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# USHAHIDI, OR 'TESTIMONY': WEB 2.0 TOOLS FOR CROWDSOURCING CRISIS INFORMATION

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| **Author / organisation** | Ory Okolloh, IIED |
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# Ushahidi, or 'testimony': Web 2.0 tools for crowdsourcing crisis information



by ORY OKOLLOH

## Introduction

This article reflects on the development of the Ushahidi website. The idea behind the website was to harness the benefits of crowdsourcing information (using a large group of people to report on a story) and facilitate the sharing of information in an environment where rumours and uncertainty were dominant.

At the height of the post-election violence in Kenya in late December 2007 and early January 2008, my personal blog become one of the main sources of information about the flawed electoral process and the violence that broke out thereafter.[1]

There was a government ban on live media and a wave of self-censorship within mainstream media, which created an information vacuum. The government argued false or biased reporting would result in even more ethnic-based violence, and that it wanted the opportunity to review media reports before they went 'live'. In response to the ban I asked people to send me information via comments on my blog and emails – about incidents of violence that they were witnessing or hearing about throughout the country, and that were not being reported by the media.

I quickly become overwhelmed by the volume and thought how useful it would be to have a dedicated website where people could anonymously report about incidents of violence online or via mobile phone text messages (SMS) – and if this information could be mapped so that people could visualise what was going on.[2]

Though there was a high risk of false reporting, I felt that having a vehicle where some information could be shared was better none – and that relying on local resources was a good way to do this. Information in a crisis is a patchwork of sources. You can only hope to build up a full picture by having as many sources as possible. The Ushahidi website was not intended to be wholly accurate and certainly there was no intention to achieve the standards e.g. of a mainstream newspaper or a human rights reporting organisation – the main focus was the immediate need to get information out.

Finally, the website was intended to be a 'memorial' or archive of sorts for the events that happened – as a reminder of just how bad things got – so that Kenyans would hopefully avoid repeating history at future elections.

## How Ushahidi began

On 3rd January 2008, I shared my thoughts on my blog and encouraged Kenyan 'techies' who were interested in building

[1] See: www.kenyanpundit.com

[2] Short Messaging Service (SMS)

**"Information in a crisis is a patchwork of sources. You can only hope to build up a full picture by having as many sources as possible."**

such a website to get in touch. The response was lightening fast. Within a day or two a group of volunteers had coalesced and the domain was registered. That was the genesis of Ushahidi, which means 'testimony' in Kiswahili.

The website went live less than a week later. It was built using open source software with around 15-20 developers making different contributions.[3] Most of these developers came from Africa. The majority were Kenyans. There was no funding for the website at the time – everything was done by volunteers, from donating server space, writing the code, donating the short code for SMS calls and helping gather the initial data to helping spread the word.[4] It was a rapid prototype model, based on the premise that things could be improved as we went along by learning on the job. We believe this spurred our innovativeness and creativity. We focused on building and launching an overall framework, and addressing the details and any technical hitches later.

Over 250 people began to use the new platform as a means of sharing information. Some radio stations even started using the website as an information source. The website was interactive. People could contribute and not just receive information. We also had the expectation that sharing information would also help individuals and groups who wanted to figure out where help was most needed (see Box 1).

## Issues around verifying reports

The Ushahidi website allowed reporting via SMS and the website itself. However, all reports had to be manually checked and approved by Ushahidi staff before they went live (see Box 2).

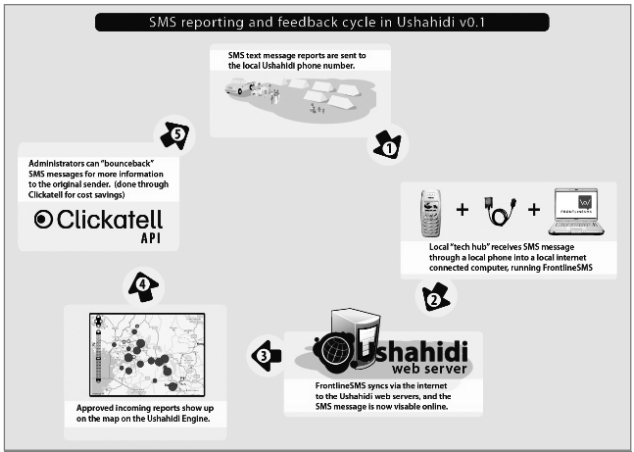
The 'go-live' process was easy for reports submitted via the website but SMS reports had to be manually entered. The approval process was rather *ad hoc*. Where possible, we called or emailed reporters to try to verify reports. Where people reported anonymously, stories were counter-checked by comparing with other sources e.g. mainstream media. Where information appeared credible but we could not verify it, we posted it and noted that it was not verified.

