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Creation of a Crowdsourcing Web Application using Open Source Ushahidi platform

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Abstract

Crowdsourcing is an online engagement of large number of people to solve a problem/issue collectively. Wikipedia and Open Street Map (OSM) are good examples of crowd sourced work, where huge amount of useful information has been created by the public and not by any single company or organization. Crowdsourcing has the potential to help the citizens or masses to provide real time accurate information to the administration/government or other related organizations so that an issue/crisis can be solved. Crowdsourcing can help in environmental monitoring, public health mapping, monitor government projects, human rights monitoring, citizen-based election observation, nonviolent protests, disaster response and crisis mapping. Earlier the public were mere spectators but crowdsourcing can convert them to sensors so that they can collect useful information (text, images, locations, video files) and send it to the concerned organization

This paper reviews Ushahidi an open-source platform with the help of which a crowdsourcing website can be created and information from web, email, SMS and twitter etc can be collected, managed and visualized in a map on a common platform in real time and with least resources.

Keywords

Crowdsourcing, Ushahidi

I. Introduction

Crowdsourcing is an online engagement of large number of people to solve a problem/issue collectively. The solution is provided by general public rather than a single company or an organization. Some of the best crowdsourcing websites or tools are Amazon Mechanical Turk, IdeaConnection, CoFundos, Crowdsourcing.org, Freelancer.com, Wikipedia, Ushahidi and Open Street Maps.

Ushahidi, which means “testimony” in Swahili, was a website that was initially developed to map reports of violence in Kenya after the post-election fallout at the beginning of 2008 [1]. The original website was used to map incidents of violence and peace efforts throughout the country based on reports submitted via the web and mobile phones by various citizens. Since 2008 it has grown from an ad hoc group of volunteers to a focused organization. Open source Ushahidi platform helps in information collection, visualization and interactive mapping, allowing the public to submit information through web forms, SMS, email and twitter etc.

[2] Describes how crowdsourcing has helped needy people during a crisis in Haiti. Natural and man-made disasters, such as tsunamis, earthquakes, floods, and epidemics pose a significant threat to humans. Research has shown that individuals respond quickly and massively to emergencies, and that they try to help with the situation. [3-5] provides information and examples about the use of collective public knowledge for emergency management.

British Geological Survey (BGS) is using the Ushahidi Crowdmapping service for recording temporary geological exposures in Great Britain that might be lost to science [6]. Geological site information can be recorded and uploaded using a smartphone or via a personal computer to the common-access web site by any citizen.

[7] illustrates a study which has used open, publically accessible

software and data as well as crowdsourcing techniques to develop robust energy analysis tools that can deliver crucial, policy-relevant insight, particularly in developing countries, where planning resources are highly constrained—and the need to adapt these resources and methods to the local context is high.

This paper reviews Ushahidi an open-source platform with the help of which a crowdsourcing website can be created and information from web, email, SMS and twitter etc can be collected, managed and visualized in maps on a common platform in real time and with least resources. Such applications can help in environmental monitoring, public health mapping, monitor government projects, human rights monitoring, citizen-based election observation, nonviolent protests, disaster response and crisis mapping. e.g. a municipal corporation crowdsourcing website can be used by the citizens to report garbage dumps, water logging, non functional street lights and poor roads etc, so that appropriate action can be taken.

II. Tools & Methodology

The various tools required are:

Server Side: Apache 2.2.22 HTTP server, MySQL 5.5.24 Database server, PHP 5.4.3, Ushahidi 2.6.1 package, Frontline SMS 2.2.1.

Client Side: Simple Browser

The methodology of creation of the web application is as follows:

1. Install the Apache, MySQL 5.5.24 and PHP 5.4.3. Packages like WAMP or XAMP which contain all the three software in a single package can be used for easy installation and configuration.
2. PHP extensions PCRE, iconv, mcrypt, SPL, mbstring, cURL, MySQL, GD and IMAP are required and should be installed.
3. Create an empty database in MySQL which will store all the data collected by Ushahidi.
4. Download the Ushahidi 2.6.1 package, unzip and install it in Apache. In the browser when you click the Ushahidi folder on apache page, the installation will start. There are two options for installation: Basic and Advanced. Select the Advanced option, it is a five step process.
5. In the first step the database settings are configured, information regarding the database name, user, password and host details are provided to the Ushahidi installer.

In the second step details like the site name, tagline and the email address to be displayed on the website to accept the reports are provided.

In the third step the email configurations are done. Details like the mail server username, password, port, host and type (IMAP or POP) are defined. This is the email address which will be used by the users to send reports to.

The next step is to configure the map options. Google, Open Street Map data can be used as base layers. If Google maps have to be used then an API key is needed. The last step gives information about the final application link and other configuration tasks to be done.

