The Role of Crowdsourcing for Better Governance in Fragile State Contexts

Maja Bott, Björn-Sören Gigler, and Gregor Young
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The term “crowdsourcing” was first coined by Jeff Howe (2006) in an issue of *Wired* magazine. In reference to the global technology industry, Howe (2008, 99) defines crowdsourcing as “the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call.” He states, “Technological advances in everything from product design software to digital video cameras are breaking down the cost barriers that once separated amateurs from professionals. Hobbyists, part-timers, and dabblers suddenly have a market for their efforts, as smart companies in industries as disparate as pharmaceuticals and television discover ways to tap the latent talent of the crowd. The labor isn’t always free, but it costs a lot less than paying traditional employees. It’s not outsourcing; it’s crowdsourcing” (Howe 2006). Reliant on actionable information provided by the appropriate “crowd,” which itself is identified through a self-selecting mechanism that is informed by a specific set of parameters, crowdsourcing is a collaborative exercise that enables a community to form and to produce something together. Expanding the concept to include not only data collection or product design but also cultivation of public consensus to address governance issues, strengthen communities, empower marginalized groups, and foster civic participation is at the heart of the new crowdsourcing movement.

This chapter offers a primer on crowdsourcing as an informational resource for development, crisis response, and postconflict recovery, with a specific focus on governance in fragile states. Inherent in the theoretical approach is that broader, unencumbered participation in governance is an objectively positive and democratic aim and that government transparency and citizen empowerment can increase a government’s accountability to its citizens and correct poor performance, although not without challenges. Whether for tracking flows of aid, reporting on poor government performance, or organizing grassroots movements, crowdsourcing has potential to change the reality of civic participation in many developing countries.

This chapter is structured in the following way. In the next sections we provide an overview of the theoretical contributions of crowdsourcing to improve democratic governance. We then examine the
critical factors necessary for successful crowdsourcing in general (Sharma 2010) and discuss the inherent challenges and risks, particularly in fragile states. We then provide numerous examples from important crowdsourcing and interactive mapping phenomena and initiatives in Haiti, Libya, Sudan, and Guinea among others. Most of these examples were taken from personal experience, and their accuracy was checked with key actors. We return to analyzing these cases according to Sharma’s framework. Finally, we provide recommendations for donors.

Crowdsourcing: A New Panacea for Social Accountability and Governance?

Crowdsourcing has become a mega trend in recent years, fueling innovation and collaboration in research, business, society, and government alike. As Clay Shirky (2008, 105) states, “We are living in the middle of the largest increase in expressive capability in the history of the human race. More people can communicate more things to more people than has ever been possible in the past, and the size and speed of this increase, from under one million participants to over one billion in a generation, makes the change unprecedented.” Global businesses like Facebook, Apple, Amazon,1 or eBay could not have grown to cover the industrial world at such speed without making use of this powerful tool, which essentially transforms consumers into coproducers, or “prosumers,”2 of their services. The business models of these companies are built on the work of their clients: Facebook’s and eBay’s clients, for example, produce all the content that makes their platforms valuable.

The power of crowdsourcing was first demonstrated by the open-source movement, which was able to compete successfully with proprietary software solutions by mobilizing volunteer programmers who had never met or worked together in creating the operating system Linux. The success of Wikipedia showed that collaborative creation of content can dwarf the quantity and quality of traditional encyclopedias and the efforts of other closed groups of experts. Other kinds of content aggregation from Flickr and YouTube to LinkedIn and Twitter use the crowd to prioritize content for their individual users. Finally, the next generation of Web 2.0 applications such as search engine advertising uses massive databases to harness the collective intelligence of their users through algorithms that detect patterns and hidden meanings in the everyday activity of users (Duval 2010, xii). Computing systems become ever more connected, data rich, and adaptive.

But crowdsourced volunteering activities are going far beyond coding or simple information sharing. Today, crowdsourcing is used to create and increase collective knowledge, community building, collective creativity and innovation, crowdfunding, cloud labor, and civic engagement.3 Powered by widespread and increasing access to the Internet, mobile phones, and related communication technologies, the use of crowdsourcing for policy advocacy, e-government, and e-democracy has grown exponentially across

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1. “When Jeff Bezos opened Amazon’s database to savvy outsiders, he didn’t tell them what to do with it. He announced, ‘We’re going to aggressively expose ourselves!’ He left it to the crowd to figure out how best to use the site, and he profited mightily” (Libert 2010).
2. Marshall McLuhan and Barrington Nevitt introduced the concept in their book Take Today (McLuhan and Nevitt 1972, 4). In The Third Wave, Alvin Toffler coined the term “prosumer,” when he predicted that the role of producers and consumers would begin to merge (Toffler 1980).
The Role of Crowdsourcing for Better Governance in Fragile State Contexts

The main reason for this phenomenon is that these tools have lowered transaction costs for exchanging information, forming groups, and coordinating action. In addition, it has become much more difficult for governments to block information and collaboration, which happens without even needing to establish opponent institutions and easily traverses state borders. The right combination of social networking tools and an active audience allows any individual to inspire and coordinate collective action outside of a formal hierarchy.

The driving vision behind these phenomena is the philosophy of “open-source governance,” which advocates an intellectual link between the principles of the open-source and open-content movements and basic democratic principles. With the objective of enabling ordinary citizens to contribute directly to the formation of policy, open-source governance theoretically provides more direct means to affect change than do periodic elections.

President Barack Obama’s Open Government Initiative as well as his appeal to the young “open-source generation” is considered by many to have been a determining factor in his electoral campaign success (Duval 2010, 126, 172). “When government data is made available as a set of Web services based on open Application Programming Interfaces (for example, Code for America) rather than a set of documents, computer applications can process this data, draw meaning from it, and make it relevant to the daily lives of its citizens” (Duval 2010, xii). This enables citizens themselves to improve or develop new public services, such as SeeClickFix, a citizen-based Internet and mobile phone system for reporting vandalism or public infrastructure in need of repair directly to the relevant local government authority. Not only are social media platforms such as Facebook or Meetup and LinkedIn or Xing increasingly used for political discussion and advocacy, but so are specific open-government platforms such as Data.gov, political party platforms, think tanks, or citizen advocacy groups, citizen journalism forums such as Sourcewatch and NowPublic, as well as platforms for developing e-governance applications such as Metagovernment.org.

Crowdsourcing is not limited to industrial countries, where it is often characterized by high-tech data solutions and business applications. In developing countries, it is applicable in the framework of popular consultations, election monitoring, constitution-drafting processes, or anywhere it ensures that the voices of diverse ethnic, political, and minority groups will be heard. Crowdsourcing is already having a strong impact in developing countries, where it is applied to crisis and tactical mapping as well as to tracking.

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4. E-government is the use by government agencies of information technologies (such as wide area networks, the Internet, and mobile computing) to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, more transparency, greater convenience, more revenue growth, and lower costs. See http://go.worldbank.org/M1JHE0Z280.

5. E-democracy is the use of information and communication technologies and strategies by “democratic sectors” within the political processes of local communities, states, regions, nations, and the global stage. See Clift (2003).

6. Facebook has about 750 million users, out of which 250 million are mobile users (www.facebook.com). With 9.5 million members and 92,000 groups in 45,000 communities, Meetup is one of the world’s largest networks of local groups (www.meetup.com).

7. For a party platform, see the 2004–05 Green Party of Canada Living Platform or the Swedish Active Democratic (Aktiv Demokrati) Party. For a think tank or citizen advocacy group platform, see the global policy campaign platform, Avaaz.org. For a citizen journalism forum, see the Participatory Media site, with more than 190,000 contributors and about 10 million page views per month.

8. According to the organization New Tactics in Human Rights, tactical mapping is “a method of visualizing the institutions and relationships sustaining human rights abuses and then tracking the nature and potency of tactics available to affect these systems, ultimately serving as a tool to monitor the implementation of strategy.” See www.newtactics.org/en/tactical-mapping.
reporting on, and coordinating relief efforts in the context of natural disasters (Haiti, Pakistan), civil wars (Libya), and human rights abuses and violence (Kenya). By providing visualization and implementation monitoring\(^9\) of relief and recovery efforts, allowing for wide dissemination of information on weather and crop market prices (Mali, Uganda), crowdfunding of microcredit, and many other cases, crowdsourcing is being applied in multiple ways within the context of international development.\(^10\) When used to collect information, it can be seen as a methodology for nonprobability sampling (Meier 2010). Crowdsourcing can thus serve as a tool for participatory monitoring and evaluation, enabling development and humanitarian programs to elicit feedback directly from program beneficiaries.

Crowdsourcing’s potential cannot be overestimated, especially in Africa, where mobile networks have grown exponentially, bypassing all other infrastructure development on the continent in terms of speed and widespread use. As such, crowdsourcing is increasingly seen as a core mechanism of new systemic approaches to governance. In fragile states, it can be used to address the highly complex, global, and dynamic challenges of governance, conflict, climate change, poverty, and other crises, where traditional mechanisms of democracy and international diplomacy have often failed.

How Is Crowdsourcing Expected to Improve Governance?

The availability and interoperability of communication tools make it increasingly harder to keep information secret. Since the recruitment of activists has never been easier and accessibility of amateurs to professional tools has never been greater, information security has become a critical issue for governments. The cases of Wikileaks and global hacking operations have uncovered the general vulnerability of governments’ data protection systems, in contrast to the power of nonstate actors to act collectively without the need for individual, and thus assailable, leadership. This creates a general power shift: governments have become more vulnerable to attack—either technological or political—while citizen groups have become less vulnerable and more effective due to their increased ability to organize. In theory, it is believed that “transparency breeds self-correcting behavior” among all types of actors, since neither governments nor businesses nor individuals want to be caught doing something embarrassing or illegal.\(^11\)

The effectiveness of governance systems can be substantially increased by social media applications facilitating real-time data collection, categorization, and redistribution from crowds to crowds—for example, tactical mapping and reporting in emergencies, sharing of market information, or community planning. The greater the numbers and the stronger the group identification with objectives, the harder it becomes for governments to ignore them.

However, there are strong cognitive limits to interactivity. As discussed in chapter 1 of this volume, causes need to be very strong and directly touch the emotions and creativity of people in order to draw their attention and keep them involved for long enough to have an impact. With a growing number of national and international causes competing for attention, rallying crowds around a specific cause

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\(^9\) For example, see www.movements.org.
\(^10\) For an example of crowdfunding of microcredit, see www.Kiva.org.
\(^11\) Duval (2010, 40), citing Vice Admiral Thad Allen, in charge of the U.S. coast guard during the second half of the Katrina rescue operation.
is becoming ever more difficult. So far, crowdsourcing has not yet had a decisive impact on political governance systems, but the continuous rise of social media, especially among youth, and its increasing use to consolidate support for common interests and advocacy suggest that its importance will continue to grow, especially if coupled with real-life interests, needs, and commitment of its users.

