

Report Part Title: CASE STUDY 3 — 'USHAHIDI, AN OPEN PLATFORM FOR SITUATION AWARENESS'

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4 CASE STUDY 3 – ‘USHAHIDI, AN OPEN PLATFORM FOR SITUATION AWARENESS’

By their very nature, humanitarian relief operations (HROs) involve a wide range of actors who need to obtain and process large amounts of information in a short period of time and in a coordinated fashion. They then also need to make this information actionable and actioned. This makes HROs a worthwhile area to investigate new forms of cooperation. Since every single operation is in a way unique, there is not only the issue of cooperation but also the need for actors to be adaptable and to be able to reconfigure cooperation mechanisms as the needs and circumstances change. We submit that this, too, makes them interesting cases studies for NDOs who are grappling with new ways to cooperate with new partners.

Rapid advances in communications technology have enabled responders to global disasters to operate in much more effective ways. This is not only the case for small and nimble organizations, but also for larger, more traditional actors, such as government agencies. The need for better means to coordinate and monitor operations arose in particular in the wake of the 2004 Tsunami in East Asia. Since then, new platforms have been developed, some of which have proven quite successful and have been replicated elsewhere. One such example is Ushahidi.

Ushahidi is both a website and non-profit company that developed an open source crisis map out of the need to provide alternative information about incidents of violence in the post-electoral period in 2007 in Kenya. At the time, the Kenyan government established a ban on free media coverage and reserved the right to review all articles and reports that were broadcasted and published. As a result, there was a scarcity of reliable information. This prompted Ory Okolloh, a blogger and activist, to use her blog to collect information about eruptions of violence. As she received a vast amount of reports and realized that a blog alone is an inadequate tool, she decided to create a website where people could share information that was banned by the government. With the help of several developers, Ushahidi was up and

running the same week.¹⁸⁰ It was an online map that showed instances of violence in Kenya. Moreover, as a truly open platform, Ushahidi enabled anyone who wished to share information to report and contribute to the map. Since then, Ushahidi has been deployed in a number of humanitarian crises, including the 2013 Japanese tsunami and the 2010 Haiti earthquake, and is also used for other purposes in Congo, Mexico, and the US.¹⁸¹ It has been used to support various humanitarian responders such as the US military, the United Nations, and a number of non-governmental organizations.¹⁸² Ushahidi's chief contribution to HROs is to make geospatial data available by consulting sources that the relief community had not exploited – ranging from digitized data to weather forecasts. For this process, geospatial technologies combining geographical data (such as GPS location) and spatial software (such as Google Earth) are required. Geospatial data, however, is not new to traditional humanitarian actors. And while geospatial technologies have high potential for crisis management, many countries or whole regions run into the difficulty of either not possessing the means of geospatial data collection or of the inability to establish proper geospatial services despite the data being available.¹⁸³ In such cases, Ushahidi or other crisis mapping platforms can fill the gap. These platforms use data available from local communities –through gathering text messages, online reports, or social media posts – and convert this raw data into a readily available crisis map constructed by a body of international volunteers.

4.1 USHAHIDI HAITI PROJECT

When Haiti was struck by an earthquake in 2010, the traditional humanitarian relief system was not functioning effectively. Humanitarian relief operations relied on the closed and rigorously structured network of relief workers and organizations. They heavily depended on the UN cluster in performing their duties. This was partly due to the belief among the organizations involved that experts with years of experience and the required skills could provide more accurate data of the situation on the ground and were thus more effective in providing disaster relief. In the wake of the Haitian earthquake, it became clear that this traditional approach fell short as a result of the inability to use new technological inventions and to explore new sources of information.¹⁸⁴

In the past decades, the online environment has evolved to such an extent that an approach that does not respond and adapt to a changing social environment will have problems surviving. Making use of new technologies and opportunities, Ushahidi was a revolutionary and a paradigm-shifting development in the field of humanitarian aid.¹⁸⁵ However, the revolutionary approach of Ushahidi was not determined only by new

technologies; the technology that was used, such as text messages or the internet, had been there for some time already. The difference is made by the involvement of local residents and by using their knowledge in operational decisions.¹⁸⁶ This can be seen as the primary lesson learned from responding to the Haiti earthquake.¹⁸⁷

There were other, Haiti-specific reasons for the need to engage Ushahidi and like-minded platforms after the earthquake. First, relief workers in Haiti were occasionally kidnapped, which resulted in the deterioration of communication between local leaders and the relief community.¹⁸⁸ Second, a proper backup of Haitian geodata did not exist, which proved to be an issue after the crisis and after the collapse of Haitian infrastructure. A freely available online map of Haiti was also not fully developed, and as a result it was a challenge and a task for international volunteers to help map the island's geography and infrastructure. Third, although the island asked for help from international volunteers – and indeed received help from various countries, foreign ministries, militaries, and (relief) organizations – local knowledge of the Haitian community stayed underexplored.¹⁸⁹ At the time, the relief community did not sufficiently recognize the opportunity of using open source maps to respond to crises, due to the rather novel nature of the application.¹⁹⁰ The widespread use of mobile phones, which boomed after 2006 when Digicel was introduced to the Haitian telecommunication market, acted as a key-enabler of the use of this type of technology.¹⁹¹

