an agency to encounter since it mirrors the rational dissent that might normally be expected to appear in any face-to-face traditional public participation activity like a town hall meeting or hearing. Destructive crowdslapping is more aggressive and takes the form of "flaming" or "flooding" an online forum with repetitive or offensive content that discourages others from engaging in a productive dialogue.[9] Cracking (the common term for malicious computer hacking) prevents citizens from participating and involves intentionally breaking a site's functionality through the manipulation of code or other tactics. Cracking, of course, would be akin to destroying a public forum by calling in a bomb threat, which is not something a government crowdsourcing application should tolerate. The most powerful form of crowdsourcing protest, however, is participants simply choosing to ignore a project. If no one shows up to the online community, the project fails.[10]

It is important to preserve free speech in government crowdsourcing applications. Because crowdsourcing applications are akin to a limited public forum in legal terms, it means government can control the time, place, and manner of speech in content-neutral ways for the sake of public discourse.[11] Crowdsourcing ventures should be conducted in the same way town hall meetings and other traditional public participation forums are conducted. Ideally, too, there should be architectural features of the crowdsourcing application that allows citizens to govern themselves, such as reputational icons attached to users to govern who is heard and how they are heard.[12] Cliff Lampe and colleagues found that a broad base of users empowered to moderate a sprawling, heated discussion online were remarkably capable of keeping the peace without censoring others unjustly.[13] In some situations, though, it may make sense to rely on a site's architecture to empower citizens to censor one another in some way. This does not mean that user comments in a forum would be deleted entirely, and indeed public records requirements often mean that everything that takes place in a public sector crowdsourcing application must be recorded. What it could mean is that perhaps when a comment receives five negative ratings, it is hidden from view or bumped to the bottom of a discussion

thread to where users would have to go out of their way to access it. The comments sections of online news articles are notorious as cesspools of name-calling and uncivil dialogue, and news organizations have struggled with this very issue for many years; some have even decided to eliminate comments altogether.[14]

One way to avoid these issues entirely may be to establish ground rules early on for who is allowed to participate in the crowdsourcing space. If public participation activities are designed to bring in citizen input on policies that will eventually affect them, then it makes sense to verify that participants have a right—legally or conceptually—to speak on those issues. For example, in a crowdsourcing activity involving land use planning in the city of Houston, should a participant from Seattle be allowed to have a say? If so, to what extent? In some instances crowdsourcing processes have been designed to encourage citizens to identify themselves before participating, usually by requiring the creation of a user profile that asks the user to disclose a real name and other details like a hometown or ZIP code. Some other more rigorous methods have been deployed to guarantee as much as possible that a citizen from a specific jurisdiction is participating in a policy discussion affecting that specific location. And in other instances the approach is fairly hands-off, relying on citizens to self-select into a conversation based on their interests alone. Beth Noveck designed Peer-to-Patent so that users had to provide their "first name and last name rather than only a 'handle'" in an attempt to "elevate the level of discourse."[15] The ability to remain anonymous on the site might allow people to liberate themselves from the constraints of identity politics, as M. Sotarauta suggests, or even to feel "disinhibited" and more expressive.[16] However, Noveck explains that one of the normative ideals of deliberative democracy has always been that processes must be accountable and relevant, and that "members of the community engage with one another in accountable and reasoned public discourse" and "cannot be anonymous to one another."[17] Upholding this ideal is especially important for designing deliberative democratic spaces online, she argues. Online disinhibition, indeed, fosters the nastiest kinds of flaming and trolling seen on some notable websites like 4chan.

These varying philosophies about anonymity and accountability should be manifested in design decisions, but they have varying consequences, both good and bad, for a public sector crowdsourcing venture. For example, public participation consultant Colleen Hardwick has developed PlaceSpeak and a suite of technology tools specifically to allow users to be authenticated

based on geographic location in crowdsourcing endeavors. Users registering on a crowdsourcing site are verified through several means, including receiving unique PIN numbers sent to their phones, using GPS to verify that home addresses fall within a predetermined geographic location, and using third-party services to detect fraudulent IP addresses. The process continues to become more sophisticated. As Hardwick notes,

> over time, we are going to add further and different ways to authenticate people. . . . We believe proponents [city clients] are going to require greater rigor over more controversial topics. . . . We also believe people will become more influential the more authenticated they are.[18]

Other consultants take a different approach, and they claim it has its own benefits. MindMixer founder Nick Bowden explained:

> We authenticate that you're a real person, but we don't verify your identity to a location. . . . We actually take a little bit different view on that than some others. I think that the movement of people is more pronounced than it ever has been. . . . Being proud of a location doesn't necessarily mean you live there. . . . I don't even know why a city cares where a great idea comes from. . . . We've taken more of an agnostic approach to that. . . . About 40 percent of our user base actually contributes to more than one online exercise [which are each sponsored by various agencies]. . . . If you were on a plane, you wouldn't tell the person sitting next to you that you were from the "City of Los Angeles." You would just say "I'm from L.A." And "L.A." implies all these cool, eclectic things, right? The neighborhood you live in, the school district you're in, the university you graduated from, all these different things. You're not a singular person with a single identity in a particular location. And so we've taken a looser approach . . . Why would you care if a good idea came from Nashville instead of Kansas City, so long as it was a good idea?[19]