Critical Success Factors of Crowdsourcing Systems

The crowdsourcing initiatives that have proven the most successful are those that succeed in empowering a disparate group of people with the tools to contribute to a larger effort. Incentives to contribute should be tailored to attract the most effective collaborators, and the motive of the crowd needs to be aligned with the long-term objective of the crowdsourcing initiative to ensure that the crowd is willing to participate in it (Lohr 2009; Eagle 2009).

In Sharma’s model of the critical factors of crowdsourcing success, which is summarized in this section, aligning the motives of the crowd is the central factor, whereas the vision and strategy of the crowdsourcing initiative, linkages and trust, external environment, infrastructure, and human capital are peripheral (Sharma 2010, 9).

Infrastructure

A necessary prerequisite for crowdsourcing is the availability, acceptance, and use of crowdsourcing technologies by the users. The ease of accessibility, reliability, and quality of communication technologies and infrastructure are therefore imperative. The global spread of mobile phones has thus been the basic condition enabling the use of crowdsourcing in developing countries.

Vision

The crowdsourcing initiative needs to present a vision with a well-defined set of ideals, goals, and objectives that is flexible to the dynamics of the environment, so that the crowd can perceive the initiative as valuable and well intentioned. While government participation can add an additional factor of trust to the initiative, this is not always the case in the context of a fragile state.

Human Capital

The other key determinant of success is human capital, both at the level of the individuals or groups spearheading the initiative as well as at the level of the crowd joining it. This includes language skills, managerial skills, national orientation, traditions, level of education, and, as an entry requirement for the crowd, the skills to use a mobile phone (Carmel 2003). In an ideal scenario, the crowd must be able
to engage the crowdsourcing initiative without prior training and with minimum interventions (Sharma 2010, 12).

**Financial Capital**

The inherent nature of crowdsourcing initiatives makes them low cost, especially if based on existing telecommunications infrastructure such as mobile phones. Additional investments directed toward the betterment of enabling infrastructure can substantially enhance the participation of the crowd. In low-income countries, performance-based donor funding of local community development could be used to create a positive incentive for governments to allow greater citizen scrutiny and participation, for example, through crowdsourced monitoring and reporting platforms.

**Linkages and Trust**

Linkages between individuals, work groups, or organizations through geographic, cultural, linguistic, or ethnic connections can be used to minimize the costs of doing business. Robust linkages make knowledge transfer, sharing of best practices, and use of innovative business models easier and help in pooling the much-needed resources to develop the initiative (Sharma 2010, 13). In order to develop the necessary trust among the crowd, sufficient time has to be allocated for its emergence. Robust linkages can add a substantial aspect of trust (Brabham 2009), as can links with the diaspora or with formerly successful ventures (Sharma 2010, 13). If government support does not enhance trust, external support through donors and well-reputed international organizations can add a sufficient level of trust as well as global visibility to the initiative.

**External Environment**

The macroeconomic environment, composed of the political governance structure, economic and business environment, general attitudes toward entrepreneurship, general living conditions, and risk profiles, is also an important determinant of success (Farrell 2006; Oshri, Kotlarsky, and Willcocks 2009). A favorable regulatory environment and ease of doing business can encourage crowdsourcing initiatives. The tasks associated with crowdsourcing must be compatible with the prevailing practices and cultural norms. The crowd must also be able to relate the goal of the crowdsourcing initiative to their living environment. Security and regulatory risks can also play an important role in aligning the motive of the crowd toward the long-term objective of the crowdsourcing initiative (Oshri, Kotlarsky, and Willcocks 2009; Sharma 2010, 13). From another perspective, however, the lack of a conducive policy environment can fuel protests and create a strong motivation for crowds to engage in collective action to challenge the status quo. The role of traditional media can play a pivotal role in triggering massive collective action, as the role of Al Jazeera in the Arab Spring movement impressively demonstrated. The
external environment is the main factor differentiating the context of a fragile state from that of a stable state and is elaborated further in this chapter.

**Motivation**

Performance expectancy (that is, the extent to which an individual believes that using the system will help him or her to improve job performance), effort expectancy (the degree of ease associated with use of the crowdsourcing system), social influence (the degree to which an individual perceives that others believe he or she should use the new system), and facilitating conditions (the extent to which an individual believes that organizational and technical infrastructure exists to support use of the system) are the direct determinants of crowd motivation (Viswanath et al. 2003). Five of the peripheral factors affect one or more of these determinants. For example, human capital affects both performance expectancy and effort expectancy. As a result, the peripheral factors affect the overall alignment of the crowd's motive with that of the crowdsourcing initiative in different ways (table 1; Sharma 2010, 15–16, citing Rogers 1995).

<table>
<thead>
<tr>
<th>Peripheral factor</th>
<th>Performance expectancy</th>
<th>Effort expectancy</th>
<th>Social influence</th>
<th>Facilitating conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision and strategy</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Human capital</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linkages and trust</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Infrastructure and financial capital</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>External environment</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Source: Rogers 1995, 15.*

This model expands on the innovation diffusion theory (Rogers 1995, 15), in which five independent attributes, as perceived by the early users of an innovation, are critical to success:

1. Relative advantage, that is, the degree to which an innovation is perceived as being better than the idea it supersedes
2. Compatibility with existing values, past experience, and the needs of potential adaptors
3. Complexity
4. Trialability (trial of the innovation on a limited basis)
5. Observability of the results by others.
Criteria of Governance

Governance criteria for crowdsourcing include anonymous participation (via a central registrar, key public infrastructure, and a trusted central authority), decentralization of authority (thus minimizing the principal-agent problem), centralization of information (via one platform and interoperability of interfaces and applications with this platform), open and equal opportunity of participation in deliberations or peer reviews (enabling self-selection of those most affected or most expert to participate on an issue), and encouragement of diversity of thought. In addition, safe operational procedures must be ensured; all actions are transparent, all contributions are recorded and preserved, all content and deliberation are structured (content management systems, fora, and moderators) and refactored by participants (via software versioning and revision control systems), and access includes remote and disadvantaged people (via mobile devices and specialized interfaces).

Process of Crowdsourcing

For the crowdsourcing process to take off, a strong connection has to be established between the people who use the initiative (crowd) and the initiators. The needs, aspirations, motivations, objectives, and appropriate incentives of the crowd to participate in the initiative are the most important consideration throughout the process. Since participation is voluntary, a community of like-minded people is the basis of successful crowdsourcing. The primary targets of crowdsourcing initiatives are groups of innovators and early adopters (Rogers 1995, 22) as well as very well-connected opinion multipliers who have a clear interest in joining the initiative and who embrace the concept of crowdsourcing itself. “Creating a vibrant community is all about creating a critical mass of good minds and spurring them to spark each other as much as possible” (Libert 2010, 42). They should be encouraged to spread the message as much as possible beyond the virtual realm. Uncovering shared interests, communicating intensively, and deepening personal bonds create mutual trust that strengthens the community. Also, the community should be large and diverse enough to improve the quality of content by collectively editing individual contributions. Most important, communal processes within groups should not be disturbed. Instead, they should be given room to be creative. Group dynamics can be initiated and supported, but should not be controlled. “The provider of the platform should not be the star of the show but the producer, working from behind the scenes to make it easy and comfortable for all community members to get involved and stay involved” (Libert 2010, 15). In addition, the community should be protected from spamming, hacking, hijacking, spying, deviating far from the main objective, and other threats to its purpose. Constructive contributions, even if they are critical, should be acknowledged and rewarded.

Sharma’s critical factors can be amalgamated into the overall sociocultural, technological, economic, and political enabling or constraining factors discussed in chapter 1 of this volume. Socioculturally, there need to be both belief and motivation in the cause. Yet economic factors are also relevant, as those participating need to be able to justify their participation, particularly if it is voluntary, and to afford the technology. Technologically, there need to be sound enough infrastructure and enough security and reassurance for those participating to feel comfortable. Finally, in terms of political vision, support needs
to be provided by the governing parties or, if this is absent, by a cohesive group such as a nongovernmental organization (NGO).

**Potential Role of Crowdsourcing and Interactive Mapping in Fragile States**

Since crowdsourcing in its very essence is based on universal participation, it supports the empowerment of people. In a pure democracy or in a state of anarchy or civil war (Haiti after the earthquake or Libya since February 2011), there are few external limitations to its use (for example, lack of coverage or breakdown of the mobile network), which explains why most salient examples come from democracies and situations of crisis.

In a fragile state, the situation is quite different. "Fragile states" is the term used for countries facing a combination of particularly severe development challenges: weak institutional capacity; poor governance; and political instability. Often these countries experience ongoing violence as the residue of past severe conflict. An authoritarian or embattled regime may tend to oppose and interfere with crowdsourcing, perceiving broad-based participation and citizen empowerment as threats to its very existence. In other words, the very context that may benefit the most from crowdsourcing is also the one that presents the most challenges.

**How Can Crowdsourcing Improve Governance in a Fragile State?**

Depending on the level of citizen participation in a given state, crowdsourcing can potentially support government's or civil society's efforts to inform, consult, and collaborate, empowering citizens and encouraging decentralization and democratization. Increasing government accountability to citizens is hereby a key determinant of improved governance.

Rosanvallon (2008) identifies three generic mechanisms through which civil society can hold the state accountable beyond and independent of electoral mechanisms:

- **Oversight.** The various means by which citizen organizations are able to monitor and publicize the behavior of elected and appointed rulers
- **Prevention.** Their capacity to mobilize resistance to or support of specific policies, either before or after they have been selected
- **Judgment.** The trend toward "juridification" of politics when individuals or social groups use the courts and jury trials to bring delinquent politicians to judgment.

As the more traditional modes of political representation decline in significance, these civil society mechanisms of indirect democracy gain in importance.

By providing the means to localize, visualize, and publish complex, aggregate data on a multilayer map and increasing the speed of generating and sharing data up to real-time delivery, crowdsourcing empowers

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12. For the World Bank's definition of fragility and conflict, see http://go.worldbank.org/6B4932MAV0.
citizens and beneficiaries of government and donor services to provide feedback and even to provide information in their own right. A real-time map is compared to “having your own helicopter,” providing immediate situational awareness of events unfolding in time and space and catalyzing conversations between crowdsourcing actors.

This transformation can take place in three ways:

- **Top down.** By sharing, debating, and contributing to publicly available databases of governments, donors, and other major actors, which distributes data directly through customized Web and mobile applications and makes information accessible and meaningful to citizens
- **Bottom up.** By providing independent platforms for “like-minded people” to connect and collaborate, which builds potential for the emergence of massive, internationally connected grassroots movements
- **Integrated.** By establishing platforms that aggregate and compare data provided by official bodies, such as governments, donors, and companies, with crowdsourced primary data and feedback.