The open nature of Ushahidi is, according to David Kobia, a co-founder of Ushahidi, the main distinguishing characteristic of the new approach. He explains that the traditional approach uses a “one-to-many relation” with unidirectional flows of information. For instance, the Red Cross, an organization with many field presences, would be the source of information for stakeholders involved. Now Ushahidi collects data from numerous sources and establishes a relation where many (volunteers) help many (members of the affected community).¹⁹² Therefore the idea behind the initiative is that the potential of a dataset of many sources outweighs that of information coming from a single source of information. The Ushahidi Haiti project collected thousands of text messages sent to an emergency reporting system that were first translated and subsequently categorized and geotagged by a team of volunteers. The information was then sent to humanitarian responders. Through this crowdsourced initiative Ushahidi was able to provide near-live and dynamic maps with information such as food requests and affected locations, which in turn facilitated relief efforts (see Figure 6).



FIGURE 6: FOOD REQUESTS PUBLISHED ON USHAHIDI HAITI WEBSITE. SOURCE: GAO, BARBIER, AND GOOLSBY, 2011.¹⁹³

Figure 6 illustrates food requests on Ushahidi Haiti based on the number of reports mapped on Ushahidi's crisis map. Using these maps, relief organizations could coordinate resource distribution and make better decisions based on their analysis of crowdsourced data.¹⁹⁴

Booker calls the strategy employed by Ushahidi a "wiki approach": it makes use of the internet's collaborative environment and creates a database of shared knowledge. He emphasizes the idea of a collective – actions are undertaken collectively and knowledge, too, is produced collectively. Ushahidi's wiki lies in the assembly of volunteers who not only come together as a joint force and perform a "collective action," but they are also involved in creating and developing the product itself, hence "peer production."¹⁹⁵

An early Ushahidi Haiti version was up and running within an hour after the earthquake had struck through a joint effort of Patrick Meier, Ushahidi's core team member, and David Kobia, Ushahidi's tech development director. Meier, pursuing his doctorate at the Tufts University, convinced several students at Tufts to join the effort and this team later became the core of the whole project. At the same time, another initiative had come together to secure a free text messaging service. Individuals from FrontlineSMS:Medic, Digicel, and the US State Department got in touch through social media and email and managed to secure an already existing number, 4636, that previously collected information about the weather. The team got permission from the owners to use it for humanitarian purposes.¹⁹⁶ Ushahidi was one of the initiatives that had access to the messages sent to the 4636 shortcode.

Ushahidi Haiti was a truly cooperative and open initiative, both internally and externally. It relied on a body of volunteers who took care of the mapping, giving an equal chance to anyone with the basic skills and tools needed to perform the job. Many of these volunteers came from the Haitian diaspora¹⁹⁷ in the US, especially from Boston, where Ushahidi Haiti set up its headquarters.¹⁹⁸ When it comes to the external environment, the cooperative nature of Ushahidi Haiti was reflected in the very function of the whole project; it simply could not have been successful without cooperating with other partners. Despite the amount of work done by volunteers and the core team, the bulk of the essential tasks (e.g., translation, analysis, and tracking) were not provided by Ushahidi itself.

As a project that relied substantially on the work of volunteers, Ushahidi Haiti's internal structure was open to anyone. Any individual could join the project and contribute their skills and enthusiasm without having to sign a contract or otherwise commit themselves for a particular time period. They could, therefore, end their involvement in the project at any time. The open structure translates into a low systematic coordination of volunteers and is characteristic of open source platforms in general. This contrasts markedly with traditional crisis management systems which focus heavily on promoting standardized procedures and protocols that would effectively coordinate all efforts by governments, non-governmental organizations, and other relief workers.¹⁹⁹

There was some effort to coordinate Ushahidi Haiti's volunteers, albeit small. As Ushahidi Haiti was a new platform and many of the recruited volunteers were unfamiliar with how it worked, it was difficult for some of those involved to contribute without proper instructions and support. Ushahidi thus served as an online support platform where its volunteers, the people involved in other initiatives, and the Haitian population could interact.²⁰⁰ Ushahidi Haiti's volunteers also served as an intermediary between the Haitians and the relief community at large. Gao et al. introduced the idea of a crowdsourcing platform as an "interagency map" (see Figure 7), which connects

relief organizations and the public through establishing relationships with both.