Bowden goes on in making the point that on some issues it helps to have people from outside of a city contribute. He illustrates the example of a city grappling with whether to invest in more in-street bike lanes or in more dedicated bike trails separated from vehicular traffic. City A may have experience with this debate and choose a certain path, for better or worse. City B, on the other side of the state, may be in the early stages of approaching the question. Biking enthusiasts from across the entire state and beyond

belonging to an active online community or blog centered around a love of cycling get news of City B's crowdsourcing process about bike lanes and word may spread through the online cycling community. Considering their experience of having already participated in public dialogues about bike lanes, why should citizens from City A be kept from the conversation that is happening at City B's crowdsourcing site? One of the principles of open innovation, after all, is openness, with the hope that widening the reach of a problem may net more and better solutions from the outside. The concern, however, is that when these issues become especially contentious or when a lot of money is at play over future development contracts or certain kinds of policies, how can a crowdsourcing process control the unwelcome influence of outside special interest groups invading the dialogue?

The Next Stop Design project faced this exact issue in 2009. The decision from the beginning was to verify through typical e-mail confirmation processes that every user was a real person (rather than a bot).Otherwise users on the site were allowed to use pseudonyms. The lack of accountability, in part, contributed to a gaming of the system and some users created multiple accounts and voted certain designs up or down to boost or lower scores. The gamers were identified by reconstructing suspicious voting patterns based on IP address and the offending votes were removed, but the damage was done. More than 27 percent of all votes were discarded as fraudulent. One participant noted that "there was a leak with the voting process and it allowed 'trollers' a chance to swing things [in] an unfair way," which affected users' trust of the process.[20] The lack of a screening process or requirements also led the project in unexpected directions, for better and worse. What had begun as a process to get amateur, local input on bus shelters from everyday bus riders in Salt Lake City, Utah, turned into a global competition in which most of the participants—and all of the top winners—were not from Utah and were mostly professionally trained architects and designers, which may have turned away the target audience.[21]

Because most crowdsourcing applications involve an online community submitting original ideas—especially the ideation approaches of broadcast search and PVCP—it is also important to have in place a policy of handling intellectual property and copyright violations. Crowdfunding site Kickstarter was recently subjected to a lawsuit involving a 3D printer project from technology company Formlabs that had been funded through the site, which another company, 3D Systems, claimed infringed on its intellectual property.[22] A clear statement of the rules of engagement, such as the guidelines given in the Digital Millennium Copyright Act (DMCA), terms of use

for websites, and other specific policies can help protect any government agency sponsoring a crowdsourcing venture. Crowdsourcing companies such as InnoCentive and Threadless have clear policies in place to protect the organization from copyright problems stemming from user-submitted ideas.

Best Practice 6. Launch promotional and growth plans to sustain the community

If an online community gets off to a slow start and only a few participants engage in a crowdsourced public participation venture, it will appear to newcomers as if the place is a ghost town, and these newcomers may be less likely to get involved at all. Likewise, if a community is already quite large, robust, and has developed its own internal culture and governance structure, newcomers to the community may not feel welcome or may be unsure about how to become initiated into the group or be taken seriously. Balancing the dynamics between these extremes is an art, and a strategic plan for online community growth should be in place before a crowdsourcing venture gets going. Some of the most well-known crowdsourcing businesses like Threadless have managed to grow quickly without having to do any formal advertising, instead relying on word-of-mouth publicity from bloggers and fans to drive new participants and customers to the site. The Next Stop Design project attempted a rather traditional public relations campaign to get the online community started, including press releases to news organizations and email blasts to personal lists, but the largest spikes in growth happened when architecture blogs, including international sites, found the contest and promoted it to their communities.[23] inTeractive Somerville, a case similar in design to Next Stop Design, experienced a late rush of participants that was spurred by three articles in local publications over a two-day span that "generated more visits to the website and . . . the number of ideas" that were submitted.[24] Both online and offline tactics can work to grow a community.

By and large, participants in crowdsourcing communities self-select into the projects based on their interests and expertise, or by being drawn to handsome rewards in some instances. Even though it may seem difficult to build a base of experts to tackle even the most complex public sector problems, it is possible: "Experts have a higher willingness to collaborate on complex tasks than non-experts."[25] Building an online community, then, has much to do with market research, audience segmentation, and targeted

promotional campaigns; it is a process of tailoring to specific groups rather than going for mass appeal. It can also make sense to ethically "seed" an online community to get it off the ground.[26] Government agencies hoping to crowdsource should construct a strategic plan for growing the online community and for sustaining it once it reaches a critical mass and begins to be truly productive.