Live public maps can thus have an empowering effect on all three mechanisms highlighted by Rosanvallon: near real-time tracking and mapping of data by crowds of citizens create pressure for more transparency, better social accountability, and the imposition of sanctions. In particular, the resulting live public maps can help to synchronize shared awareness (Meier 2011c), an important catalyzing factor of social movements according to Jürgen Habermas (1962): “The presence of a synchronized public increasingly constrains un-democratic rulers while expanding the right of that public.” Traditional media have an important role to play in broadcasting the results of such an exercise to a broader public.

Greater effectiveness of state and nonstate actors can be achieved by using crowdsourced data and deliberations to inform and monitor the provision of services. But while generating larger volumes of data and increasing the speed of transactions can be attractive to governments even in fragile states, the advent of citizen empowerment is often viewed as a serious threat (the Arab Republic of Egypt, Sudan, the Syrian Arab Republic, or República Bolivariana de Venezuela). At the same time, there is a risk that the measure of confidence built through the process will be destroyed in the absence of concurrent capacity development or facilitation of the government’s ability to respond to the monitoring reports generated by the crowd.

**Digital Mapping as an Instrument for Improving Governance in Fragile States**

Digital mapping platforms, which combine electronic networks, maps, satellite imagery, and tracking, are emerging as key instruments for improving governance in fragile states. Crowdsourcing has become a dominant method for live mapping initiatives in the area of governance due to its potential to integrate all types and kinds of information and communication channels. Real-time aggregated data can be

13. For example, through Web-based deliberation platforms (such as Discourse DB) that apply frameworks for issue-based argument instead of simple polling.
categorized, layered, and visualized in ways that even novices can understand with relative ease. Geo-spatial data can thus be linked with other types of data for various purposes, such as disaster risk management or urban planning (Meier 2011a).

There are two basic types of interactive mapping initiatives: initiatives coordinated with (or at least agreed to by) national governments, taking a top-down approach, and initiatives developed independently, with a bottom-up perspective. Both serve to democratize information flows and access. The determinants of these two types of initiatives differ fundamentally, but they can evolve respectively toward the other direction, ideally ending up with a comprehensive, hybrid structure that integrates government, international, nongovernmental, and locally crowdsourced data. The distinction between these two perspectives is crucial in fragile states, where governments are naturally suspicious of grassroots movements.

The top-down approach usually requires the buy-in of the national government, which may provide certain advantages, such as the ability to access critical government data, use a wider variety of communication channels, and engage the government and all other local stakeholders in a practical dialogue and even collaboration on political governance issues. However, every new service of a mapping initiative requires negotiating with and persuading government counterparts, which may slow down progress. In general, the greater the interest of government in the initiative, the easier it will be to receive the necessary approvals for rapid setup of the project. This explains the relatively huge success of crowdsourced emergency services in the aftermath of natural disasters. For a recipient government, the risk of “abusing the system for rebellion” is very low, and the benefits of coordinating a disaster response are enormous. Likewise, there is also strong interest in e-government services that facilitate trade, tax collection, and private sector development.

However, in conflict or postconflict situations, nongovernment-driven initiatives, such as the tracking of acts of violence across Kenya—the first initiative by the Ushahidi crisis-mapping project in the wake of the 2008 elections—operated independently from government. Since then, the Ushahidi crowdsourcing platform has propagated to more than 130 countries, serving diverse tracking and planning objectives (Meier 2011a). In countries like Egypt, Sudan, and Tunisia, telecommunication services have been censored periodically or switched off completely in order to prevent uprisings and interrupt rebel communications. Also, critical statements by citizens on social media platforms have been used to identify and imprison regime opponents, as in Zimbabwe and many other countries (Masimba 2011, 254).

Few electronic mapping initiatives have made progress in situations of conflict between a government and rebel movements. One example is the Crisis and Recovery Mapping and Analysis (CRMA) project of the United Nations Development Programme (UNDP) in Sudan, which, however promising, has not yet reached the crowdsourcing stage, working instead with a “bounded crowd.”

Within interactive mapping, four processes need to be identified and examined separately: data collection, data analysis, data dissemination, and decision making. Governments, as well as other actors, are usually more interested in data collection, analysis, and decision making than in data dissemination. It is a matter of negotiating with governments one process against the others. The CRMA project started as a small pilot to hold state and local multiple-stakeholder consultations in the postconflict state of Kassala, with the aim of mapping conflict issues between local groups from different tribal and livelihood affiliations, in addition to collecting data on emergency and early recovery needs and on projects funded by government and donors in the state. Representatives from all major tribes, government, civil society,
producer and trade associations, as well as women, youth, NGOs, and donors joined in the exercise. This map provided the first comprehensive snapshot of the main local conflicts together with their geospatial localizations. The participatory, conflict-sensitive approach to this exercise as well as the volume and quality of data collected impressed both government and donors to such a degree that they agreed to collaborate. The government agreed to expand the project throughout Sudan and to publish data collected by international donors in collaboration with government, while the donors agreed to share their own data in order to get a comprehensive picture of the situation in different regions of Sudan.

The breakthrough for national expansion of this mapping exercise was reached when all major data-collecting actors signed agreements to share their data in the form of map layers, making the data layers available to all of the participating actors, including the government.

**Key Features of a Conflict-Sensitive Interactive Mapping Platform in a Fragile State**

The incentive mechanisms for major stakeholder groups inside and outside of government, including civil society, need to be analyzed thoroughly when designing the aims and services of an interactive mapping platform.

The government counterparts need to agree with all other key partners on a clearly defined aim of the platform (such as disaster prevention, local conflict mapping, or market information) in order to prevent fears of political threat. The platform should focus on one objective and not attempt to serve many purposes at once, since this could create suspicion of abuse and confuse citizen-providers.

The services offered via the platform need to be easily understood and meet a critical need or interest that directly affects the livelihoods of the target population.

If the government is not yet ready to provide any data, a data-sharing agreement between the main international and local actors (international financial institutions, the United Nations, NGOs, and universities) can create a critical mass of information to start the platform. Of course, the government would need to approve even this preliminary data sharing if the data are to be published openly.

Strong informational asymmetries must be avoided regarding the collection, analysis, and dissemination of data; a system that generates critical data about a location and its inhabitants but is only accessible to government or local elites can increase conflict rather than reduce it and even serve to support military actions. Therefore, the platform features need to be accessible by simple mobile phones through text-based short message service (SMS) for sending and receiving information, since mobile phones are the only device to which most citizens in fragile states have access. Where literacy is low, automatic voice transcription as well as local offline information hubs managed by neutral providers can make platforms more inclusive. Real-world volunteer systems operated by international actors (for example, crowdsourcing platform providers, United Nations volunteers, and NGOs) and by local universities are best suited to play this role. Associations of municipalities could also act as relatively neutral provider, if they possess a minimum degree of independence from national authorities. In addition, balanced participation and inclusion of local ethnic, tribal, and livelihood groups as well as women and youth need to be actively promoted through closely monitored local consultations and capacity building for stakeholder representatives as well as through traditional media, such as interactive radio shows.
The design of the administration and authorization structure is crucial. Usually, apart from the site administrators, there are at least three levels of users: first-time or temporary users who have reading access only, normal users who have the right to contribute their information and opinions, and power users who contribute content on a regular basis or provide additional volunteer services, such as editing content, mobilizing more users and linking them up with each other, networking online and offline, and even coding new platform features. The number and contributions of “power users” determine the success of a crowdsourcing platform. In fragile states, the role of these power users requires special attention in order to ensure political neutrality and inclusiveness of the platform in general.

Through increasing aid transparency, interactive mapping of aid projects can in theory also encourage healthy competition between NGOs and other implementers of humanitarian and development aid, since their activities become more visible and traceable to their sponsors, whether they are donor governments or private sponsors. However, a simplistic focus on mapping of local infrastructure can create unwanted bias and distort funding toward mappable-equals-“visible” projects, leading to more “empty shells” instead of increased capacities of vulnerable and poor populations.

The tools should be designed to strengthen the capacity of local government to respond and provide opportunities for authorities to increase efficiency, decrease cost, or adapt existing workflows.

**Challenges and Risks of Applying Crowdsourcing and Interactive Mapping in Fragile State Environments**

Crowdsourcing faces fundamental challenges with regard to identifying the tasks for which crowdsourcing is an appropriate solution. Regardless of the context, it is difficult to define, operate, support, and end a crowdsourcing activity; to identify and create technical means of participation that minimize barriers to use; to establish and maintain participation through appropriate incentives; to ensure appropriate privacy and safety for the contributors (for example, when individual contributors might be identifiable and locatable); as well as to maximize the quality and benefit of the outcome (for example, through filtering, rating, cross-checking, and peer or expert moderation).

Seven issues pertain to crowdsourcing in general and crowdsourced geo-spatial data sharing in particular. In most cases, these issues are more critical in fragile states than in states with stable governments.

**No Active Crowd**

Sometimes, top-down platforms offered by government or donors fail to attract the attention of crowds because they seem too static, are too centrally controlled, or do not offer direct benefits, reputational gains, or other incentives to potential contributors. The biggest issue with government-controlled platforms is that individuals do not trust that their information will be used responsibly. The more authoritarian a government’s behavior, the less trust it will inspire from its citizens. Under authoritarian regimes, it is also more difficult for NGOs and social entrepreneurs to launch a crowdsourcing initiative.
No Sharing of Data

Lack of trust also arises from the other side; the relatively slow progress of e-government in industrial countries shows that even democracies are hesitant to share their official data. The less legitimate a government feels, the more secretive it tends to behave and vice versa: “Sharing internally was a problem in the first place. That was why the parliament secretary taking a huge role was a big deal, in terms of talking to colleagues about opening up this data. Technical challenges were not where the headache was—we have plenty of skill and partners here to do that—it was in getting the data in the first place, in the form that we needed it. Plenty of data wasn’t in digital form or usable and was trapped in agencies,” stated Paul Kukobo, chief executive officer of the Kenya ICT Board, in a phone interview on the launch of Open Kenya on July 8, 2011 (Howard 2011).

The Wrong Crowd, a Digital Divide, or Participation Inequalities

A theoretical prerequisite for the use of crowdsourcing in participatory and democratic decision-making processes is universal access to technology. In the absence of universal access, capacity building, mediators, and transcription tools are necessary to prevent the digital divide from excluding the most vulnerable parts of the population from participation. In crowdsourced projects such as OpenStreetMap and Wikipedia, a small group of participants contributes significantly, while a very large group of participants contributes only occasionally. Educated young males are usually overrepresented, while women are underrepresented. Since governments with weak governance processes usually base their power on the support of elites, they have less incentive to reduce these inequalities. Therefore, there is a high risk of elite capture or at least strong demographic bias if not mitigated by additional measures.

Manipulation of the Crowd

Plain wikis only show “what is” and not “what should be.” More sophisticated systems aim to provide tools for meaningful deliberation by using semantic tags, levels of control, or scoring to mediate disputes. This runs the risk of unduly empowering a clique of moderators who possess no public legitimacy (similar to the wiki problem of “sysop vandalism”15 or “administrative censorship”). The simpler the processes and structures of the deliberation platform, the higher the risks that minority opposition will be drowned out. In platforms that aim to combine crowdsourced contributions with official ones, a lack of trust will accentuate these problems, especially in environments of weak governance.