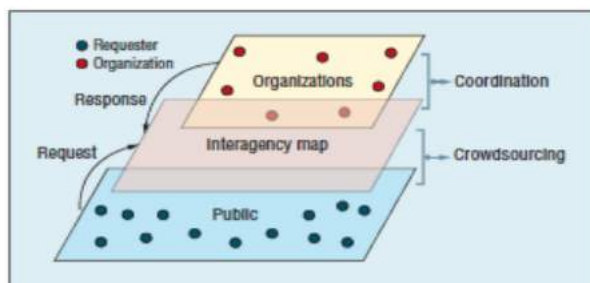


FIGURE 7: INTERAGENCY MAP. SOURCE: GAO, BARBIER, AND GOOLSBY, 2011.²⁰¹

The Haitians provided information by sending aid requests through messaging service or the internet. The data was then crowdsourced by volunteers of Ushahidi and other projects and provided to relief organizations who could then respond to specific requests. The interagency map also serves as a tool for the organizations to “collaborate, plan, and execute shared missions,” based on the information provided.²⁰²

However, after the Haitian earthquake, there were numerous crowdsourcing initiatives that served as an interagency map. In such cases, coordination of these projects would be beneficial to the whole humanitarian operation. But beyond the exchange of information with other projects, there was little integration of Ushahidi with other crowdsourcing initiatives, also owing to some disagreements between these platforms.²⁰³ That said, the benefits of crowdsourcing in complex theaters that suffer from unrest as a result of (natural) disasters is increasingly recognized for use in different operational settings (see Figure 8).

GAMING AS A STRATEGY DEVELOPMENT TOOL

The benefits of crowdsourcing in coming to grips with zones that experience high levels of turmoil, whether as a result of disasters or conflict has also been recognized in an initiative of the US Navy called the *Massive Multiplayer Online Wargame Leveraging the Internet*. This is an online game that analyzes the moves of players. The information this game yields serves as a tool to explore possible warfare scenarios and new strategies and has been used for instance against piracy in Somalia.

FIGURE 8: GAMING AS A STRATEGY DEVELOPMENT TOOL. SOURCE: ABOUT MMOWGLI, 2015.²⁰⁴

Another issue was that the government was unable to provide adequate coordination of all relief efforts. Jan Voordouw, Haiti-based coordinator for Cordaid, explains that in the wake of a crisis, coordination should normally be provided by the local government. However, in the case of Haiti, the government was “hard hit and could not do much.”²⁰⁵ A lack of accountability on the part of Ushahidi towards the government was the result. Nevertheless, Ushahidi Haiti did try to establish partnerships with the government. While the government was interested in closer cooperation, it cited structural problems that would stand in the way of new cooperation – chief among them being the lack of “a building or offices to set this up.”²⁰⁶ Despite this failure, Ushahidi still intended to hand over administration of the project to Haitians as soon as possible. An Ushahidi Field Representative was sent to Haiti for this specific purpose.²⁰⁷ In November 2010, the coordination of Ushahidi Haiti was fully transferred to a Haitian software company called Solutions. The reconstruction mapping tool later started functioning under the label “Noula.”²⁰⁸

4.2 BENEFITS OF USING USHAHIDI

Despite the absence of extensive quality assurance measures during the Ushahidi Haiti deployment and the resultant risk of errors, some sources claim that Ushahidi Haiti had a tremendous impact on the outcome of the relief operation.²⁰⁹ Fast mobilization is one of the most frequently cited advantages of initiatives that involve local communities and international volunteers in HROs.²¹⁰ Ushahidi Haiti was set up a mere two hours after the earthquake struck and helped the relief community move into action swiftly.²¹¹ It could become fully operational quickly given that the most important source of labor – the volunteers – was readily available. Traditional relief organizations that rely on verified official sources of information risk “running miles behind” since “the info is already available to the public [through crowdsourcing initiatives].”²¹²

Additionally, in the first phases of the project, Ushahidi Haiti hardly required any financial support for its initiative. The web platform was taken care of by the software company Ushahidi, and the volunteers initially operated out of the apartment of one of the participants in Boston and only later moved into a place that was donated to the team.²¹³ Volunteers worked for free and, given that many of them were strongly motivated to contribute to the effort, there was no need for an extensive and costly media campaign to recruit people. As other actors realized the potential of the campaign, financial donations began to pour into the Ushahidi Haiti project. In total, around \$97,000 was provided to Ushahidi. The majority share of this sum was invested into the actual operation in order to improve output and help ongoing efforts.²¹⁴

Low operating costs are one of Ushahidi’s strongest assets. Some financial resources are needed to employ staff, yet these are provided by the company itself and by means of donations. The relief organization, or any other cooperating partner who wishes to maintain this cooperation in the future, does not have to spend too much time or financial resources on the platform itself. Volunteers stop cooperating as soon as a particular operation is completed and new volunteers are recruited when a situation worsens in a particular area of the world. Ushahidi is therefore self-perpetuating; the basic motivation of volunteers to help the affected community will drive human willingness to help crowdsource the data. In the end, the volunteer, located far away from the disaster area, has oftentimes no alternative other than helping through a computer and the internet.