An emerging body of research on how to build and manage online communities has appeared, with some of it coming from the fields of marketing, brand community, social media management, and the lived experience of some online community managers.[27] But some of the most theoretically grounded work is coming from the fields of computing, psychology, and group communication.[28] There are some complicated reasons why individuals choose to join an online community, regularly contribute to its health, and develop a deep commitment to it over time. The point here is that there is rarely such a thing as "if you build it, they will come" kind of thinking related to online communities. Online communities often grow slowly, they sometimes mirror offline personal relationships, and there is a delicate balance of needs that must be met in order to keep individuals coming back for more. There is no single recipe for success. Rather, the constant with good online community management is an insightful, committed, trustworthy online community manager who can read the energy of a community and know how to anticipate and solve problems that may arise among members.

Best Practice 7. Be honest, transparent, and responsive

As a concept, online community management has been discussed at some length by practitioners, primarily because managing the crowdsourcing venues (i.e., the discussion boards) and attracting members to an online community in the first place are core requirements for any successful venture based around the labor and energies of volunteers.[29] The basic principles of public relations and relationship management apply here. Relationships between an organization and its stakeholders are usually "strongest when they are mutually beneficial and characterized by 'win-win' outcomes"; when they are symmetrical and have two-way flow of communication; and when they are at the core of strategic communication practice.[30] Public relations activities are best seen through the lens of strategic management that follows a typical series of steps consisting of research, objectives, strategies, tactics, and evaluation.[31]

It is important for an online community in a crowdsourcing venture to trust the government agency sponsoring the project, and the community members should feel as though their voices will be heard and their ideas handled with care. It may help for the managers of these crowdsourcing ventures to think of themselves less as managers and more as "curators" cultivating ideas and contributions and elevating them into practical use.[32] Curators should view their work as both secretaries and shepherds, taking note of the community's needs and wants while moving the group toward a common goal.

Best Practice 8. Be involved but let go of control

When presentations on crowdsourcing are given to public administrators or government officials—whether they are emergency management personnel, public information specialists, or city planners—they all fidget a bit over the subject of control. Any professional who is constantly worried about what will be part of an official public record is right to be nervous about turning over the reins to citizens, especially in light of the fact that so many public sector and for-profit cases of social media and other online activities have gone wrong.[33] But it is important to let citizens take control over the crowdsourcing process, all within the as-is implementation or consultative framework that the government agency has committed to upfront.

Food manufacturer Heinz tried to run a crowdsourced advertising contest in 2007, inviting users to submit advertisements promoting Heinz ketchup. As with many PVCP, a lot of really bad content rolled in, but had the online community been empowered to vet the submissions of peers, they surely would have found "the best stuff." Heinz's problem was that it hired an expensive Madison Avenue advertising firm to wade through the flood of bad submissions, which ultimately cost the company a lot of money and time and in fact did not turn up a winning advertisement.[34] Had it been left to the online community, there surely would have been a different outcome for Heinz. The case of Greenpeace and Reddit also shows the benefits of letting go of control. Greenpeace held an online naming contest for a whale it was tracking in the Pacific Ocean as part of its anti-whaling campaign. It hoped to give the whale an erudite-sounding name, but instead "Mr. Splashy Pants" was submitted and soon became a landslide winner thanks to promotion by content aggregating site Reddit. Ultimately, Greenpeace embraced the Mr. Splashy Pants moniker and launched a successful marketing

campaign, complete with merchandise sales, around the figure.[35] This story demonstrates that letting go of control can often lead to positive, if unintended, outcomes for the crowdsourcing organization. The sponsoring government agency should always remain involved and present in any crowdsourcing platform—ideally through the hands of an online community management team—but it must be comfortable in letting the online community run free to some degree or else good ideas might be stifled.

Key Points

- In the implementation phase of a crowdsourcing project, consider investing in high-quality tools, crafting policies that consider legal needs, launch a promotional plan to grow the community, be honest and responsive, and let go of control.
- Good design of a crowdsourcing interface will motivate people to participate and enable success.
- There are many legal issues that may arise in a government-sponsored crowdsourcing activity. These issues include censorship and creation of the public record.
- Online community management, informed by public relations and marketing principles, is key to growing a crowd, though keep in mind that crowds often self-select based on interest or expertise.
- Online community managers may view themselves as curators of citizens' ideas and content, but this responsibility should be handled carefully.
- Crowds can perform wonders when given some latitude. Trust in the crowd to rise to the challenge, but monitor the activity closely as a matter of good moderation.

5

The Post-Implementation Phase

All good strategic plans require follow-through, and a crowdsourcing venture is no different. The post-implementation phase of a crowdsourcing venture must do more than just provide closure or give citizens the sense of having completed a task; it must provide the opportunity to gather valuable data from the process and analyze it for future efforts or simply to justify a campaign's success. This chapter rounds out the list of best practices for public sector crowdsourcing activities.

Best Practice 9. Acknowledge users and follow through on obligations

As important as knowing what motivates an online community to participate in crowdsourcing projects is the need to make sure those participants' needs are met, which often takes the form of public acknowledgment. If the crowdsourcing application is a contest of some sort, which is more common in an ideation challenge, it makes sense to publicly acknowledge the winners in some fashion. With information management problems, where the end goal may be to build or organize a collective resource rather than design a new plan or policy, acknowledgment may come in the form of a mass "thank you" to all participants. It is sometimes that simple. The White House maintains **an entire page on its website** to acknowledge the efforts of recent and past SAVE Award winners, and the names of winners also appear in official press releases and news pages elsewhere on the White

House website. This kind of acknowledgment goes a long way toward encouraging people to participate in future endeavors and to continue to feel connected to government long after the project is over. Simple acknowledgment for work performed in a crowdsourcing venture, which may serve as a badge of honor for individuals to carry among their peer groups and professional colleagues, is sometimes a more important motivator than even large cash rewards.