15. Sysop vandalism or wiki administrator vandalism is the destruction of content by people who have wiki administrator or “system operator = sysop” privileges that other editors do not have. Because of the unequal power relationship, such individuals are thought to behave worse than ordinary users when it comes to editing content. See http://openpolitics.ca/tiki-index.php?page=sysop+vandalism.
Attacks on the Crowd

Contributors can be attacked, both virtually (by being spied on) and physically. Especially amid human rights violations and conflict, data based on global positioning system (GPS) information provided by individuals on the ground can be abused by government, rebels, or terrorists for military action. Crowdsourcing contributors can be incriminated by national security moles. In Libya, measures were taken to protect contributors and prevent intrusion by the Libyan military.

Ineffective Crowdsourcing Process

A general challenge of crowdsourcing is deciding how to manage contributions. Chaotic data and deliberation structures can make crowdsourcing ineffective. In order to solve this problem, crowdsourcing software has been designed with highly sophisticated management structures.

Clash of Paradigms

The problem becomes more complex if official government or donor data are to be combined with crowdsourced data that do not adhere to the same information management standards. Rahemtulla et al. (2011) argue,

Crowdsourced data will only be fully adopted if the user organizations can have trust in the data being fit for its intended purpose. Uncertainty regarding the quality of such data is often cited as a major obstruction to its wider use (Goodchild and Glennon 2010). Critics argue that such informal ad hoc data collection does not typically adhere to formal standards of geometric precision or meta data consistency or even provide consistency in coverage or detail. Despite this, the volume of such data can … acquire a density of sampling often far exceeding what can be formally acquired, and this can in turn assist in the process of validation and error reduction. Furthermore, the currency of the data … will often be much more up-to-the-minute than formal survey data. This comparison, however, illustrates that while the content, quality, and attributes of crowdsourced and authoritative data are different and can even be apparently conflicting in detail, both have informational value. Through a considered combination, they can complement each other to provide a more complete, up-to-date, people-centric, and richer picture of such humanitarian disasters than either could provide in isolation.

What Next? Crowdsourcing = Accountability?

Crowdsourcing is only the first step toward achieving better results. The next step is to use that data to hold power to account. As Tsai (2007) acknowledges, “Formal institutions of accountability are often
weak in developing countries which often lack strong bureaucratic institutions for controlling corruption and making sure that lower-level officials are doing their jobs. Democratic institutions such as elections that allow citizens to hold local officials accountable may be unreliable or even nonexistent. Yet even in these countries, some local officials perform better than others. Under these conditions, how do citizens make government officials provide the public services that they want and need? According to Rosanvallon (2008), the three accountability mechanisms of indirect democracy—oversight (monitoring and evaluation), prevention (collective civil society action concerning policy), and sanctions (tracking of abuses for evidence in court)—can be strongly empowered through crowdsourcing.

To summarize, the core risks and challenges arise from the concept of trust. These challenges increase with the loss of governance capacity and legitimacy that is typical of fragile states.

The Experience of the Crisis-Mapping Community

The first and principal objective of disaster response is to obtain “situational awareness,” that is, a detailed picture of the situation on the ground, the scale of the damage, and above all the needs of affected people—in other words, to use first-hand information as fast as possible in order to plan and conduct relief efforts. Effective relief relies on valid and timely information, which is collected most commonly by assessment missions consisting of international and local experts deployed after securing funds, recruiting teams, and sometimes awaiting security permissions for personnel to access the situation in the field. Where conventional methods have been unable to provide the necessary information quickly enough, humanitarian interventions have turned to crowdsourcing.

Created in 2008, Ushahidi is one of the most important open-source platform providers for crowdsourcing crisis information. This system was initially established to report and map violence during the postelection period in Kenya. It has since been used to track a variety of crises and other issues on global, regional, and national scales. The platform gathers distributed data from the public via several media and communication channels (SMS, e-mail, and Web) and visualizes the information on a map or timeline. The objective is to facilitate better understanding of the needs of people affected by natural or man-made disasters or other issues and to create direct and immediate links between stakeholders, for example, crisis-affected people and assistance providers. The system empowers respondents to collect information together and helps to guide and coordinate humanitarian response efforts on the ground (Rahemtulla et al. 2011).

This section describes actual cases of crisis mapping in fragile states. Specifically, it details the inception of crisis mapping in Haiti to aid relief efforts following the devastating earthquake in 2010 and its application in Libya to gather timely information and organize relief efforts during the recent civil war.

Crisis Mapping in Haiti: Aiding Humanitarian Relief

In 2010 the most prominent crowdsourced crisis-mapping initiative to date appeared in the wake of Haiti’s major earthquake. It was characterized by a high level of professionalism, which allowed relief agencies to
act with unprecedented speed. Immediately after learning about the earthquake on CNN, Ushahidi set up the Ushahidi Haiti map—with a team of volunteers from the Fletcher School of Law and Diplomacy at Tufts University—and used Digicel's free SMS short code (4636) to crowdsource needs assessments from the disaster-affected community. Local radio stations disseminated information about the short code. The concept of “Mission 4636” was as simple as it was revolutionary: to make use of widespread mobile communications, highly motivated volunteers, and the most immediate source of situational knowledge—the affected local population of Haiti. During the first week, volunteers mapped some 1,500 reports based on information from Twitter, Facebook, and online news, even before they began to receive text messages. A team of graduate students at the Fletcher School mobilized an active partnership with Ushahidi within hours of the earthquake and provided a key element of volunteer support in reviewing and curating incoming crisis data.

“By creating an SMS short code, an already common approach in the entertainment industry enabling audiences to vote for America’s Idol or next Top Model has been harnessed successfully for humanitarian assistance and has proven to be not only a much faster procedure for gathering information in disaster situations but also the most legitimate, as it ensures participation of the affected population, often neglected in humanitarian response due to time constraints,” concludes Nicole Hofmann, task team coordinator for the Standby Volunteer Task Force for Live Mapping (SBTF), an online volunteer initiative for crisis mapping that was founded as a consequence of the various loosely connected projects for Haiti’s recovery.

Both the strength and the weakness of crowdsourced information management derive from its participatory openness. Making sense of received text messages and categorizing information appropriately have been major challenges. The importance of filtering and verifying text messages or crowdsourced information in general is among the lessons learned from the Haiti experience. Most criticism of crowdsourced crisis mapping as it was conducted in Haiti refers to an overflow of information and lack of coordination with humanitarian agencies for immediate action (Harvard Humanitarian Initiative, UN Foundation, and Vodafone Foundation 2011). But the active online community has progressed immensely since then. The SBTF has already incorporated lessons learned and improved processes through simulations and trainings for deployments using a much more structured framework and taking a comprehensive, modular approach to the various steps of crisis mapping.

Another important step in creating useful crowdsourcing platforms lies in continued access to and updates of information, which are keys for sustained efforts in information management. The collaboration between Mission 4636, Ushahidi, and especially the Haitian diaspora evolved into a sustainable project, as it provided for the transition to local actors, who later contributed to project coordination and mapping. The involvement of diaspora and local participants from the outset of the Mission 4636 and Ushahidi collaboration ensured local ownership and outstanding ongoing results. Using the established process of crowdsourcing information as well as other data for planning crisis response constitutes one of the major successes of this project. Although transfer of the Ushahidi platform for Haiti to a local group was not originally planned for, in November 2010 the crisis-mapping project was reprogrammed and transferred in full to the local software company, Solutions, and is now operating under the name Noula.16 Noula has

since established a new service number for future SMS reporting and become furthered integrated with aid agencies working in Haiti.\textsuperscript{17} The transfer to local groups will probably characterize longer-term projects and initiatives and remain an afterthought in crisis response efforts.

\textbf{Evolution: The Experience of Libya}

In 2011 crowdsourced crisis mapping had matured to a level of reputation and professionalism that led the United Nations to acknowledge the opportunities presented by social media and their role in sharing and managing information. Several disasters have occurred since Haiti's earthquake, and volunteers involved in the Haiti mapping have supported other crowdsourced mapping initiatives, such as in the wake of the recent earthquake in Chile and floods in Pakistan. The consequences of this continued engagement have been twofold: first, it has helped to build knowledge and experience in the volunteer squad; second, it has demonstrated a reliable commitment of volunteers, proving that an organized structure could harness real-time crowdsourcing effectively when it is needed.\textsuperscript{18} The SBTF was established during the annual conference of the Crisis Mappers Standby Task Force,\textsuperscript{19} which had provided the space for exchanging information in a horizontal network, but had not set up standby teams for supporting crisis mapping.

The rationale for pushing a conventional organization like the United Nations (UN) Office for the Coordination of Humanitarian Affairs (OCHA) to adopt previously unconventional methods of gathering information needs to be highlighted against the backdrop of current events and lack of current, effective tools for gathering information in order to save lives. In the popular insurrection in the Middle East and North Africa region, or what became known as the Arab Spring, Egyptian activists organized protests through social media, among other outlets including Facebook and Twitter, and brought about the resignation of an authoritarian leader. Other countries followed the Tunisian and Egyptian examples, and by February a civil war had unfolded in Libya. An oil-exporting, middle-income country that had not experienced a major disaster or conflict in its territory for decades, UN OCHA did not have any presence within the country. The lack of first-hand information and the pressing need to make decisions and prepare timely relief in the crisis has been cited by Patrick Meier, co-founder of the SBTF and director of crisis mapping and strategic partnerships at Ushahidi, as the major reason why UN OCHA requested the SBTF’s crisis-mapping support for Libya. The credibility of crowdsourced information management and awareness of the relevance of social media are given as secondary reasons for the longest and most comprehensive deployment of the SBTF so far (Meier 2011b).

Yet the professionalism of this passive,\textsuperscript{20} crowdsourced, crisis-mapping exercise, capitalizing on the opportunity to collect information from several conventional and unconventional sources remotely and in real time, was the key factor in the success of the Libya crisis map (map 1).\textsuperscript{21} UN OCHA (2011, §9) notes, “The Volunteer and Technical Community helped collect more information … in 48 hours than

\begin{itemize}
\item \textsuperscript{17} See “Collaborating Organizations and History,” Mission 4636 (http://www.mission4636.org/history/).
\item \textsuperscript{18} Interview with Nicole A. Hofmann, July 7, 2011.
\item \textsuperscript{19} See www.crisismappers.net.
\item \textsuperscript{20} Crowdsourced volunteers analyzed social and public media data, not data submitted by individuals on the ground, as was the case in Haiti.
\item \textsuperscript{21} According to UN OCHA (2011, § 39), there were problems only with 5 out of 500 volunteers.
\end{itemize}
we usually do in the first week.” The SBTF used the Ushahidi platform, incorporating various processes and technologies in a way that produced comprehensive and valid results in the form of a real-time crowdsourced map comprising interlinked geo-spatial and other data.