Another advantage of cooperating through a platform such as Ushahidi are the low entry barriers. First, any individual can choose to join the volunteer community and contribute to making a crisis map. Volunteers were recruited from all over the world

and the type of cooperation that is established between the “mapper” and the platform is truly open in nature; anyone can join irrespective of his or her level of knowledge. And second, due to the fact that the final product is a freely available map, any relief organization or worker can easily use it or start a new collaboration initiative. Ushahidi’s impact is ultimately evaluated according to the number and importance of relief actors that decided to use the platform.

The reason why this initiative managed to recruit so many volunteers was the feeling of helplessness that many individuals experienced. Especially for those who had an attachment to the Haitian community, it was painful to watch the island suffer from the comfort of one’s own house. This desperate feeling was overcome by creating a real-time map of events.²¹⁵ Volunteers could quickly see the effects of their work, and even though they were not materially incentivized a word of gratitude served as a more than sufficient reward. Also the fact that internet and basic hardware are abundantly available in many places of the world made the volunteers eager to contribute. It also required little effort to join the initiative as the only sacrifice from their side was time.

The map of Haiti that the volunteer community developed in the course of a couple of weeks is of remarkable quality. The effort was successful to such a point that Craig Fugate, a member of the FEMA Task Force, tweeted that “[t]he crisis map of Haiti represents the most comprehensive and up-to-date map available to the humanitarian community.”²¹⁶ The main difference between this map and the maps that were available to the relief community from other sources was that the crisis map contained data about actionable reports – a map that had not been developed prior to this disaster.²¹⁷ Figure 9 provides a comparison of how the OpenStreetMap of Haiti looked before the earthquake and after the volunteer initiatives were concluded.

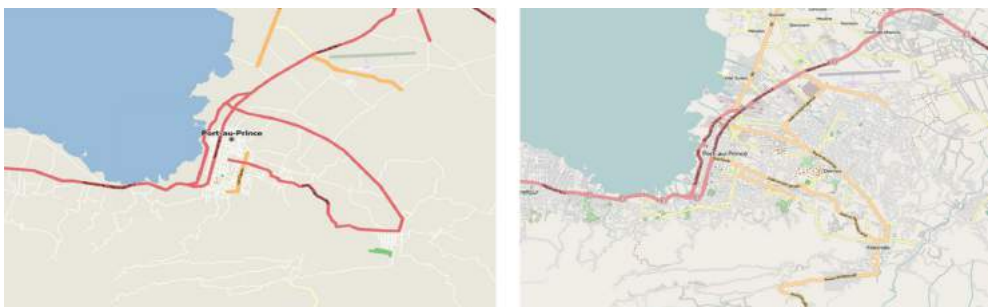


FIGURE 9: A MAP OF HAITI BEFORE AND AFTER THE 2010 EARTHQUAKE. SOURCE: OPEN KNOWLEDGE BLOG, 2010.²¹⁸

The combination of a live crisis map and the generation of a new knowledge base that could be built quickly and at a low cost makes Ushahidi a very promising new platform. Among the organizations and entities that made significant use of the Ushahidi Haiti data were the US Marine Corps, numerous other US governmental bodies (US Department of State, the US Coast Guard, the Office of US Foreign Disaster Assistance and the Federal Emergency Management Agency), non-profit organizations such as NYC Medics, the UN World Food Program and American, and Canadian citizens engaged in relief operations.²¹⁹ The US Marine Corps used the geodata for the identification of centers of gravity where marines should consequently be sent to (see Figure 10 on how the US Department of Defense uses big data in ensuring a more effective on-the-ground operation).²²⁰

PREDICTING THE FUTURE WITH CROWDSOURCING

The fact that involving large numbers can make a difference in producing more precise input for policy-making or on-the-ground operations, in particular in combination with other data sources, is seen in the US Department of Defense's *Intelligence Advanced Research Projects Activity (IARPA)*. It has been established for the purpose of collecting big data and proved relevant in responding to epidemics, the Arab Spring, or the Islamic State.^[i] But IARPA also announced a competition whose winning project, *Aggregative Contingent Estimation System (ACES)*, asks the public about intelligence strategies and produces more accurate forecasts.^[ii] Should the number of predictors increase in the future, ACES would be apt at developing strategies of advanced analytics of big data that has been directly crowdsourced from the broad public.

FIGURE 10: PREDICTING THE FUTURE WITH CROWDSOURCING. SOURCE: CORRIN, 2015; PARSONS, 2011.