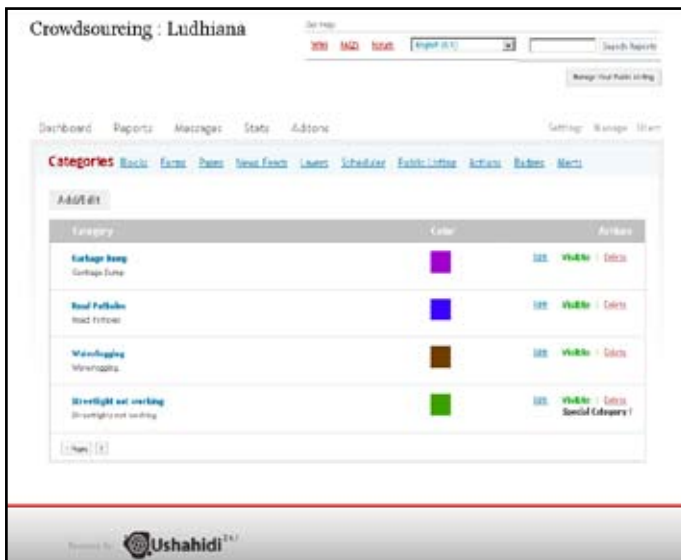


Fig. 1: Category Section

6. Install the Frontline SMS 2.2.1 software and configure the phone number you want the users to send SMS to.

7. Login as administrator and configure the settings related to Website, Map, SMS, Email and Themes etc. Using the website option the front end of the website can be designed.

The map option can be used to define the default location to be shown on the map window. Also the map provider and zoom level etc. can be selected. In the SMS settings define the Frontline SMS software settings so that the SMS messages are collected on the Ushahidi server. Email option is used to configure the email settings and themes for changing the theme of the website.

8. Use the manage section on the admin page to set up the main characteristics of the platform like categories, forms, pages, news feeds and sharing etc. In the category section new categories can be added e.g. if a application is being created for sending reports to a local government then categories can be garbage dump, water logging, non functional street lights etc. The category section is as shown in fig. 1. Forms and be designed, more pages can be added and news feeds can be added to the web application using the manage options.

9. The user section on the admin page can be used to create/delete the various users and manage the roles and permissions.

10. Test the application.

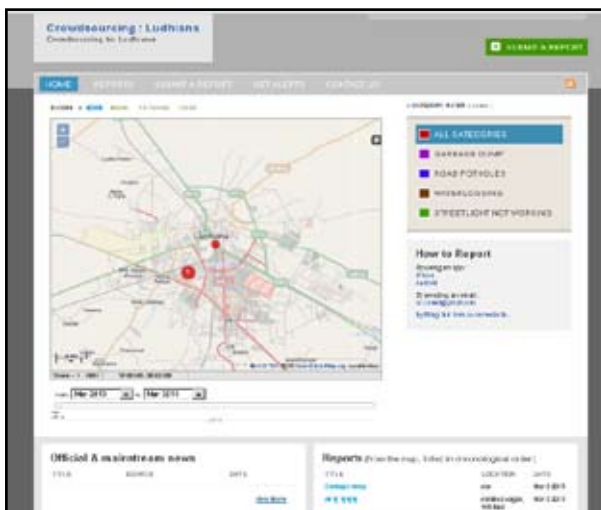


Fig. 2: Home Page of the Application

III. Results & Discussions

Once, the web application has been configured and made live, people can send reports by filling the web form on the website, by SMS and by email. The view of the home page is as shown in fig. 2. It gives information of the collected reports, their location on the map and also the email address and phone number where the complaints are to be sent.

The view of the web form used to send a report is as shown in fig. 3. There is an option "Create a report" available on the web application. In addition to providing information by filling the form, the user has the option to mark the exact location of incidence/event on the map window and attach images and media files.

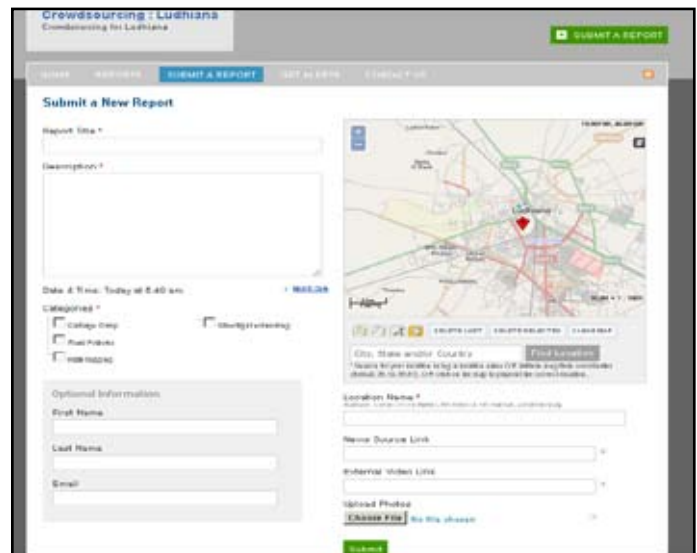


Fig. 3: Web Form to Send a Report

The user can also send the report to the email address provided on the home page and also by SMS to the phone number provided. The administrator has various options on the administration page to manage the incoming information. They are dashboard, reports, messages and stats.