Various teams were responsible for individual steps: addressing technology issues concerning the platform and features, monitoring the media and translating as well as categorizing information, approving reports and verifying information and sources, and conducting geo-location and analysis. Almost 500 volunteers from more than 50 countries committed to support the Libya deployment, providing a tremendous amount of relevant information on events, food or medical needs, destruction or existence of infrastructure, and humanitarian responses. This information was consolidated in analytical reports and used to facilitate ad hoc tasks such as coordination. This real-time availability of information was unprecedented, especially considering the limited resources. Furthermore, the direct link between crisis-mapping results and humanitarian responders, often criticized as the major flaw of crowdsourced activities, was ensured in this project because UN OCHA itself requested the SBTF deployment and thus was involved directly in the process, matching the gathering of crowdsourced information with the needs of humanitarian responders.22

Whereas the Haiti team faced several challenges for which no plan was in place, the Libya crisis map team was better prepared to embrace the challenges. Dealing with sensitive information that could either

22. The quotes attributed to Hofmann in this and the next two paragraphs are from an interview with Nicole A. Hofmann, July 7, 2011.
have been abused for tactical purposes or have endangered the people who supplied the information, the map was only accessible via secure log-on procedures to volunteers working for the deployment and to partner agencies. Nicole Hofmann, SBTF task team coordinator and active volunteer in various teams, recalls virtual team meetings in which confidentiality versus open access was discussed: “It was due to Patrick Meier that this was realized with a time delay between adding reports and being able to view them in the public map, so that information was available first to those who would act according to the code of conduct established.”

The Libya crisis map represented the first full-fledged cooperation between crowdsourcing online initiatives and conventional international organizations. For team coordination, on-the-job training, and the spirit of group work, Skype chat groups became a key method of communication for home-based online volunteers involved in crowdsourced crisis mapping. Hofmann is convinced that this mode of communication played a major role in the success of the SBTF’s performance: “Although work flows were generally provided, … new volunteers often have questions which require instant clarification in a live crisis-mapping process. During deployments, the Skype group chat window was active 24/7 for live support, and volunteers guided and informed each other simultaneously. If anything important needed to be clarified, coordinators reacted immediately … on valuable inputs concerning creation or re-definition of information categories. … The SBTF follows a very cooperative, low-hierarchy teamwork approach that is very effective in the fast-paced environment live crisis mapping has to cope with.”

The SBTF (2011) summarizes the most important lessons learned from this collaboration with UN OCHA as follows. First, it is of pivotal importance for the motivation of volunteers to provide feedback to them on how their work is making a difference, in this case through daily updates on exactly how the live map is being used to inform decision making and response. To this end among others, there is a need to dedicate more official UN project staff to distribute tasks and provide feedback to volunteers, to better categorize information, to further standardize communication procedures, to provide translation services for local languages, and to better train volunteers. Duration of the SBTF deployment needs to be agreed and respected ex ante. Protocols on exit strategies should be devised. It is very problematic to change the rules of the game during project implementation: the decision to transfer from the initial private map to a public map introduced security concerns that ultimately limited the recruitment of volunteers with crucial local knowledge. In its own report on lessons learned, UN OCHA additionally emphasizes the importance of recognizing the efforts and results of volunteers and the need to protect individuals, for example, by omitting data that could be used for military reconnaissance, by not soliciting or storing information that could be personally compromising, and by using open-source standards and applications that are accessible to everybody (UN OCHA 2011, §3, 4).

Participatory Postconflict and Recovery Mapping in Sudan: Building Peace and Stability

The transition from an emergency to a postemergency situation is always highly complex. On the one hand, the population is still severely affected and in need of humanitarian support; on the other hand, local

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23. Summary of sources provided by Margunn Indreboe Alshaikh, CRMA replication and policy coordinator, UNDP Sudan, and the authors’ own experience.
actors usually call for a longer-term perspective on peace building and recovery. In most cases, government wants to take the lead, but is still facing severe capacity or legitimacy deficits. Sudan, both during and after the Comprehensive Peace Agreement period, is one of the best examples of the manifold challenges arising from such a transition. Sudan’s security, political, and socioeconomic situation is extremely intricate, constantly shifting, and subject to regional crises. Many groups have been working on poverty reduction and peace building: two UN peacekeeping missions, almost all existing UN agencies, more than 300 international aid agencies, and more than 2,000 national NGOs work in partnership with the governments both north and south to deliver critical humanitarian and development aid. These challenges and complexities call for effective tools to assist in identifying, prioritizing, and coordinating interventions that can enhance peace and stability.

The UNDP Sudan Crisis and Recovery Mapping and Analysis (CRMA) project has been working since 2007 with key international, government, and community actors across the country’s conflict-affected areas to enhance the coordination and prioritization of their efforts. The core objectives of the CRMA are to build local capacities for crisis mapping, conflict analysis, and strategic planning; to institutionalize evidence-based and conflict-sensitive planning across the UNDP portfolio; to enhance knowledge management and coordination for the UN Delivering as One Initiative; as well as to explore innovative GIS-enabled platforms and participatory methods for early warning and conflict prevention. The project is based on four principal, interconnected mechanisms.

First, a core component of the support has been to establish an Information Management Working Group (IMWG) of the UN Country Team, the first of its kind at the country level, to facilitate the development of a coherent information management approach for UN agencies and international NGOs working in cooperation with local authorities and institutions. The IMWG has developed a formal information-sharing platform that provides all participants in recovery and development with a common, basic package of relevant baseline information for their individual analysis, planning, and programming efforts. Every quarter, the IMWG produces a state-by-state digital atlas containing multisectoral and geo-referenced information from all participants. Data sets are sourced and dated to facilitate queries and temporal analysis. Maps can be exported, saved, and printed.

Second, the CRMA has worked with government and community actors to develop a blueprint for state- and community-level participatory mapping workshops that capture community perceptions of priorities and emerging risks. Priorities and risks are grouped along socioeconomic and security lines and are identified for specific geographic and thematic areas. Qualified participants are drawn from a socially and culturally diverse group of people, seeking to ensure as wide representation as possible. The aim is to capture the full spectrum of dynamics in any given locality or state. Participation has included youth representatives, cultural and religious leaders, women’s unions, and pastoralists’ and farmers’ unions, among others. This community-level process provides a link between the state and the population, with the findings feeding directly into state policy.

24. The Comprehensive Peace Agreement was established in 2005 and officially ended with the declaration of independence of the Republic of South Sudan on July 9, 2011.
25. The success of this working group at the national level has led to the setup of a regional IMWG for Darfur and now an independent one in the Republic of South Sudan.
Third, the community perceptions of threats and risks with regard to crisis and recovery are fed into a process of analysis and planning support. Making use of the interactive community-mapping process as well as the baseline data collected through the information management platform, the CRMA supports the efforts of state governments, UN agencies, and NGOs to ensure that their strategic planning, design, and targeting of interventions are evidence based and conflict responsive. Working together with state governments, the CRMA supports the development of a state situation analysis using a mixed-methods and participatory approach. This joint analysis, in turn, becomes the backbone and base of evidence for the government’s own development and revision of its five-year state strategic plans. Further, it facilitates coordination and collaboration among all major actors in designing joint needs assessments, disaster risk reduction programs, early warning systems, as well as monitoring and evaluation.

Fourth, a comprehensive program of capacity development focuses mainly on developing the capacity of local authorities and ensuring that the processes, skills, and tools needed for continued data collection, knowledge management, and analysis for evidence-based and conflict-responsive strategic planning are institutionalized.

The participatory mapping and analysis of community perceptions of threats and risks serve multiple purposes. They can help to identify priority areas for intervention across sectors in a crisis and recovery setting by localizing concentrations of threats and risks pertaining to a particular issue, such as community security, access to health services, or environmental degradation. As all threats and risks are located at the village level, the community can provide detailed contextual information about a specific location of interest, shedding light on how different threats and risks interact and affect the community locally. Beyond collecting grassroots information, this process creates an important opportunity for diverse communities to come together in the aftermath of a crisis to discuss their challenges, perceptions of the situation, and views of the future. This process fosters open dialogue in a safe setting, where opinions are heard and valued rather than silenced and criticized. Although peace building and indeed state building per se have not been articulated as discrete focuses of the CRMA, the crisis- and recovery-mapping process has become an important tool in bringing communities and local authorities together, gaining a broader understanding of the situation, and jointly developing priorities for the future. The process has thus contributed to strengthening the relationship between state and society, building trust, and improving the legitimacy and accountability of the state.

Realizing the potential for combining participatory methods with innovative GIS-enabled tools and new technologies, the CRMA is exploring the possibility of designing an early warning system for its local government partners. This system would be based on the continuous monitoring of a carefully selected set of minimum essential indicators from the crisis and recovery mapping (CRM) data, updated via an SMS reporting tool, and integrated into a specifically tailored database, whether online or offline, using a combination of crowdsourcing and trusted networks of community-based reporters (map 2). This information would provide the foundation for thematic and area-based conflict analyses that would, in turn, inform the targeting and design of conflict prevention and peace-building interventions. The ownership and management of the early warning system would be firmly embedded within the local institution, which could request support from international bodies for the particular interventions identified and designed, if needed.

Several factors were important to the success of the CRMA project.
Its diverse professional staff had experience in a range of techniques for collecting, processing, and analyzing data, from traditional GIS to participatory community security workshops, using a variety of new and established data-processing and data-mapping technologies, with a strong focus on volunteered GIS data.

Its design and rollout of an incentive mechanism for all major actors helped the project to achieve framework agreements with both the northern and southern Sudanese governments at the federal and state levels, on the one hand, as well as data-sharing agreements with all major UN agencies, large NGOs, and donors, on the other. Its key selling point was its usefulness for all actors involved as well as the neutrality of the UNDP as the convening power behind it. In addition, the joint analysis brought all
major actors together and provided a solid platform for coordinated and evidence-based designing and targeting of programs.

The *implementation modality* also was a key factor in its effectiveness. The project design was adaptable, context driven, client oriented, and easily replicable. Data layers provided through the IMWG range from hydrology, soil types, and land cover to demography (including internally displaced persons and returnee populations) and distribution of basic services and who-does-what-where-when.

A participatory and consultative approach to ensure leadership and ownership of the process was firmly embedded in the project’s counterparts. The inclusiveness of the CRM process was at the core of implementation; while validating and updating available layers of IMWG data, two-day participatory mapping workshops carried out at the state and local levels generated new grassroots information related to accessing essential resources like water, land, and basic services as well as monitoring small arms proliferation, counterproductive behavior, rule of law deficits, ecological hazards, and livelihoods-related issues. With 25 to 35 participants each and inclusive in terms of gender, age, livelihood groups (for example, farmers and nomads), government, traditional, and religious leaders, as well as civil society representatives, workshops brought together widely representative groups.