**Box 1: Extracts from 'Kenya: Citizens' reporting tool comes in handy.'**

Ushahidi, meaning 'witness' in Kiswahili, describes itself as a tool for people who witness acts of violence in Kenya to report incidents that they have seen. The incidents are then placed on a map-based view for others to see. Most incidents listed on the website are verified by local groups working on the ground.

What is shocking about some reported incidents is the frequency with which new, unreported episodes are being uploaded to the website – indicating that official reports from aid agencies and the Government may have grossly underplayed the extent of damage around the country.

Source: Kinyanjui (2008)




**Box 2: How SMS messages are routed through Ushahidi**

The first Ushahidi website model allowed people to send in reports both via SMS and on the website itself. This simplified diagram shows how SMS text messages move through the Ushahidi system in a two-way communication cycle.

- An SMS text message gets sent to a local number
- It is then rerouted through FrontlineSMS[5]
- This synchronises with the Ushahidi platform
- The message shows up on the Ushahidi website
- Administrators can then decide whether to send a message back to the original sender

[3] **Open source software** (OSS) can be defined as computer software for which the human-readable source code is made available under a copyright license (or arrangement such as the public domain) that meets the Open Source Definition. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form. It is very often developed in a public, collaborative manner.

[4] 'With the growing popularity of mobile phones, especially in developing countries, SMS has become a familiar and widely used form of communication. It offers advantages over traditional voice services including reduced cost and the ability to send messages to large numbers of people in a short amount of time.' Source: www.frontlinesms.com/what

[5] FrontlineSMS enables you to provide local numbers in areas where larger SMS providers do not operate. It is free software that allows you to send text messages to large groups of people anywhere there is a mobile signal. See www.frontlinesms.com

This is the risk with any crowdsourcing social media tool. 'Truth' is not guaranteed – but the idea behind crowdsourcing is that with enough volume, a 'truth' emerges that diminishes any false reports. To avoid the risk of the website being used for propaganda, reports were monitored before they went 'live'. Anything that appeared to be patently false, inflammatory or inaccurate was not posted. We anticipated that over time it would be easy to counter-check false reports against what eventually made it to the mainstream media and by using the power of the citizens themselves to counteract false reports. For example, someone posted a false report of violence breaking out in a North-Eastern town called Garissa. Within hours we had received several reports from other sources saying that there was no violence in the area.

### Developing potential: Ushahidi and humanitarian crisis situations

*In Kenya, Ushahidi demonstrated the power of geographically mapping real-time citizen reports and crisis-related information to help civilians avoid conflict.*
Randy Newcomb, President and CEO of Humanity United

As interest in the website developed, it became apparent that the tool had potential applicability beyond Kenya, particularly in crisis situations. Humanitarian-based crisis situations do not usually start with one flashpoint. They generally result from a number of events and factors that have happened over time. Kenya was one such example. While the violence was depicted as a 'sudden eruption' of protests by supporters of the opposition leader Raila Odinga, there were indications that some of the violence was pre-planned.[6]

Our view was that Ushahidi could in the future help local and international NGOs working in crisis situations: from early conflict warning to tracking a crisis situation as it evolves and facilitating response.

### Redeveloping the Ushahidi platform

As a result of the growing public interest in Ushahidi and its potential for wider replication we received funding from Humanity United, an organisation dedicated to ending modern-day slavery and mass atrocities. This has allowed us to rebuild the platform into a tool that any person or organisation can use to set up their own way to collect and visualise information.

The private alpha of the redesigned Ushahidi platform was released in October 2008. The alpha is the initial version of the rebuilt platform. It is being tested by a number of groups before the software is released to the general public. Pilot projects include Peace Heroes, the Democratic Republic of Congo (DRC) crisis and four others.[7] [8] We are surveying our testers and plan to write case studies about the implementation and testing process once this phase is completed.

**"We anticipated that over time it would be easy to counter-check false reports against what eventually made it to the mainstream media and by using the power of the citizens themselves to counteract false reports."**

It is too early to fully evaluate what impact the tool is having. However, we have some initial reflections based on our experiences in Kenya and our more recent experiences in DRC.