The importance of Ushahidi Haiti for the relief operation is perhaps best illustrated through personal testimonies of relief workers directly involved. Clark Craig, a former JAG attorney in the US Marine Corps, has expressed his gratitude for the project in these words:

"I cannot overemphasize what the work of the Ushahidi-Haiti has provided. It is saving lives every day. [...] I say with confidence that there are hundreds of these kinds of [success] stories. The Marine Corps is using your project every second of the day to get aid and assistance to the people that need it most. [...] Keep up the good work! You are making the biggest difference of anything I have seen out there in the open source world."

Hillary Clinton stated that with the help of "interactive maps, [...], a seven-year-old girl and two women were pulled from the rubble of a collapsed supermarket by an American search-and-rescue team after they sent a text message calling for help."²²¹

4.3 DRAWBACKS OF USING USHAHIDI

Despite all the benefits of using Ushahidi Haiti, a conclusive judgement on the success of the project proves hard to make. There were a number of issues that stood in the way of a more effective cooperation between the relief community on the one hand and Ushahidi Haiti on the other. These concerns included issues of coordination, data, technology, accuracy and credibility, exposure, and privacy.²²²

Coordination can be a challenge when it comes to open and informal types of cooperation. Volunteers operate in a largely uncoordinated manner and crowdsourcing initiatives lack an overarching authority to steer individual actions. When a report is posted on the Ushahidi website, any relief organization has access to it. However, to decide which organization should take action is more difficult. There are no formal mechanisms for dividing the work among organizations, causing situations wherein more than one actor responds to a concrete report.²²³ This also means that it is difficult to evaluate the impact of a project as there is no proper way of providing feedback or testifying whether help was provided or not. Finally, because the eventual map blends together all the info provided by all the different organizations, the contribution of each to the map is hard to establish – and thus so is the value of their real contribution.²²⁴

Rather than coping with a lack of information during a humanitarian crisis, crowdsourced initiatives such as Ushahidi tended to be faced with an information overload.²²⁵ Some stakeholders felt that the data analysis skills of volunteers might be insufficient to process and categorize all reports that were available and therefore only contribute to a more chaotic database. Specifically, stakeholders felt Ushahidi Haiti provided insufficient coverage on security and logistics. For instance, many reports contained a lack of detail to allow them to be considered actionable and were eventually not used. Out of the estimated 40,000 to 60,000 reports, only 3,584 were put on the crisis map²²⁶; only fifty-four of these were categorized as pertaining to security threats.

In terms of accuracy and credibility, concerns about the accuracy of crowdsourced information existed well before Ushahidi's inception. Ory Okolloh, Ushahidi's co-founder, was aware of the fact that there would be instances where reports would be found to be incorrect or contain duplications, but she argued that having access to at least some – admittedly not 100% correct – information is better than having no access at all. David Kobia, another one of Ushahidi's co-founders, expressed his belief that whereas sometimes a greater accuracy of data is required, there are many other circumstances where an accumulation of more data is in fact preferred over absolute

precision. He gives an example of the UN, which also realized that achieving perfect data accuracy is an unattainable goal. Data precision according to Kobia is that “the crowd validates itself and says what did or did not happen.”²²⁷

Back in 2007, the first Ushahidi reports had to be checked manually and could only be marked as verified when the source was proven to be reliable.²²⁸ The Haitian earthquake, however, represented a disaster where people were in need of immediate help and where people’s lives were directly threatened. This may have been one of the reasons why the Ushahidi Haiti team decided not to employ extensive quality controls at this stage. However, inadvertently this led to higher instances of data inaccuracy, in particular the occurrence of duplicate reports and those whose categorization contained errors.²²⁹ However, according to the US Coast Guard, the part of the dataset that was processed correctly provided geographic coordinates that were accurate up to 5 decimal points.²³⁰ That said, the impossibility of verifying the quality of the information during the Haiti deployment was a primary concern among many organizations and stakeholders in considering the use of crowdsourced data.²³¹

Ushahidi relies on volunteers who are oftentimes inexperienced and therefore prone to making mistakes. Volunteers sometimes struggled with the categorization of reports that did not fit in a specific category but were nonetheless urgent. In those cases, volunteers would intentionally wrongly categorize these reports only to make sure that they would be recognized and deemed actionable. This kind of data manipulation has been cited as a concern by some members of the relief community. Ushahidi Haiti also struggled with double reporting. More than a hundred reports were identified as duplicates.²³²

Also, the medium itself may have an influence on the way information is received and treated. A study by Schultz, Utz, and Goritz shows that social media is viewed as a credible source (especially in the context of a humanitarian crisis) due to its agile and responsive nature.²³³ However, despite the amount of information available, there is often insufficient detail provided by those who report on the issue at hand. Many messages and reports received by Ushahidi were incomplete or indecipherable.²³⁴ There is the additional risk that reports can be fake or that people from the community have manipulated the information that is inserted into the map.²³⁵