Best Practice 10. Assess the project from many angles

Finally, it should be noted that crowdsourcing projects generate enormous amounts of data, all of which can be used to refine the process in an ongoing way or to inform future endeavors. Simple, free tools such as Google Analytics can be used to track traffic patterns on the original crowdsourcing website to determine exactly how people engaged in the project and how they arrive and depart from the website itself. This includes discovering inbound traffic to the website, which can tip off an online community manager about new affiliated sites that have begun to direct users to the project, as well as the common keywords people use to find the project. Advanced uses of these tools can allow administrators to track with precision any number of outreach efforts to grow the online community, too, using custom links and campaigns associated with different stakeholder groups. A crowdsourcing project may also require citizens to register free personal accounts on the website before being able to fully participate or contribute new ideas. This registration process can capture a wealth of demographic and other information about participants that can help organizers track success. For instance, the Next Stop Design project required users to complete a registration process to use all of the site's functions. The registration form asked key demographic questions, frequency of transit use, and past attendance at traditional public participation meetings. The data helped the project team discover that participants were mostly young, they used mass transit frequently, and they had mostly never attended traditional public participation meetings—all indicators that the project succeeded in bringing new voices into the process.[1]

Government agencies should also embark on original empirical research and release regular surveys on the site and initiate interviews and focus groups with participants. These studies will yield qualitative and quantitative insights that may help improve the process in an ongoing way, a kind

of "monitoring the pulse" practice for the agencies involved. A pre-test survey at the start of a crowdsourcing project might establish baseline awareness of an issue among a population, and a post-test survey after the project ends—or in stages along the way—can track the direct impact of the project on shaping public opinion.

Textual analysis techniques can also be helpful when creating a systematic approach to understanding the trends in the content that users produced in a crowdsourcing process or in revealing a zeitgeist to steer an agency in new directions. For instance, environmentally friendly materials, a notification system to alert passengers to arriving buses, and good lighting to create a sense of safety were common themes across the majority of design submissions in the Next Stop Design bus stop shelter competition, even though the winning designs did not particularly play up these features. This suggests a public desire for these features in future transit shelters, regardless of the contest's outcome.

Not all assessment procedures related to a crowdsourcing project need to take place on the project website itself, though. A great deal of any public participation program should be about educating and informing citizens about the complexities of the policymaking or planning processes or about the complex issues at hand.[2] Even if participants do not fully engage a government-sponsored crowdsourcing application, their having participated at all indicates they may have learned at least a small amount about the kinds of problems the government agency must solve. A White House SAVE Award entry may teach a citizen about government spending and operations, a bus stop shelter design competition may teach a citizen about the complexities of urban planning and transportation, and a crowdsourced transcription of old census records may encourage an appreciation for our collective history. For example, in the case of the crowdsourced program to develop an off-road traffic law in Finland, participants found that "some of the most impactful learning experiences seem to derive from unstructured exchanges" among peers on the site, prompting everyone to learn more about "the regulation of a certain issue in the current law."[3] Each of these learning opportunities may make future policymaking—whether cutting government waste, passing a bond to enhance public transit, or initiating public history and art projects—just a bit smoother and will undoubtedly bring citizens a bit closer into the decision-making process. Good government crowdsourcing ventures must commit to assessing and learning all outcomes, even tangential ones, that may result from citizens having participated in the process at hand.

At the very least, too, just the act of initiating a government crowdsourcing project may improve public perception of government by making the government seem "cool" for trying something new and driven by technology. The goal of these ventures should never be just for crafting a positive image of the government, though. Ideally, a perception that government is cool for trying crowdsourcing is just a welcome side effect of a serious endeavor to actually accomplish something meaningful.[4]

Key Points

- In the post-implementation phase of a crowdsourcing project, acknowledge users and follow through on obligations, and assess the project from many angles.
- Failure to show that government is truly listening to the crowd leads to mistrust for future consultations, and acknowledging contributions will reward citizens for their thoughtful engagement.
- Crowdsourcing activities generate a wealth of data for analysis. Social scientific methods and web analytics produce key insights for doing it better next time. Educating the public is a key victory, even if the substance of a crowdsourcing activity seems disappointing.