### Challenges and lessons learnt

We have tried our own deployment with the Ushahidi DRC page to cover the crisis in Eastern DRC. That has been a very useful learning process for us, including the challenges of building in translation facilities, operating in a very low Internet access region and overcoming trust issues from the local population as far as submitting information.

Our immediate experience with the DRC deployment reveals that there is still a lot to be done and that each crisis/situation has its own set of unique challenges (and possibilities). The main challenges are outlined below.

- The lack of good local Internet connectivity. Although we expected this and worked hard to get the mobile component ready, even our partner organisations are struggling to maintain their access to the Internet.
- The lack of an Ushahidi point person on the ground. This was a rare instance in which we were going to manage the deployment itself at least initially, which is why we have tried to partner with groups such as Heal Africa. We sent out an outreach email and they were recommended to us

[6] See: www.commondreams.org/news2008/0124-07.htm

[7] Peace Heroes: Unsung Peace Heroes is a campaign developed by Butterfly Works and Media Focus on Africa Foundation. The goal is to nominate people who helped do positive things during and after the post-election violence in Kenya. Kenyan heroes are ordinary people who did extraordinary things for their fellow citizens or their country. See: http://peaceheroes.ushahidi.com, www.mediafocusonafrica.org and www.butterflyworks.org

[8] Deployment to the DRC Congo happened on 7th November 2008 – the week the alpha version of the new Ushahidi Engine software was released. See: http://drc.ushahidi.com

**"As interest in the website developed, it became apparent that the tool had potential applicability beyond Kenya, particularly in crisis situations."**

based on their lengthy experience locally and with monitoring how the local population is being affected by the crisis.

- The difficulty in raising awareness about Ushahidi in the local population and encouraging them to use it. We tried to promote the service wherever we could, via local bloggers, local organisations, international NGOs, local radio etc.

Other challenges and lessons learnt are outlined below.

### Blogging can help raise awareness

It helps to have a relatively active and connected blogging community to raise local awareness (Kenya was a good example). Local bloggers help raise the profile of social media tools like Ushahidi. DRC does have a comparatively small but active blogging community of both locals and expatriates. We have encouraged bloggers to share their reports on Ushahidi but so far no-one has done so.

### Translation is important

We need to tackle the translation issues and also work with a wider network of bloggers geographically and linguistically.

### Be simple but effective

The tool needs to remain simple and functional as much as possible – more complicated features slow the website down and make it harder to adapt to situations where there are few resources on the ground.

### Be clear about what you aim to do

We need to be clear about what Ushahidi is and is not. Unlike in Kenya, in Eastern DRC when approaching local organisations and contacts we were often asked if they would be paid for reporting to the website. Perhaps because the DRC crisis has been much longer and more persistent, organisations are more hesitant to embrace this type of approach.

### People need time and resources

In Kenya, some areas were isolated from the violence – and the violence also ebbed and flowed. This meant people were better able to engage in citizen reporting. As someone closely involved in assisting people in DRC pointed out to me, in a crisis situation most people are on the run – they do not have time to file reports.

In places like Eastern DRC that is compounded by factors like electricity cuts so mobile phones cannot be charged. Some people do not have the resources to buy credit so the SMS functionality does not really help them. Also, unlike in Kenya, there is no MamaMikes option for donating credit.[9] We are trying to get Zain, a leading mobile phone service provider in Africa, interested in this type of service.

### Gaining trust

Unlike in Kenya, in DRC people are not used to a culture of free press – nor of people asking for their opinion. Most importantly, there is a huge lack of trust as well as concerns about reprisals if people are targeted for making reports. We have tried to allay these concerns by emphasising that the reports can be anonymous and generic, e.g. 'help is needed because of a cholera outbreak in Rutshuru'. However at present we do not have detailed guidelines for reporters.

### Creating two-way information flows

In an ongoing conflict like DRC, there is also the issue of fatigue among the locals, which was not the case in Kenya. Ushahidi becomes just another organisation that is looking for information. Past experience has shown citizens that sharing this information with the media, NGOs, UN Missions etc. has not really changed anything. To address this, we are building in functionality that closes the information loop – people are not just giving information but also receiving information e.g. on where to get help.