As a result, the relief community is reluctant to use user-accumulated data. Generally speaking, the relief community relies on “standard procedures using structured indicator data” and “long-standing protocols.” Unless the data has been organized

through the United Nations system, relief workers simply do not have time to consider unverified sources of information in their response to disasters.²³⁶ This translates into strict expectations about the data received in terms of the format and time needed for processing. These expectations are perhaps impossible to meet by the volunteer community. This discrepancy between open source output and the relief community's norms and standards often means that organizations simply choose to "stay in [their] comfort zone," as stated by an American official.²³⁷

These shortcomings notwithstanding, crowdsourcing initiatives are increasingly recognized as possessing value and organizations such as the US Joint Chiefs of Staff, the Clinton Foundation, UNDP, and the UN Interagency Standing Committee are looking into ways to incorporate "crowd wisdom" into their operations.²³⁸

Online platforms such as Ushahidi inevitably raise privacy and security concerns. Volunteers, in processing the data, also gain access to sensitive information. Moreover, reports are freely accessible on the internet, and this became a point of disagreement between Ushahidi Haiti and other volunteer initiatives, such as Mission 4636. While the latter decided to protect the senders, Ushahidi Haiti was initially publishing reports online that included the names of the authors.²³⁹ It soon became clear that this practice exposed vulnerable groups and individuals, thus compromising their privacy and safety.²⁴⁰

What is more, Ushahidi Haiti was one of the 50 websites monitored by the US Department of Homeland Security in order to gain material about potentially threatening persons.²⁴¹ What this essentially means is that Ushahidi Haiti was, instead of connecting the affected community with the relief workers on the ground, also inadvertently providing information to an American intelligence body. Some people who sent a message to the shortcode were at times not provided the aid they requested, yet were still scanned by the Department for intelligence information.²⁴² This issue can also endanger relief workers.²⁴³ But it also raised questions among Haitians about involvement with crowdsourcing initiatives and whether this could compromise their own safety and security. Aashika Damodar, the co-founder of an alternative text messaging service Ayiti SMS SOS, said that when people do not feel safe, they will have concerns when considering whether to report or not.²⁴⁴

Crowdsourcing was also used by the UNDP in Latin America, Kenya, Sudan, and Kyrgyzstan. The way the public was engaged ranged from reporting security threats to providing opinions and perceptions of the current security situation.²⁴⁵ While the UNDP

deployments were similar to Ushahidi in the limitations that they faced, there are some differences, notably with respect to privacy concerns. In Kenya, only the crowdsourced information was made freely available to the responders, while public access to information was restricted. Even though this would partly mitigate the privacy issues outlined above, it was identified as a limitation in the UNDP report.²⁴⁶ Similarly to Ushahidi, in Latin America, citizens' concerns about privacy were one of the reasons for the unwillingness to report; crowdsourcing initiatives would likely have been more successful had there been a greater trust in the legal authorities.²⁴⁷ The UNDP report states that "[p]rivacy should remain the number one concern when developing Big Data for development and [...] conflict prevention"²⁴⁸ and that the development of "privacy-preserving data analysis" would benefit future crowdsourcing missions.²⁴⁹

4.4 IMPROVEMENTS

Ushahidi is a work in progress and each new deployment produces numerous lessons (to be) learned. It can be said that with Ushahidi, "innovation has happened basically in the midst of disasters, with time constraints, minimal resources and in the shadow of the more traditional roles of relief agencies and geographic professionals."²⁵⁰ During the project in Haiti, many things changed over the course of the initiative. Many improvements were made, such as in the publication of sensitive reports. When it had become clear that vulnerable groups and persons were exposed, Ushahidi Haiti recognized the mistake and stopped publishing full reports online. The nature of Ushahidi is to be fully transparent, open, and participatory, and this was the driver behind the decision to publish messages online. However, compromising the protection of senders was identified as a gravely negative byproduct of the open policies and eliminated from the project. While Ushahidi was open to criticism and changed the previous behavior, unveiling too much private and sensitive information remains an issue of concern.²⁵¹

The lack of accuracy has been quoted many times as a problem. The overall low percentage of verified reports is a discouraging element for new actors to cooperate with Ushahidi in the future. However, there are instruments that can ameliorate the overall trustworthiness. Especially when monitoring post-electoral situations, Ushahidi is employing a tactic of building a network of "trusted reporters" – people whose contribution is considered reliable. Hence when building a map, reports from this network do not need to be checked before entering the database, while other, unverified reports are pending approval.²⁵² Furthermore, the plugin "SwiftRiver" was developed to filter the large amounts of data and ensure their accuracy. However, the Ushahidi team decided to stop developing this plugin as of January 5, 2015.²⁵³