Conclusion

The Future of Crowdsourcing in the Public Sector

Considering the fact that the term did not exist nine years ago, crowdsourcing has enjoyed quite an enthusiastic embrace by government agencies in the United States and abroad. In the United States there have been high-dollar calls for proposals from the departments of the army, navy, and air force; the Defense Advanced Research Projects Agency (DARPA); the National Science Foundation; NASA; the Broadcasting Board of Governors; the Department of the Interior; the Department of Veterans Affairs; and other agencies that specifically use the word "crowdsourcing" in their literature. This demonstrates a level of commitment to continued funding of these innovative processes. The Obama Administration deserves much of the credit for ushering in many of these activities, though it is coincidental with the rise of technology and a sense of normalcy among younger generations who consider themselves part of a culture of participation, sharing, and direct access to organizations through media. The next US president will surely continue the trend of entrepreneurial experimentation and openness that has informed the past decade. Around the world, other governments have invested in crowdsourcing, too, and international crowdsourcing policy efforts are under way. The United Nations held a meeting in 2012 to explore crowdsourced crisis mapping for disaster relief. Individual agencies within the United Nations are also coming to grips with a new world influenced by crowdsourcing and open government, such as the World Intellectual Property Organization.[1] Considering the common criticism that government moves slowly and is notoriously

unwilling to take risks, the rate with which crowdsourcing has taken hold in government, despite its many risks, is perhaps a signal that a sea change is happening within the business practices of government and the way citizens engage with elected officials and public administrators. In the spirit of participatory democracy, this is no doubt a good sign.

The aim for this book is to inspire future crowdsourcing ventures in government by offering a tidy typology for four approaches to crowdsourcing based on the type of problem to be solved and an overview of crowdsourcing, its history and definitions, and how it can work in a government context, along with a list of best practices to consider at all phases of a crowdsourcing venture. These best practices also imply a need for future research and case studies related to crowdsourcing in governance. While relatively widespread now, few people have intimate knowledge of how to run a crowdsourcing project from start to finish and empirical research on crowdsourcing is still in its infancy. It will be the role of government, namely the White House's office of the chief technology officer at the federal level or enterprising public administrators at the local level, to ensure collaboration and knowledge sharing among government agencies. Regular summits on crowdsourcing between elected officials, administrators, and proprietors of crowdsourcing platforms (e.g., IdeaScale, InnoCentive, Mechanical Turk) are needed to share this information in order to improve the business of government. Connections between government and academic institutions are certainly needed as well.

In other countries there is a closer embrace between government and the academy, not just through government funding of research but also through the inclusion of researchers on high-level planning committees in government and strong collaborations with university-based research labs and centers. The United States could do a better job of connecting government with academia. This book has highlighted some of the scholarly research on crowdsourcing, and for good reason. Aneesh Chopra is correct in saying that entrepreneurs and the private sector should be seen as a source of leadership when it comes to technology in government. But it should also be noted that as the practice of technology-driven open governance becomes normalized, more precise questions will arise and more precise answers will be demanded from theory-driven empirical research. The inclusion of academics at the ground floor of these endeavors will strengthen the outlook for public sector crowdsourcing in the long term. Crowdsourcing scholars are a motley crew from many disciplines and spread across many campuses, but gathering points are emerging, such as

dedicated conferences, and robust labs are taking root. One of these research groups is the Governance Lab—**GovLab,** for short—at New York University and directed by Beth Simone Noveck, of Peer-to-Patent fame. Another is the **Data and Democracy Initiative**, a part of the University of California's Center for Information Technology Research in the Interest of Society (CITRIS). A third is the **Crowdsourced Democracy Team** at Stanford University. It would be encouraging to see the government support and elevate these existing teams or establish new ones in the model of the National Institutes of Health or the Centers for Disease Control and Prevention's network of centers of excellence.

A future of crowdsourcing in the public sector will need to acknowledge the hidden costs of these ventures as well. For all of the praise being heaped upon the benefits of crowdsourcing for making government process more efficient, it should be noted a considerable amount of work is being done elsewhere. Citizens in crowdsourcing arrangements shoulder much of this burden, as the labor of providing public services partially shifts from government to citizen rather than having it dissipate entirely. Nancy Roberts points to the considerable coordination costs for executing crowdsourcing and related activities, and the "reduction of coordination costs for one set of actors does not necessarily mean a reduction of the coordination costs for the total system."[2] A similar criticism exists for crowdsourcing companies like InnoCentive or Threadless: for every submission that wins the contest, perhaps hundreds of hours of creative talent was lost on the dozens of submissions that did not win.[3] How efficient a government becomes vis-à-vis a crowdsourcing activity may depend on how many citizens are willing to help carry the load of public administrative work and not necessarily on the inherent merits of a particular crowdsourcing process design.

While many of the examples here focus on the possibilities at the federal level, clearly there is room for crowdsourcing at the state and local levels, too. The challenge for these smaller government entities, however, will be to find the resources necessary to support all aspects of a successful crowdsourcing endeavor. These resources include the money to build and support the websites and other technologies needed for a crowdsourcing application and the staff to act as online community managers. Some of the big players in crowdsourcing have plans for including more state and local governments, even if states and cities may not have the same wealth of resources as the federal government, simply because it makes strategic sense to do so. Jon Fredrickson of InnoCentive outlined one such plan:

> Because [crowdsourcing] has been far more accepted on a federal level and the funding has been much more available on the federal level, it made it a lot less risky for the feds to do something rather than state or local [governments]. I've been talking to some state-level [managers] about using crowdsourcing more effectively for STEM [science, technology, engineering, and math] education, using it as a way to stimulate engagement by having kids at all levels in school, where a public-private partnership between business and educational institutions—in cities, counties, and at state levels with universities—where this kind of collaborative capacity could have dramatic impact on building STEM capabilities in the country. We are doing some of these STEM initiatives at InnoCentive that we hope to propagate, and we think that's better done on a state or local level. . . . I think the states that do [pursue this] need to be led by governors and legislatures that say it's critical for us to sustain and grow our advantage and reclaim our national educational advantage.[4]

But the most substantial hurdle for smaller government entities will be, frankly, having the guts to give crowdsourcing a try. Planners, engineers, and architects at a regional transit agency, for example, may feel threatened by a crowdsourced transit planning competition and worried that the efforts of volunteer citizens may make their jobs obsolete. An elected official may worry that inviting too much public involvement may expose hidden cracks in the foundation of an administration and highlight operational inefficiencies or a lackluster record of accomplishments. Or an elected official may simply worry that crowdsourcing policy proposals will drift him or her too far off message politically. These worries are not entirely unfounded, but they reveal a hesitant attitude about innovation that is far more worrisome than the specific outcomes of any one crowdsourcing venture.

Sometimes crowdsourcing is seen as a threat because it may expose the organization as being inefficient or unable to follow through on citizen demands. As SeeClickFix founder Ben Berkowitz explains,

> Sometimes it's literally that [cash-strapped cities] don't have any more [money left]. Their budget has been combed so finely that there is no money to spend. . . . Sometimes it's a fear that while they may have money to spend on the software they may not have money to spend on solving of the problems that are documented through the software. . . . It's not really a question

> of *if* they have some kind of . . . software, it's just a matter of *when* they implement it. . . . Some governments may not be ready for one where requests [from citizens] are publicly documented, but much more often than not now there is an expectation that this process is open and social. . . . From a citizen's perspective, we've seen the model be stretched in the direction of not only am I shaking the vending machine and asking for help, as Tim O'Reilly would put it, [but] we're offering services or responding to questions from other citizens.[5]

In other contexts, though, a government agency may believe crowdsourcing threatens the power embedded in the professionalized work of the public sector. Government workers, in other words, may be worried that the crowd may do their job better than they can, and they may lose their jobs. But as CSPM Group co-founder Neil Takemoto pondered,

> They [public sector employees] don't see the value in the crowd's knowledge. . . . They don't think people have value to add to anything. [They think everyday citizens are] uneducated and they're just going to make things harder if you get them involved. . . . They think people are not very smart. . . . It comes from ego. . . . They just don't want to lose their jobs. It's a control thing. It's all about control. . . . So the way we get around that in terms of [the] ideas [that come from the crowd], so that they're not dismissed, is that we actually work with the community when they submit an idea to find the right imagery that does work, we'll work with them to find the right descriptions so that they won't sound uneducated. . . . We'll actually help them present the idea so that it looks professional and then that's the first phase. And then the second phase is that if it actually gets enough support, we'll do a feasibility study to find out if we can actually build that. We help them come up with a *feasible* idea. So then if it's financially feasible and the crowd is behind it, then there's no reason not to implement it.[6]

Generally, though, crowdsourcing is a well-received thing these days and has quickly become normalized and expected. Bristol Rising project manager Mark Walerysiak said that

> I don't know anyone that has been critical of the crowdsourcing process. I think everyone universally thinks it's an amazing idea. . . . I can't think, honestly, of one person who has ever said to us that this is crazy. Now, there

> are things about the design of the site that were a bit confusing for people at first, but it wasn't the *concept* of crowdsourcing per se. . . . People love the concept of crowdsourcing, of being listened to.[7]

The Obama administration's push for transparency and innovation in government has helped to spread crowdsourcing and other technology-based projects throughout the federal government quickly, but the majority of local government agencies have not felt this same push. Nevertheless, local government agencies have the benefit of their small size and should make that work in their favor; there are fewer resources at the local level but there are more agility and smaller constituencies to win over with new experiments. As government crowdsourcing matures, we will hope to see more crowdsourcing activities taking place in states and cities.

There is little doubt that the United States and other countries are on a trajectory that will realize a kind of ongoing collaborative democracy that Noveck envisions.[8] The cases of successful crowdsourcing activities in the public sector have begun to build an authoritative canon of literature on the study and practice of crowdsourcing and highlight the implementation of thoroughly tested ideals of deliberative democracy and self-governance. The rapid advances in crowdsourcing practice over the past nine years have been impressive, and a vision of the country nine years from now may look nothing at all like the government many of us knew growing up. As our attitudes change, and as technology changes, so, too, do our expectations for a relationship with our government and our place in it change. Crowdsourcing offers but one view into a promising future.

Key Points

- The future of crowdsourcing will involve a normalized integration of the method in many government affairs, much as many major vendors regularly work in partnership with the public sector.
- Academia has an important role to play in refining crowdsourcing practices for the public good.
- State and local level crowdsourcing ventures are a new frontier. As federal projects pave the way and toolkits are made available, smaller government entities with fewer resources will try crowdsourcing.