The dashboard page provides a summary of all the information coming into the platform and displays a snapshot of the amount of reports over time, it is as shown in fig. 4.

The Reports section as shown in fig. 5, lists all of the reports that are submitted to the system. The user can view the full list of reports, access details of individual and reports, and manage reports that need to be approved or modified. Once approved, the reports can be viewed on the home page. There is also an option to upload or download the reports information in a csv file.

The message section lists all the incoming messages from SMS, emails and Twitter etc. There are options for the administrator to convert these messages to reports.

The statistics section allows the user to see detailed information about the reports that have been submitted and the users of the Ushahidi system.

If the user does not have resources to setup such portal described above, then also he/she can create a crowdsource website based on Ushahidi platform, at www.crowdmap.com free of cost, within few minutes.

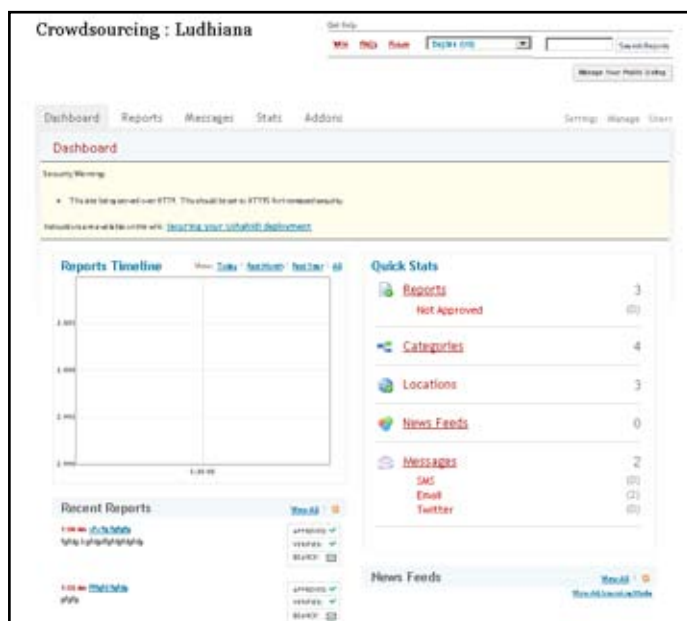


Fig. 4: Web Form to Send a Report

Real time geo-coded evidence based data in the form of images, GPS point and text can help in faster decisions, transparency in the governance. Crowdsourcing can transform the citizen-government relationship and it has the capability to deliver demonstrable benefits for both citizens and the government.

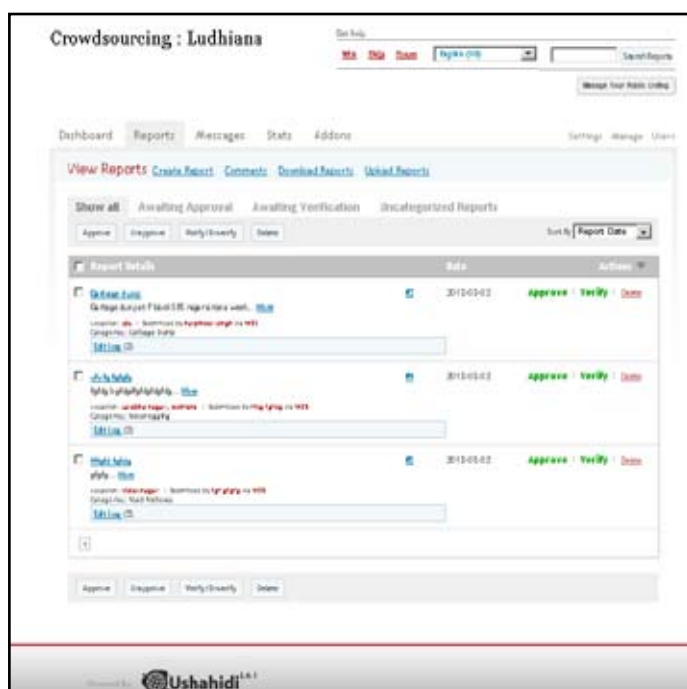


Fig. 5: Web Form to Send a Report

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