### Creating a culture of sharing

In comparison to when we launched in Kenya, our efforts in DRC were much more structured. The Ushahidi DRC page has received great coverage in the international press. However, we have not received the volume of reports we anticipated. Many of those affected by the crisis or watching the situation closely had complained about the minimal media coverage on the DRC conflict. In contrast in Kenya, we received more reports with very minimal active outreach on our part. While we did not expect to receive thousands of reports, we certainly expected more than we have received so far.

Another challenge is the distinct desire to silo informa-

[9] The MamaMikes remittance service empowers Kenyan immigrants in North America and Europe to transfer help home – not via cash, but by sending shopping credits, mobile phone airtime, and other gifts. See www.mamamikes.org

**"Ushahidi demonstrates how we can use open source software in humanitarian crises, the potential power of crowdsourcing, and the advantages of keeping tools simple and easily adaptable."**

tion among humanitarian organisations in DRC who should be the natural users of Ushahidi – and this was also a problem in Kenya. We encouraged NGOs to submit information collected in the field (which was substantial) but with no success. The reasons are unclear considering the benefits of bringing more attention to a crisis and helping to strategically direct help. Perhaps it is a general reluctance to embrace innovation. Perhaps it is a belief that fundraising works best for those with the most information, and Ushahidi is seen as a competitor. In any event, it is a huge problem. These organisations purportedly speak for the people who are affected by a crisis, yet do not appear to want to embrace this form of citizen reporting.

### Ways forward

The new Ushahidi platform will soon be available. It will allow the aggregation of crisis information by displaying data from various sources such as mobile phones, the Internet and mainstream news feeds on one page. The data can also be shown in a simplified geographical format. Anyone tracking or affected by a particular situation can submit reports.

This open source application will be available for free for others to download, implement and use to bring awareness to crises in their own region. The core platform can be customised for different locales and needs. Implementing organisations will be responsible for raising awareness about the tool and encouraging e.g. members of the public and staff members to submit reports. The rebuilt platform will have various administration levels from data entry of reports (e.g. for organisations to submit their own reports from the field), to full administrative privileges, which include the responsibility of verifying the submitted reports.

Organisations will also be able to use the tool for internal monitoring purposes. For example, a human rights organisation collecting testimonies about an event may not want to release the information publicly to protect the anonymity of those testifying or because they want to verify the information first (see Box 3).

However, we do realise that it is a tool and not a solution. Our goal is to create the best tool possible to help make sense of emerging situations and to develop web and mobile tools that can help with visualisation and decision-making on where and how to deploy aid and other forms of assistance.

**Box 3: The new Ushahidi platform**

Some of the technical features of the new platform will include:
- Simple and fast web/Internet accessibility.
- Map-based regional views for each country using web-based interactive maps.
- Pre-determined geo-location information for major cities.
- Ability to send reports to Ushahidi through mobile phones.
- Ability for people to sign up to receive text message alerts through mobile phones.
- Ability for people to sign up for RSS feeds to their mobile phone, email or RSS feed reader – segmented by region, country or city.[10]
- Multilingual.
- Detailed incident report page, including but not limited to: location, date, description, category, links, images, and video.
- Ability for others to submit more information about a specific incident.
- Track the number of reports coming in from specific locations and designate them as 'hotspots' and apply a heat-map to that area with extra explanations.
- 'How you can help' area where different organisations email the site administrator to be added with a short description, contact information and link to their site.
- Possible addition of a simple donation system for a specific organisation in the affected country (e.g. Kenyan Red Cross).
- Ability to post anonymous incident reports, by the contributor's choice.
- A search and timeline feature.