Notes

Introduction

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9. Rainie, *Internet, Broadband, and Cell Phone Statistics.*
10. Jenkins, "Confronting the Challenges," 3.
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13. Chesbrough, *Open Innovation*; Chopra, *Innovative State*, chap. 4, para. 93.
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15. Obama, "Transparency and Open Government."
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22. Estellés-Arolas and González-Ladrón-de-Guevara, "Towards an Integrated Crowdsourcing Definition," 197.

23. Zmuda, "New Pepsi 'Dewmocracy' Push."

24. Landemore, "Inclusive Constitution-Making"; Haroon Siddique, "Mob Rule: Iceland Crowdsources Its Next Constitution: Country Recovering from Collapse of Its Banks and Government Is Using Social Media to Get Citizens to Share Their Ideas," *The Guardian*, June 9, 2011, http://www.guardian.co.uk/world/2011/jun/09/iceland-crowdsourcing-constitution-facebook?CMP=twt_gu.

25. Benkler, *Wealth of Networks*.

26. Boyne, "Public and Private Management."

27. Boyle and Harris, *Challenge of Co-Production*, 9.

28. Nick Bowden, telephone conversation with author, May 14, 2014.

29. Ben Berkowitz, telephone conversation with author, May 27, 2014.

30. Chopra, *Innovative State*; Fishenden and Thompson, "Digital Government, Open Architecture."

31. Neil Takemoto, telephone conversation with author, May 9, 2014.

32. There are many hundreds of sample cases of crowdsourcing, even though the term "crowdsourcing" did not exist before 2006. This book draws from several of those cases though there is a reliance on a relatively small pool of examples throughout. These recurring examples include the Peer-to-Patent Project, Next Stop Design, Threadless, Amazon Mechanical Turk, InnoCentive, SeeClickFix, Ushahidi, and others. These exemplars are notable for having broken new ground, for being high-profile ventures at the federal level, or for the amount of popular

press coverage they continue to receive. In these cases, too, much information is known. Many crowdsourcing ventures are not tracked or studied very closely, the details for how they operate not very well known, or, in the case of private sector examples, proprietary information is hidden away from researchers. The exemplars have either been open or known from their beginnings (sometimes as scholarly studies) or have been remarkably accessible to researchers hoping to learn how crowdsourcing works. Because there is a relative wealth of information about these cases in the scholarly and trade literature, while already well known and reported in academic circles they are nevertheless held up here for how they illuminate the workings of crowdsourcing.

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2. Creighton, *Public Participation Handbook*; Pimbert and Wakeford, "Overview."

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5. Brabham, "Crowdsourcing the Public Participation Process," 246.

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7. Rossiter, *Organized Networks*, 13, 95.

8. Appadurai, *Modernity at Large*.

9. Terranova, *Network Culture*, 3.

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17. Jonassen, *Learning to Solve Problems.*
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20. See Surowiecki, *Wisdom of Crowds.* Surowiecki's work is founded on the work of Lévy, *Collective Intelligence*.
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22. Birdsall and Birdsall, "Geography Matters"; Fox, *Digital Divisions*; Jones and Fox, *Generations Online*; Rainie, *Internet*; Warschauer, "Reconceptualizing the Digital Divide." For more on the impact of smart phones see Clark, Brudney, and Jang, "Coproduction of Government Services"; and Boyera, "Can the Mobile Web Bridge?"
23. Starr, "Liberal State," 5.
24. Brabham, "Crowdsourcing as a Model for Problem Solving."
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About the Author

Daren C. Brabham, PhD, is an assistant professor in the Annenberg School for Communication and Journalism at the University of Southern California and the founding editor of *Case Studies in Strategic Communication*. The first to publish scholarly research using the term "crowdsourcing," he has focused on translating the crowdsourcing model into new domains such as governance and public health. He is the author of the book *Crowdsourcing* (MIT Press, 2013) and more than a dozen scholarly articles on crowdsourcing, which have appeared in *American Journal of Preventive Medicine*; *Convergence*; *Planning Theory*; *Information, Communication, and Society*; and *Journal of Applied Communication Research*. His work has been supported by funding from the US Federal Transit Administration, the IBM Center for the Business of Government, and the Social Sciences and Humanities Research Council of Canada.