The CRMA data analysis followed an *inductive approach*. Important themes were grounded in the data instead of developed from a preexisting framework. This approach sought to explain perceived threats and risks to communities by identifying key characteristics, relationships, and processes. The categories used throughout the workshop were chosen by the participants themselves and derived from the topics of discussion brought forward. These categories were then fed into an overall human security framework in the CRM database, with indicators derived from the data. The CRMA’s methodology was informed by participatory rural appraisals, participatory learning action, and participatory postconflict needs assessment, the UNDP’s conflict-related development analysis, conflict vulnerability assessments, human security frameworks, and mixed-methods research. According to Margunn Indreboe Alshaikh, UNDP CRMA replication and policy coordinator, “Through our participatory approach and close collaboration with state authorities and local communities, CRMA has gained the trust of its counterparts and opened doors to topics of discussion hitherto silenced and delegitimized. Using innovative technologies and GIS, sensitive issues are contextualized and depoliticized through novel correlations and visualizations, allowing previously contesting actors to jointly identify priorities for intervention and response. Participatory mapping has become a key tool in managing complexities in peace building and planning for postcrisis settings.”

*Interoperability* was achieved. The information management support tools were based on GIS-enabled, open-source software and were compatible with DevInfo, UN OCHA’s ProMIS, and other GIS platforms to ensure full interoperability with key partners’ internal databases and tools. Additionally, the standardized digital atlas package produced through the IMWG was based on Arc Reader GIS software, which was not restricted by current embargos. The digital atlases were distributed on compact discs to government, donors, and NGOs.

From the onset of the project, *mobile applications*, through NOKIA Data Gathering, were explored as alternatives to paper forms, palm held devices, or laptops for collecting data from remote locations. In designing an early warning system, the CRMA is also evaluating various SMS reporting tools, adding
a feature to the database tool developed in-house for this purpose, and allowing for crowdsourcing of information as well as basic information sharing within a trusted network of rapporteurs.26

Local government ownership was crucial for achieving the desired impact on government policies. To ensure local ownership of the process, the CRM and the analysis and planning support processes were organized at the request of and in collaboration with local authorities. The current products, such as the state situation analyses, are nationally owned and have become milestones in and of themselves.

Other Applications of Crowdsourcing

This section details other applications of crowdsourcing, including efforts to improve transparency through election monitoring in Guinea, to improve governance through transparency in Kenya, to harness international pressure for accountability in fragile states, and to support economic development.

Elections Monitoring in Guinea: Crowdsourcing for Transparency and Civil Rights

In 2009 a crowdsourcing and citizen-reporting platform was established by the civil society group Alliance Guinea in the aftermath of massacres, mass rape, and political suppression carried out by soldiers loyal to then president Dadis Camara (Charbonneau 2009). Only after Camara left office did Guinea begin to reestablish democracy, albeit on shaky foundations and amid much public tension, skepticism, and fear. The atrocities committed under Camara’s direction occurred on September 28, 2009, and Alliance Guinea was founded the next day in response. The main objectives of Alliance Guinea were to promote transition to full democracy by providing a platform for information sharing and advocacy and to serve as an informational resource for international agencies, analysts, human rights groups, and activists. In addition, Alliance Guinea was established in part to provide a crowdsourcing system for citizen reporting on elections, and, due to Camara’s unexpected removal from power, it served to do just that. After many months and several delays, a relatively transparent and free election was held on September 7, 2010.27

Guinée Vote 2010 Témoin (GV10), the contribution primarily of Alliance Guinea, was based on the Ushahidi platform following the success of Ushahidi’s implementation in Kenya. Using a combination of SMS, e-mail, Web form, and Twitter, GV10 collected information on the electoral process. Both positive and negative incidents were categorized in eight ways: violence, harassment, campaign events, polling stations, “what went well,” counting and results, and reporting of material problems.28 Between the launch of the program and late November 2010, after the election, GV10 had collected more than 2,000 reports from around the country. The associated map indicates that participation was generally widespread and more concentrated in areas with higher population density, which may suggest an encouraging trend of unbiased representation.

26. The project can be followed on Twitter at @undpcrma.
GV10 was erected in partnership with the African Elections Project, an independent election monitoring and information group, the National Independent Election Committee, and major telecom companies (Vasdev 2010). Several key factors were present to make GV10 operable. A central information platform was provided, and participation was made widely available through a variety of mobile technologies. Every citizen with access to a phone was able to send in text reports. However, GV10 also fell short in many critical areas of effectiveness: it did not have sufficient moderators or the capability to verify the majority of reports; it did not have the means or the authority to respond to reports; its access to mobile communications was at the mercy of the government; and it was exposed to potential measurement error and “poison data,” for example, people committing false reports in order to discredit a competing group or politician (Vasdev 2010).

The posture of state authority in Guinea and its will to suppress GV10 through various means were inconsistent. After the massacres, aimed at peaceful demonstrators protesting Camara’s rise to power via a coup d’état, the government was in a weak position to block SMS and other communications infrastructure, due in part to uncertainty over leadership and intense international pressure. Mobile communication services were blocked for a short while, but they were reactivated quickly amid widespread public outrage. The massacres, later coined Bloody Monday, also marked one of the earliest and most significant uses of mobile telephone cameras to broadcast information about human rights abuses in Africa, although the suppression of information and confiscation of cameras and mobile devices followed.

More recently, in the wake of the more successful 2010 election, the government again blocked SMS, after violence broke out in response to initial results. This action severely hampered the ability of GV10 to collect reports from concerned citizens. It is clear that the Guinean government, whether military in character or not, has perceived mobile communications and crowdsourcing as a threat to general stability as well as to the domestic and international legitimacy of the government.

Another fundamental question is whether or not crowdsourcing data for an election constitutes election monitoring or whether genuine election monitoring requires the data to be actionable and for some intervention to take place, if needed, based on that information. In short, does the efficacy of the data and coordinating institutions inform whether the task at hand is “citizen reporting” or “election monitoring” in a technical sense? As a discipline, election monitoring involves deploying trained monitors to polling stations and having them report structured information back to the monitoring body. Furthermore, the presence of election monitors instills a stronger sense of procedure, discourages intimidation, and deters fraud and irregularities. Citizen reporting and the presence of a system such as GV10 may serve to empower citizens and encourage better government behavior, deter fraud, and make those who may disrupt elections more cautious. But the argument can also be made that, as an informal process with limited capabilities to respond to allegations of tampering, intimidation, or worse, citizen reporting should not replace formal election monitoring. Nonetheless, the two disciplines are highly complementary, and more

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The Role of Crowdsourcing for Better Governance in Fragile State Contexts

Crossover between the two would yield better results. In particular, it would allow for better triangulation of data from official monitors with crowdsourced data. For example, if GV10 included data provided by independent election monitors, citizens and agencies would have more structured and verifiable information with which to design interventions and political or advocacy campaigns.

Guinée Vote 2010 Témoin demonstrates that Guineans want broader participation in governance, more transparency, and more consistent democratic rule. Furthermore, the posture of the government vis-à-vis civil society activities, coordination, and crowdsourcing makes a difference, and institutional and technical linkages to crowdsourced information are needed to ensure the efficacy of such an effort.

Open Data Initiative and Huduma in Kenya: A Paradigm Shift for Governance?

In July 2011 the government of Kenya officially made available its statistics and data on government spending, health and poverty indicators, public service delivery including primary schools, and much more. By releasing its data to the public, the government opened the possibility for developers, statisticians, civil society groups, and researchers to analyze, engage, and criticize state management, budgeting, and welfare in entirely new and empirical ways. It also opened the doors to evaluation and criticism more than ever before. With significant support from the World Bank and the Mapping for Results Program of the World Bank Institute, Kenya took the first steps toward empowering citizens through openness of information. A desired outcome of the Open Data Initiative is to crowdsourc
e independent developers who can create new and useful tools, applications, and analyses for institutions, companies, and the general public, making use of new resources to hold government more accountable. Ideally, greater transparency through open data on government spending, parliamentary proceedings, and public service delivery could also have a dampening effect on corruption in the country.

Several elements of governance are present in this new environment of openness and the types of data made available. Self-selection of participants is evident, as citizens with expertise in statistical analysis will be motivated to make use of raw government data. Other applications being built around or in concert with the Open Data Initiative could cater to broader segments of Kenyan society. A central platform for information dissemination, Kenya Open Data could function as a neutral hub for citizens of all kinds to use. While it is unclear whether the government will be able to provide timely, accurate, or consistent data, all of these steps are encouraging. Of course, observers and Kenyan citizens alike hope that the government’s new commitment to transparency will breed self-correcting behavior and improve the quality of life of citizens and responsiveness of government to the needs of the people.

So far, there has been significant demand for data, a hopeful trend for proponents of crowdsourcing new applications and uses of government data for improving governance and development. As of August 17, 2011, Kenya Open Data had received more than 100 individual requests for specific data sets, often accompanied by brief justifications or proposals for the development of new applications. It is encouraging that the government has recognized the demand for data and responded appropriately. However, not all sections of the Kenyan government have been equally supportive of this move.

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34. See http://huduma.info/.
35. See http://opendata.go.ke/.
In concert with the Kenyan government’s Open Data Initiative, an Ushahidi-based crowdsourcing platform called Huduma (Swahili for service) was launched in February 2011. Huduma employs SMS, e-mail, and Twitter to allow citizens to submit reports on infrastructure needs, supply or utility shortages, and other problems with government services and conduct. The system is modeled after the U.S. community service SeeClickFix. There are six categories for reporting: education, governance, health, infrastructure, water, and justice. Contributions can be submitted anonymously, but must show the location of the sender.

Several Kenyan ministries attended the launch of Huduma, but the extent and quality of their participation and willingness to use Huduma in their operations have yet to be proven. Huduma was scheduled to become fully functional nationwide in August 2011. However, as of that date, Huduma had not become operative beyond a pilot phase. The slow take-up demonstrates the importance of crowdsourcing prerequisites as elaborated by Sharma. It will be interesting to see when the government will engage in dialogue with its citizens by handling their reports, which, it is hoped, will make specific local issues and needs visible to the global public for the first time.

**Avaaz: Crowdsourcing Political Pressure on a Global Scale**

Avaaz, launched in 2007, is an international campaigning tool to generate support or pressure around international and transnational issues and influence governments and institutions to act in the interest of human rights, peace, environmental protection, and other causes. Fragile state governments such as Sudan, Syria, and Myanmar are prominent campaign targets. Avaaz is a strong example of universally participatory crowdsourcing, as anyone with an e-mail address and an Internet connection can participate; the issues that Avaaz takes on are identified (in part) by member polls taken on a yearly basis. Anyone can become a member, log in, and sign an Avaaz petition, in a show of issue solidarity with others around the world. There are ongoing campaigns to end violence afflicting the people of Darfur in Sudan, to stop the practice of “corrective rape” in South Africa, and to highlight many other affronts to basic human rights. By demonstrating that hundreds of thousands of people worldwide can collaborate and have meaningful, effective collective voice, Avaaz has revolutionized how people think about difficult international issues.