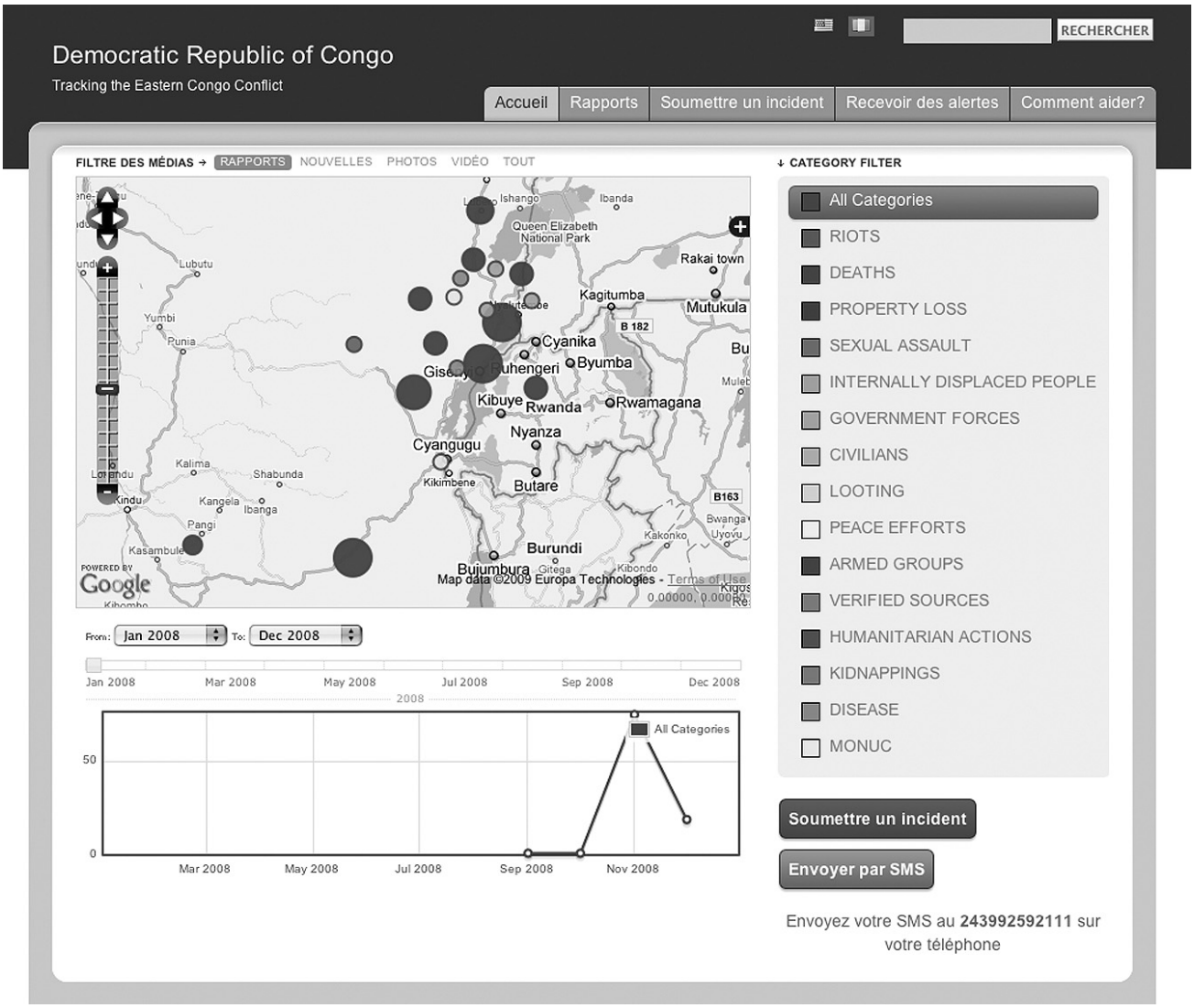
### Final reflections

As the interest in the platform evolves and is refined in the development process, more lessons and challenges are bound to emerge. How can we handle the verification of data in a fast-breaking crisis? How can we extend Ushahidi's reach in low-tech areas?

Although it is still very early days for Ushahidi, the development of the platform has already generated some useful lessons in terms of how to approach participatory media, especially in challenging environments. Ushahidi demonstrates how we can use open source software in humanitarian crises, the potential power of crowdsourcing, and the advantages of keeping tools simple and easily adaptable. We anticipate that the platform will revolutionise how many organisations handle their data and also democratise how information is collected and shared in crisis situations.

[10] For a definition of 'RSS', see glossary, p.122. See also RSS feeds p.115 (this issue).

**Ushahidi plans to make its mapping tool available globally for free to interested parties and organisations. The Ushahidi team will be able to provide technical customisations and support as needed.**




For now, we will continue to embrace the rapid prototype model and focus on pushing the boundaries of the various areas that the platform touches on – crowdsourcing; visualisation; mapping; and mobile phone platforms.

**CONTACT DETAILS**
Ory Okolloh
Email: ookolloh@gmail.com
Website: www.ushahidi.com
Twitter: www.twitter.com/ushahidi

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