The new version of Ushahidi, V3, also features more comprehensive quality assurance measures. Ushahidi introduces “modular quality assurance,” which focuses on individual parts of the website – the patterns – rather than on the website as a whole. Ensuring that the pattern is correct would also contribute to the quality of Ushahidi websites.²⁵⁴ However, the developers are aware of the potential errors in any open source tool and are constantly asking for feedback and support with ensuring the accuracy of Ushahidi’s reporting.²⁵⁵ The website even has a group called “SWAT” that was specifically created to recruit skilled developers and other volunteers who believe they have the eye to spot and fix the bugs in Ushahidi’s reporting system.²⁵⁶

As stated above, the category “security” was underrepresented in the Ushahidi Haiti project. Ushahidi realized that the category itself must have been underreported to a certain degree. An explanation could be that people who are in an immediate life threat do not have the time or tools to send a report.²⁵⁷ Ushahidi’s field representatives were sent to Haiti to find solutions in cooperation with the local and international relief workers. The impersonality and scarcity of rich reports have been resolved through the establishment of call centers as a part of another crisis mapping initiative in Haiti, Noulala. This is, however, not applicable only to Haiti. The talks between Ushahidi and the relief community have been useful in bringing the two sides together and brought a framework of how the cooperation could move forward in the future crises. This could have contributed to an institutionalization of the way Ushahidi can be used in crisis management.²⁵⁸

A new feature of Ushahidi, which was not present during the Haiti deployment, is a function that enables relief workers to get alerts through their preferred channel (either SMS or email). These alerts can be based on the category of the reports or on geography. This function will contribute to matching the reports with the responders in a more efficient and effective way and will enhance the overall impact of Ushahidi in future deployments.²⁵⁹

Categorization of reports is one of the most important features of Ushahidi’s maps and even though categorization did occur during the Haitian earthquake, this process was rather arbitrary. It would undoubtedly contribute to the overall quality of Ushahidi’s maps if flagging and labeling the reports according to their urgency and nature would be determined by a more sophisticated way than the mere judgement of a volunteer. Triaging these reports with an algorithm or in another automated way could eradicate errors and speed up the process.²⁶⁰

Perhaps most importantly, the Ushahidi blog reveals that, “The unprecedented response of online volunteers during the 2010 Earthquake in Haiti introduced new processes, tools, and actors to the humanitarian landscape but also brought new challenges: chiefly among them being coordination of information and efforts.”²⁶¹ In other words, Ushahidi realized that the best way to help might be not to contribute to the number of already existing volunteer efforts but to support those who are trying to organize and coordinate these projects. This is the reason why Ushahidi did not actively involve its platform in the Nepal 2015 earthquake. Instead, Ushahidi initiated partnerships with colleagues from the crisis mapping community and decided to support their efforts, calling on their own volunteers to do the same. What has been done since the Haitian earthquake in this matter is the establishment of the Digital Humanitarian Network to serve as a bridge between the two sides: traditional relief organizations and new volunteer platforms. This network has already published two documents that aim to ameliorate the coordination of efforts: *Guidance for Collaborating with Volunteer & Technical Communities* and *Guidance for Collaborating with Formal Humanitarian Organizations*.²⁶²

4.5 APPLICABILITY FOR NDOs

The importance of situational awareness for NDOs is a given that requires no elaboration. To create and maintain situational awareness, NDOs invest heavily in advanced sensor and information systems (including humans-in-the-loop). There are, however, many situations in which these systems are not or may not be deployed. Furthermore, advanced as these systems may be, in many scenarios they are insufficient for gathering all relevant information. That is where the idea kicks in of using people already on the ground to provide and augment the information available through one’s own channels: people that know the local situation and generate real-time information. People that not only see but also can give context to what they see, thereby contributing to situational understanding on top of situational awareness. With ubiquitous communication means – mobile devices with GSM or internet connectivity – available, reaching out to reporters on the ground is increasingly feasible. Modern geospatial and data processing tooling facilitate better combination, visualization, and correlation of the data so obtained, allowing for easy quality enhancing feedback loops.

An open, on-line crisis situation map that is generated or augmented by continuous input from volunteers on the ground offers the following advantages for a military crisis response task force:

- By using the local community as a source of information the map is *more comprehensive and up-to-date* than anything the military can generate on their own;
- *Fast mobilization*: volunteers are ready to help as soon as possible (when sufficiently motivated);
- There are *little to no entry barriers*. Anybody can choose to join the volunteer community and any relief organization or worker can easily use it or start a form of collaboration;
- Volunteers need no extrinsic incentives and *little or no financial support*. There are also *low maintenance costs*: volunteers stop cooperating as soon as a particular operation is completed, and new volunteers are only recruited when needed.

Ushahidi Haiti is a case in point. Its aim was to create a crisis map that could help relief workers in their rescue operations. While the impact of the map is difficult to determine, a comprehensive map of the island was certainly created. Platforms such as Ushahidi carry a high potential when it comes to monitoring security situations. Above all, an online platform adds a source of relevant information above and beyond what NDOs already have access to. They address time and resource constraints as a basis for action-oriented decision making. Furthermore, it is a source that can be mobilized quickly and generates (near) real-time reporting. In some cases, it offers a way to circumvent government censorship and propaganda. And all of this against very limited costs.