Many of the issues that Avaaz campaigns for are highly emotionally charged and carry significantly broader resonance in the developed world than in developing countries. The vast majority of Avaaz’s membership is found in developed countries. The map provided in 2010, when Avaaz had 5 million members (more than 9 million, as of August 2011), shows a concentration of people with access to the Internet, wealth, consistent and good health care, as well as other indicators of high levels of development. To illustrate the point, after major campaigns in 2009, including an online petition against violence,
disease, and hunger in Zimbabwe, an online petition against the 2008 Mumbai terrorist attacks, and an online petition against the Anti-Homosexual Bill in Uganda, citizens of the countries whose interests are represented by the campaigns are significantly less active in them than are citizens in nontarget and more developed countries. For example, in 2010, there were 398,798 members from Canada (1.2 percent of the population), but only 1,293 members from Nigeria (0.0008 percent of the population).42

While this fact in no way diminishes the point that Avaaz genuinely does crowdsource public sentiment to provoke political change, it does indicate the self-selection aspect of Avaaz’s online petitions (in-country demonstrations are a much different story), which attract persons with ample stability to be concerned with “what is affecting others” and less need to be concerned with “what affects me.” It can thus be seen as an external complement to in-country campaigns as well as to “speaking out for the oppressed” and creating international pressure where internal opposition is being silenced (for example, Sudan and Syria), which, of course, is particularly relevant in fragile states. A similar, albeit smaller, role is played by online diaspora networks, such as the Facebook group “Sudanese in support of Sudanese protests,” to mention just one of many examples.

Web-based activism has been the subject of pointed criticism, despite its apparent benefit to international causes, crowdfunding for disaster relief, and successes in changing legislation, pressuring the United Nations, and becoming a major player in progressive international campaigning. One of the most consistent criticisms of Avaaz is that it makes activism too easy. The term “clicktivism” has been coined in reference to the ability of regular people to participate in serious international issues from a distance and at little personal cost.43 But despite criticism, Avaaz has had a real impact and demonstrated the value of collective voice. It is completely funded by its membership and thus a powerful tool for crowdfunding. The organization’s budget for 2009 was US$4,328,357,44 with which it carried out several campaigns and made significant charitable donations.

As expected of a crowdsourcing tool, the Avaaz site does not reflect a high diversity of political views; it represents international mainstream opinion with a Western bias. However, there is no geographic barrier to participation, which means that any citizen with the right access to technology, regardless of political thinking, can participate.

Avaaz is generally not a resource for launching start-up political movements, not useful for organizing movements on a small scale, and not useful for introducing entirely new issues to the general public. Avaaz campaigns focus on issues that are widely known among internationalists, veritable “household-name” conflicts, crises, chronic abuses of human rights, and environmental issues. But Avaaz does have grassroots appeal; its strength derives from its immense membership and the power of collective action and petition. In this way, Avaaz represents crowdsourcing for political action in the broadest sense possible.

43. See “What Is Clicktivism?” (http://www.clicktivist.org/what-is-clicktivism/).
Crowdsourcing for Economic Development and Good Governance

Crowdsourcing not only is useful in directly addressing governance issues, but also can indirectly influence governance by increasing market efficiency as well as by offering additional income sources, thus empowering small-scale producers and poor workers. These types of crowdsourcing could offer an acceptable entry point to crowdsourcing for fragile states, even when authoritarian governments block initiatives that directly address governance issues. In addition, donors and development program implementers can use crowdsourcing as a cost-effective tracking and monitoring tool.

Crowdsourcing Market Information

Better awareness of market prices reduces low-income farmers’ risks when deciding whether to plant a particular crop as well as where to sell it. mCollect is a trade-in-hand initiative started in 2006 by the International Trade Center with the intention of fostering an integrated pro-poor value chain by enhancing export opportunities and trade throughout West Africa (Livingston 2010). Using crowdsourcing, mCollect makes it easier for the information collectors to gather domestic prices straight from the local agricultural markets. The information is then distributed via SMS to interested farmers and businesses in the region. mCollect has been implemented in Burkina Faso, Liberia, Mali, and Senegal. Another trade-in-hand initiative, Mobile Marketplace, enables small-scale producers to advertise their products to wholesalers and exporters via mobile phone. This greatly expands the opportunities to connect buyers and sellers beyond farmers’ or traders’ immediate locales (Livingston 2010). TradeNet/Esoko, Resimao, and Community Knowledge Worker by the Grameen Foundation are similar programs in Africa that aim to collect and make market data and agricultural information, crowdsourced from farmers, available on the Web and via mobile phones in order to enhance market efficiency.

txtEagle/JANA: Generating Additional Income for Low-Income Populations

Based on the concept of Amazon’s Mechanical Turk,45 txtEagle enables mobile phone users to earn small amounts of money by completing simple tasks on their mobile phones for corporations. The corporations pay these ad hoc workers either in airtime or in mobile money. The tasks range from translation, transcription, marketing surveys, and software localization. txtEagle (now rebranded JANA) was established in 2009 and provides an additional source of income for rural and low-income populations in Kenya and Rwanda.

45 One of the first successful large-scale commercial crowdsourcing marketplaces, Amazon’s Mechanical Turk provides a platform for computer programmers to coordinate a crowd of workers to perform tasks that computers are unable to do yet, such as translating, writing product descriptions, or identifying performers on music compact discs. The workers can browse among existing tasks and complete them for a monetary payment.
Crowdsourcing for Monitoring and Evaluation

Beyond tracking human rights abuses and monitoring elections, crowdsourcing can also serve as a complementary monitoring and evaluation tool for development and humanitarian programs by providing a direct feedback loop from the beneficiaries. This is of particular interest in fragile states, where access to target areas and the presence of unbiased national partners are rarely guaranteed. Concerns about the validity and representativeness of crowdsourced data neglect to appreciate the fact that any local organization that selects participants for a survey or focus group or for training deals with similar criticism. Although it cannot provide perfectly unbiased sampling, crowdsourcing has the potential advantage of being open to anyone with access to a mobile phone. Where organizations need to have situational awareness, they rely on ad hoc sources, which allows the objectivity and credibility of the information to be scrutinized. Crowdsourcing platforms have already installed methodologies to cross-check information, minimizing the possibility of error or abuse.

The UNDP Sudan produces threat and risk maps that assess spatial risks that can inform programmatic response in Sudan's postconflict states. The use of such spatial risk assessments, updated over time, is an even more compelling use of crisis maps to support decision making. Due to a changing postconflict environment, projects designed six months ago may no longer have the intended impact, as the situation may have changed rapidly on the ground. Regular updates on the changing context allow donors and government to adapt their programming. Crisis mapping can play a pivotal role in this decision making. Patrick Meier (2009) proposes “base mapping” for monitoring and evaluation, using three types of mapping: the current situation (baseline), the ideal situation (intended impact), as well as ongoing mapping to measure progress from the baseline to the intended impact (Meier 2009).

An Analysis of Crowdsourcing Success Factors

To what extent do the cases illustrate Sharma's model of critical success factors? Table 2 offers a preliminary analysis. We have allocated scores to each case against Sharma's critical success factors, while accepting the limitations of this subjective ranking. The highest-ranking cases have the highest scores within each success factor. Avaaz ranks highest, offering the largest scale of participation and level of activity. Second come the Haiti cases, providing the fastest response, high levels of linkages and trust, and clearly defined crowdsourcing process. The first Ushahidi pilot (postelection violence monitoring) comes third, due to its pilot character and smaller scale. Fourth is txteagle/JANA, ranking lower due to its nonparticipatory governance. Its overall rank is still quite high, because its business model could become a best practice for commercial crowdsourcing (especially for market research and data validation) in developing countries, including fragile states. The crisis-mapping example of Libya comes fifth, due to its use of a limited, bounded crowd and its strong separation between trusted and nontrusted sources. Still this model derives from its use in an extreme-conflict environment and was successful in rapidly collecting valuable data at much lower cost than would have been possible through other means. The GV10 case attracted much interest during the elections of 2010 and is still accessible online. However, the platform does not generate long-term motivation of a crowd, and during its early implementation in 2010, many errors were made.
## Table 5.2 Rating of Cases Using Sharma’s (2010) Model of Crowdsourcing Critical Success Factors

<table>
<thead>
<tr>
<th>Project</th>
<th>Infrastructure (available vs. needed)</th>
<th>Vision (shared within the crowd)</th>
<th>Human capital (available vs. needed)</th>
<th>Financial capital (needs)</th>
<th>Linkages and trust</th>
<th>External environment</th>
<th>Motivation (crowd alignment with long term goals)</th>
<th>Criteria of governance (of the system)</th>
<th>Process of crowdsourcing</th>
<th>Score (and ranking among cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Ushahidi pilot in Kenya</td>
<td>2</td>
<td>2 (short term)</td>
<td>2</td>
<td>1 (small initiative)</td>
<td>3 (high trust among initiators and by donors, but little trust in government)</td>
<td>2 (high interest due to crisis, no government blockage)</td>
<td>3 (high intrinsic motivation, but short-term oriented)</td>
<td>1</td>
<td>2 (relatively small scale)</td>
<td>18 (3)</td>
</tr>
<tr>
<td>Ushahidi in Haiti</td>
<td>3</td>
<td>2 (short term)</td>
<td>1</td>
<td>1 (in-kind sponsoring)</td>
<td>2 (high level of trust among initiators, but less with international NGOs)</td>
<td>2 (same as previous)</td>
<td>3 (high intrinsic motivation, but short-term oriented)</td>
<td>1</td>
<td>1</td>
<td>16 (2)</td>
</tr>
<tr>
<td>CRMA in Sudan</td>
<td>2</td>
<td>3 (limited target group)</td>
<td>1</td>
<td>4 (UN and donor financed)</td>
<td>4 (little trust between civil society and government) and no crowdsourcing</td>
<td>3 (UN and donor facilitated, but little or no trust in or by government)</td>
<td>4 (long-term oriented, but no crowdsourcing; risk of biased selection of stakeholders/representatives)</td>
<td>5 (limited participation, no public view of the map)</td>
<td></td>
<td>31 (8)</td>
</tr>
<tr>
<td>SBTF crisis mapping in Libya</td>
<td>2</td>
<td>3 (differences between core group and volunteers)</td>
<td>1</td>
<td>3 (UN and donor financed plus volunteers)</td>
<td>4 (high trust between volunteers, but low trust in crowd data and no trust in government)</td>
<td>3 (UN and donor facilitated, but little or no trust in or by government)</td>
<td>3 (short-term orientation; limited participation and crowd)</td>
<td>3 (limited crowdsourcing, risk of bias)</td>
<td>3 (complex rules, lack of training of volunteers)</td>
<td>25 (5)</td>
</tr>
<tr>
<td>GV10 in Guinea</td>
<td>3</td>
<td>3 (very heterogeneous)</td>
<td>2</td>
<td>3 (donors, crowd)</td>
<td>3 (donor funded, low government trust)</td>
<td>3 (UN and donor facilitated, but little or no trust in or by government)</td>
<td>4 (long-term goal, limited crowd)</td>
<td>3 (unclear rules of participation)</td>
<td>3 (limited; varying interest)</td>
<td>27 (6)</td>
</tr>
<tr>
<td>Huduma in Kenya</td>
<td>2</td>
<td>1 (long-term oriented, with government as key partner)</td>
<td>2</td>
<td>3 (government, donors, crowd)</td>
<td>3 (government buy-in, but low trust because of delays in launching the platform)</td>
<td>2 (government buy-in)</td>
<td>5 (platform not yet operational beyond pilot)</td>
<td>5 (platform not yet operational beyond pilot)</td>
<td>5 (platform not yet operational beyond pilot)</td>
<td>28 (7)</td>
</tr>
<tr>
<td>Avaaz</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 (very high number of supporters; crowdfunding)</td>
<td>3 (relatively high trust in initiators, but due to scale; anonymous, less collaboration within the crowd)</td>
<td>2 (international advocacy rather than relationship with fragile state governments)</td>
<td>2 (high altruistic motivation from developed countries, but less interest from developing-country citizens)</td>
<td>1 (transparent, simple rules for issue selection and participation, direct action)</td>
<td>1 (see criteria of governance)</td>
<td>13 (1)</td>
</tr>
<tr>
<td>mCollect</td>
<td>3 (weaker infrastructure in partner countries)</td>
<td>3 (externally driven)</td>
<td>2</td>
<td>3 (high long-term funding needs, donor-sponsored)</td>
<td>3 (UN and ITC support, but unclear if local actors and clients involved in setup)</td>
<td>3 (potential to make markets more efficient, but unclear business driver)</td>
<td>4 (unclear long-term business driver)</td>
<td>5 (no live view of the platform)</td>
<td>5 (no information on data collection process found online)</td>
<td>31 (9)</td>
</tr>
<tr>
<td>txtEagle (now: JANA)</td>
<td>2</td>
<td>1 (entrepreneur driven)</td>
<td>2</td>
<td>3 (high start-up, scale-up needs; business funded)</td>
<td>2 (initiative supported by large telecoms)</td>
<td>2 (local government support, serving real demand)</td>
<td>2 (business model: crowd receives micropayments)</td>
<td>3 (business driven, but no crowd participation in design)</td>
<td>2 (see entry under motivation)</td>
<td>19 (8)</td>
</tr>
</tbody>
</table>