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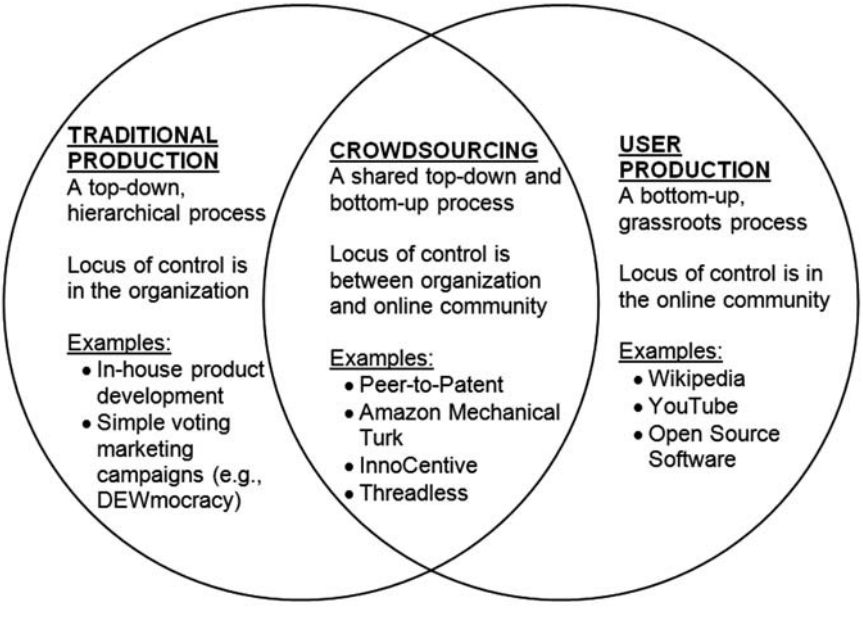
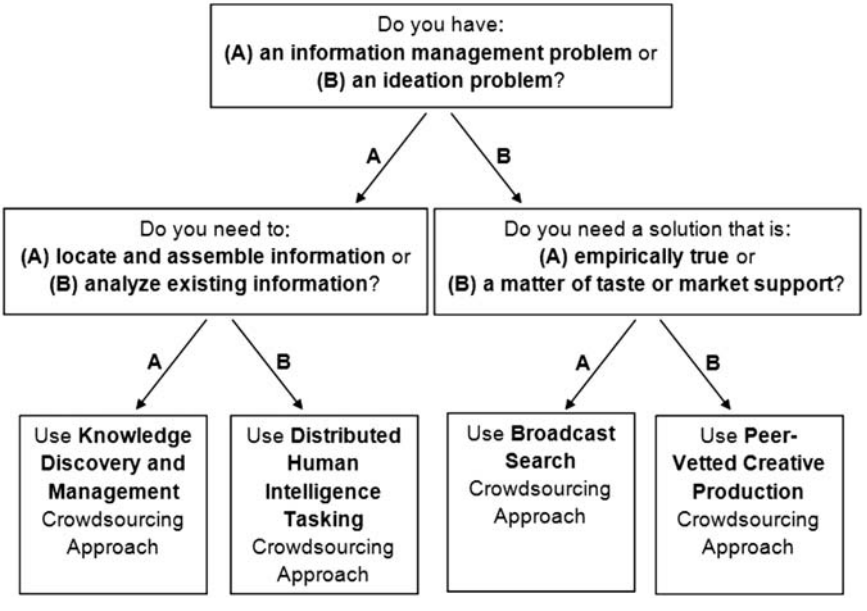
Figures and Tables

Figure I.1. Crowdsourcing as a blend of traditional, top-down production and bottom-up user production.



Source: **Daren C. Brabham, Kurt M. Ribisl, Thomas R. Kirchner, and Jay M. Bernhardt. "Crowdsourcing Applications for Public Health."** ***American Journal of Preventive Medicine*** **46, no. 2 (2014).**

Figure 2.1. Decision tree for determining suitable crowdsourcing type based on problem.



Source: **Daren C. Brabham, Kurt M. Ribisl, Thomas R. Kirchner, and Jay M. Bernhardt. "Crowdsourcing Applications for Public Health." *American Journal of Preventive Medicine* 46, no. 2 (2014).**

Table 2.1. A typology of crowdsourcing problem types for governance

Type	*How it Works*	*Kinds of Problems*	*Example Uses for Business of Government*
Knowledge Discovery and Management	Organization tasks crowd with finding and collecting information into a common location and format	Ideal for information gathering, organization, and reporting problems, such as the creation of collective resources	***Cases***: SeeClickFix; USGS' "Did You Feel It?"; USPTO's Peer-to-Patent ***Possible uses***: reporting conditions and use of public parks and hiking trails; tracking use of public transit; cataloguing public art projects and murals for historical boards
Distributed Human Intelligence Tasking	Organization tasks crowd with analyzing large amounts of information	Ideal for large-scale data analysis where human intelligence is more efficient or effective than computer analysis	***Cases***: Transcribing digital scans of old handwritten census records ***Possible uses***: Language translation for documents and websites; data entry; behavioral modeling
Broadcast Search	Organization tasks crowd with solving empirical problems	Ideal for ideation problems with empirically provable solutions, such as scientific problems	***Cases***: White House SAVE Award; NASA's use of InnoCentive for a solar flare prediction formula ***Possible uses***: finding better algorithms for timing traffic signals; improving actuarial formulas for social security
Peer-Vetted Creative Production	Organization tasks crowd with creating and selecting creative ideas	Ideal for ideation problems where solutions are matters of taste or market support, such as design or aesthetic problems	***Cases***: Next Stop Design bus stop shelter design competition; ITS Congestion Challenge for alleviating traffic congestion ***Possible uses***: Designs for public structures and art projects; urban plans; transit plans; policy proposals; school redistricting plans

Source: Adapted from "Crowdsourcing: A Model for Leveraging Online Communities." In *The Participatory Cultures Handbook*, edited by Aaron Delwiche and Jennifer Jacobs Henderson. New York: Routledge, 2012.

Figure 3.1. The degree of up-front government commitment to crowdsourcing outcomes.