The Ushahidi example shows that life-saving information-gathering operations based on crowdsourcing can be set up and operational within hours after disaster has struck. Related to this is that the resources needed to set up these operations may not be available immediately, or even at all. The fact that Ushahidi relies on volunteers drastically reduces the costs involved. Finally, Ushahidi has already demonstrated that it can be a useful monitoring tool for security purposes over the course of the 2007/2008 post-electoral violence episode in Kenya. In such circumstances, local knowledge can be helpful, especially when censorship and propaganda are imposed on independent sources of information.²⁶³

The potential and actual disadvantages to the use of platforms such as Ushahidi to create online crisis situation maps are:

- *Coordination is difficult*, in particular when many parties – such as individual citizens, government agencies, local NGO's, and the relief community – are required to generate a comprehensive map;
- Both *information overload and/or insufficient coverage* may arise from too much or too little reporting;
- Human errors, a lack of actionable reports, double reporting, or a lack of verification possibilities etc. may lead to a map / database of *questionable quality*. Gross inaccuracies inadvertently give rise to trust issues and people feeling disinclined to use the platform – a vicious circle that is difficult to stop;
- *Insufficient technological equipment* – such as web browsers, internet connection of the relief community – may lead to underdeveloped or underused maps;
- *Resistance and lack of exposure*: the entry barriers for joining the platform might be high for the traditional relief community. If insufficiently known or accepted, resources must be invested in promoting the platform;
- Information is processed by volunteers and reports can be freely accessed through the internet. This raises *issues of security and privacy*.

Many of these limited factors can be successfully addressed or mitigated. Our example case, Ushahidi, is a work in progress platform and each new deployment produces new lessons learned. The Ushahidi blog states that “[t]he unprecedented response of online volunteers during the 2010 Earthquake in Haiti introduced new processes, tools, and actors to the humanitarian landscape but also brought new challenges: chief among them being the coordination of information and [ongoing] efforts.”²⁶⁴ In other words, Ushahidi realized that the best way to help might be not to contribute to the number of already existing volunteer efforts, but to support those who are trying to organize and coordinate these projects. This is the reason why Ushahidi did not actively involve its platform in the Nepal 2015 earthquake. Instead, Ushahidi initiated partnerships with colleagues from the crisis mapping community and decided to support their efforts, calling on their own volunteers to do the same. What has been done since the Haitian earthquake in this fashion is the establishment of the Digital Humanitarian Network to bridge the gaps between traditional relief organizations on the one hand, and new volunteer platforms on the other. This network has already published two documents that aim to ameliorate the coordination of efforts: *Guidance for Collaborating with Volunteer & Technical Communities* and *Guidance for Collaborating with Formal Humanitarian Organizations*.²⁶⁵

4.6 PRACTICAL EXAMPLES

Ushahidi Haiti inspired a variety of organizations to make use of the digital environment in crisis management and disaster response. The US Department of State was actively involved in the Haitian relief operation and cooperated with the Ushahidi Haiti project. In doing so the Department recognized that the use of online technologies had a positive impact on the outcome of the relief operations and decided to implement these in their future humanitarian efforts. "TechCamps" were established around the world to connect NGOs and experts in the field of technology in order to find creative solutions to humanitarian problems. According to the director of the US State Department's eDiplomacy, the TechCamps are "a way to identify the next Ushahidi or FrontlineSMS and help them scale quickly."²⁶⁶ This represents a shift from a more closed view on resolving humanitarian issues to involving the community at large. USAID has also welcomed the initiative and its Chief Innovation Officer expressed his belief that through "mashing up local insights and tech tools," the new project will "save lives, create stable and open governments, and greater prosperity for all."²⁶⁷

The Ushahidi platform has been successfully used in various countries and operations after the earthquake.²⁶⁸ Ushahidi has learned from its past deployments and aspires to respond to the changing environment and constantly improve itself. The platform undoubtedly has many shortcomings, and a NDO wishing to cooperate with and use Ushahidi must be aware of all its (potential) benefits and risks. However, it cannot be denied that Ushahidi provides an excellent opportunity for true innovative partnerships. Ushahidi and similar platforms thus deserve a place in the field of defense and security.

The applicability for NDOs is obvious when it comes to missions that have clear popular support in the area of operations, as in the case of (military support to) humanitarian relief operations. One can also envisage the use of this mechanism in scenarios other than a clear and present emergency situation. An example could be to augment situational awareness about potential hotspots where a security risk might develop into an actual security threat or conflict. Possibly the lack of an intrinsic sense of urgency requires the establishment of an incentive structure to motivate possible contributors.