Note: 1 = very good; 5 = nonexistent or very bad.
in the governance and crowdsourcing process. The Huduma case is ranked quite low, mainly because its full-fledged implementation was still pending. mCollect is not accessible online, and the International Trade Centre, its initiator, has not reported its current level of participation. Finally, the CRMA mapping project is not based on crowdsourcing, but on a “bounded” crowd, and its model is very costly. However, it provides a reference for the cost-effectiveness of crowdsourcing for governance improvement.

Finally, we ask, to what extent does crowdsourcing contribute to empowerment, transparency, accountability, and participation? The direct advantage of ICTs in developing countries is that they provide a widespread telecommunications infrastructure as well as common tools and applications, such as crowdsourcing software, that allow crowds of users—citizens—to communicate with each other as well as with government, civil society organizations, and businesses at a relatively low cost, especially compared to the cost of traveling to another city to communicate with each other. Through matching of crowdsourced with official “open” government data, crowdsourcing enables public service provision or elections to be publicly monitored and documented, which helps to increase government transparency.

In a next step, government institutions publicly responding to and taking action on crowdsourced citizen reports can significantly improve their downward accountability to their citizens. In turn, government’s effective response can incite more citizen participation. This interaction between government, on the one side, and citizen crowds, on the other side, can create a spiral of citizen empowerment, whereby public accountability and civic participation incentivize each other. While assumptions and challenges are evident in each of these stages and link to each other to some extent, these cases show how crowdsourcing has the potential to enable empowerment, transparency, accountability, and participation equally. Yet, as Sharma’s model and our analysis of the cases also show, some sociocultural, technological, economic, and political factors are necessary, and the more factors are present, the more successful a crowdsourced initiative is likely to be.

**Recommendations for Donors: Applying Crowdsourcing and Interactive Mapping for Socioeconomic Recovery and Development in Fragile States**

Crowdsourcing systems present donors with an opportunity to promote local ownership and facilitate broader participation in development and governance. “The default position for many people working in ICT4D [information and communication technology for development] is to build centralized solutions to local problems—things that ‘integrate’ and ‘scale.’ With little local ownership and engagement, many of these top-down approaches fail to appreciate the culture of technology and its users. … My belief is that users don’t want access to tools, they want to be given the tools. There’s a subtle but significant difference. They want to have their own system, something which works with them to solve their problem” (Banks 2009).

Crowdsourcing requires significant contributions by volunteers. Yet processes driven by volunteers are less predictable and less controllable than formal processes, which in a fragile state can support the credibility of information rather than undermine it. Is institutionalizing crowdsourcing (as in the case of national elections) always the best option? Fragile states are often characterized by a lack of trust in public institutions. Therefore, ownership of the crowdsourcing, as in the case of Kenya’s Open Data
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Initiative, becomes a key issue, both on the side of government and on the side of potential users. The willingness and personal engagement of volunteers is based on a vision or specific objective that an official donor or government institution may not have. An initiative that is perceived to be externally driven will only work in an emergency, crisis, or similar short-term context. However, donors can play a pivotal role in facilitation.

Donors can maximize the impact of crowdsourcing for better governance in fragile states in meaningful ways. Exploring the role of donor and government institutions in reactive and proactive crowdsourcing, the focus should first be on creating awareness among officials to foster an understanding of the opportunities arising through this new mechanism. Crowdsourcing tools first need to be acknowledged by a wider group of professionals and become a valid input to guide decision making for these institutions. Rather than establishing crowdsourcing mechanisms in isolation from initiatives on the ground, official institutions need to find ways to cooperate with the existing online communities and to provide information and facilitate crowdsourced processes. The principle for the use of country systems in partner countries is equally applicable to civil society mechanisms, including traditional as well as virtual forms. In order to transform reactive crowdsourcing into proactive peace-building, democratization, and development programs, community engagement is indispensable to ensure transition from short-term projects to sustainable processes with broad-based ownership. Freedom of the press as well as the capacity and role of the media—especially radio—cannot be underestimated in helping crowdsourcing initiatives to reach a critical mass of contributions. Media can act as “data intermediaries,” translating the results of crowdsourcing data to the general public (USIP 2011). Of course, donors can provide funding, training, and technical advice to local institutions or groups setting up a crowdsourcing initiative as well as media training and coverage of the crowdsourcing initiatives.

In a fragile state, donors can make a crucial contribution at the level of the enabling environment. Donors are well equipped to expand the political space for crowdsourcing by presenting the opportunities and advantages of crowdsourcing and interactive mapping to government authorities and by considering the government’s interests in improving development planning, reducing transaction costs, adding value to e-government services, increasing aid transparency, and improving relations with the public. Donors can thus suggest incentives for governments to support, or at least permit, crowdsourcing processes.

Donors possess the convening power to bring all major stakeholders to the table. In addition, donors can offer financial incentives for local governments to collaborate, such as performance-based investment funds. Local government’s implementation and performance then can be effectively monitored and evaluated by a civil society–based crowdsourcing mechanism.

The case of Sudan demonstrates that donor-supported offline participatory mapping continues to play an important role in breaking down ethnic-social divisions and engendering inclusiveness—and thus conflict sensitivity—in community recovery and development planning. The process of collaborative governance and decision making is a factor in preventing and mediating conflict, the importance of which cannot be overestimated. After the map has been agreed on, the mapping results can be digitized by donors or governments and thus made available to the public. Furthermore, participatory mapping can be used to train communities and authorities at a later stage and can be enriched by using mobile phone–based crowdsourced tracking of development progress by local community members. An innovative design of the planning process that combines traditional one-time participatory community mapping for planning and
evaluation with continuous interactive mapping for tracking and monitoring creates a (typically absent) feedback loop to and from the local level. Such a design can help to build social capital and prevent the emergence of parallel institutions—for example, crowdsourcing by youth versus offline representation by traditional leaders.

Crucial conditions for success are to design the intervention as a process, not a project, and to allow the data generated through participatory mapping and crowdsourcing to guide overall planning decisions. The inductive approach used in Sudan illustrates how mapping categories were developed by stakeholders, instead of being dictated by facilitators. Planning data generated through such processes can legitimately inform state-level and national development and poverty reduction strategies. In general, platforms that start at the community and local levels—for example, for collaborative community planning—seem the most promising, since their lower initial level within government reaps more immediate benefits and presents a weaker political threat to government leadership.

The cases presented in this chapter outline opportunities for donors to encourage governments to share information with the public, to foster inclusive access to telecommunications, to prevent harassment of crowdsourcing activists, and to create critical links with civil society and the private sector for the inclusion of population groups hitherto subject to the digital divide. Such advocacy could be part of the political dialogue within a budget support program or a significant multidonor program. The willingness of donors to gather and share their data, making them publicly available through an open-aid mapping process with crowdsourced feedback loops involving beneficiaries, can be an important incentive for governments to become more open. Ideally, crowdsourcing initiatives for development will be closely linked to an open government program, as attempted by the Kenyan government.

However, open government programs cannot be driven by donors; they need to possess strong ownership by government leaders in order to have a chance of success. Last but not least, by means of their reputational impact, donors can create linkages with and trust of a crowdsourcing initiative, especially in a fragile state where strong initial government support may not be an option. By supporting local crowdsourcing activities, donors as well as international campaign platforms such as Avaaz can link interactive mapping with other media and thus help to focus the international community and mainstream media on human rights violations and other important issues. The sheer potential of doing so could discourage abuses, prevent conflicts, and increase government accountability in the future. If a divisive situation develops into a crisis, donors can provide technologies and systems and mobilize external support that help to protect crowdsourcing activists and platforms from government abuse, as shown in the case of Libya.

In fragile state contexts, crowdsourcing can be made more difficult by government regulations and actions, but it can also draw more attention and motivations from the crowd, especially if the options to express opinions are otherwise limited. As the early experience has shown, crowdsourcing and GIS-based interactive mapping are already widely used by citizens within fragile states. Whether they will have a significant impact on governance depends largely on how governments relate to this emergent phenomenon. Embracing its potential, especially for participatory development planning and monitoring of issues by citizens, could increase governments’ accountability and ultimately their legitimacy, while efforts to stifle crowdsourcing initiatives could further destabilize regimes.
References


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UN OCHA (United Nations Office for the Coordination of Humanitarian Affairs). 2011. Lessons Learned: Collaboration with VTCs in Libya and Japan. Geneva: UN OCHA. https://docs.google.com/document/d/1wut8oDRo9BYSlc0hQ34Ng8qQ-pLVG1RO95WOvR3MN78/edit?hl=en_US.


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