Humanitarian Studies Course
2010 Simulation

Applied Technologies Module Evaluation

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Executive Summary

Background

Information communication technology (ICT) and mapping have revolutionized the way humanitarian actors understand crises and the changes in the environment. Current fieldworkers are beginning to learn the importance of these applied technologies and humanitarian training programs are now, in advance, preparing future humanitarian responders by incorporating ICT, termed here as "applied technology" into the curriculum. In 2010, the Humanitarian Studies Course incorporated applied technologies into the coursework for the second consecutive year. During a three-day simulation of the humanitarian emergency in Chad/Darfur, ninety students and a team of nine volunteers were able to practice and experience applied technologies. Specifically, students, acting as humanitarian workers, 1) acquired geo coordinates for select locations 2) viewed GIS maps during mock UN headquarter meetings and 3) became end-users feeding crisis information to the Ushahidi-HSI platform. Students participated in crowdsourcing crisis information and in GIS activities during the simulated emergency, while learning the traditional skills needed of humanitarian responders.

The goal of this evaluation report is to reflect upon and determine the next steps for the Applied Technology Learning Module and to better understand its impact on participant learning during the 2010 Humanitarian Studies Course. This evaluation concludes that improvements in 1) didactics and preparation 2) integration of crowdsourcing and GIS technology 3) satellite communications and 4) volunteer capacity resulted in a successful educational experience for future humanitarian responders.

Key Findings & Recommendations

- Technology should be tested independently and in series/parallel prior to the simulation. "Test running" the system is of utmost importance to ensure that the simulation will run smoothly.
- A nine-person applied technology team was one of the greatest improvements in enabling more efficient data processing and improving the feedback loop to student groups.
- Incorporating various learning methods (didactics, skills stations, in-field support) before and during the simulation improved the educational experience. Examples include skill stations that teach students how to incorporate ICT into their decision-making.
- Further experience is necessary to determine how to verify rapid influxes of heterogeneous information. Events should be weighted appropriately and verified based on priority, rather than solely on the number of duplicative messages and linked to the appropriate response.
- Changes in the Ushahidi platform to enable clustering and simplifying mapped information can potentially improve the students' ability to interpret Ushahidi maps for timely decision-making.
- Volunteers need to be skilled in creating tech savvy workarounds, but more essential is a complement of humanitarian volunteers who are experienced in ICTs to facilitate a return communications system to students.
- An interactive computer station at the UN meetings will allow students the opportunity to view the HSI-Ushahidi website and learn how to interpret this information into their assessments and service deliverable plans.
- Further thinking is necessary to define the multiple roles that the applied technology team will take on during the simulation. Once defined, the roles of UNHQ communications, GIS specialists, and Ushahidi should be clearly defined either before or at the beginning of the simulation.
- Ninety percent of survey respondents reported that applied technologies "sometimes", "frequently" or "always" influenced their *service deliverables.*
- "Phone calls" were reported as the most influential technology during the simulation.

Conclusion

The 2010 Applied Technology Learning Module for the Humanitarian Studies Course was a success in introducing ICT and GIS to future humanitarian practitioners. Despite the positive feedback and improvements in module implementation, functionality of Frontline SMS, Ushahidi and GIS mapping-- future improvements are needed to better empower students to integrate applied technology information into real-time decision-making as practitioners in future humanitarian emergencies.

Introduction

The recent marriage of information communication technology (ICT) and mapping has revolutionized the way humanitarian actors understand the crisis environment. The recovery efforts of the 2010 Haiti Earthquake disaster is an example of how ICT and crisis mapping can play a role in humanitarian response. The network effect that brought stakeholders from private industry, government, UN agencies, NGOs, and volunteer groups[1] was a testament to the belief that crisis mapping has a valuable role in disasters. This collaborative effort resulted in an unprecedented implementation of applied technologies in a scale unseen in other humanitarian emergencies. Despite these great strides, the community is becoming keenly aware of new and common operational challenges. We, as humanitarian workers, have come to the realization that applied technologies are subject to some of the most common challenges seen time and time again in humanitarian response. Stakeholders in this new realm of humanitarian response are beginning to learn the importance of training new responders. Such efforts are evident in humanitarian education programs, including the Humanitarian Studies Initiative described in this evaluation report, which incorporates ICT, termed here as "applied technology", into their training activities in order to better prepare future responders against newfound challenges.

Background

In 2008, the Humanitarian Studies Initiative integrated applied technologies into didactic curricula to be followed by its incorporation into the simulation training program in 2009. The 2010 applied technology learning module brought was an aggregation of lectures, skills training sessions, and simulation activities framed by distinct goals, objectives and activities. In 2009, the simulation exercises focused upon real-time GIS mapping activities and the Ushahidi crowdsourcing platform. Little reflection occurred after the simulation to inform future activities. Students felt that mapping activities were too demanding and its utility in the overall simulation, and humanitarian space, was unclear. Changes were made to simplify the GIS/mapping exercises and increase the role of crowdsourcing and crisis mapping for future simulations.

In April 2010, ninety students and a team of nine volunteers participated in a three-day simulation of the humanitarian emergency in Chad/Darfur. Three didactic lectures (satellite technology, GIS field applications, and crisis mapping) introduced geospatial, ICT and crowdsourcing concepts to students. A skills session instructed students on how to use GPS Garmin units. During the simulation, students acted as humanitarian workers and 1) acquired GPS coordinates for select locations 2) viewed GIS maps during UN headquarter meetings, and 3) became end-users, feeding crisis information to the Ushahidi-HSI platform. During the three-day simulation, students learned the key skills in program planning, security events, and field epidemiology but also experienced new humanitarian technologies through crowdsourcing crisis information and GIS activities.

Evaluation Goals & Objectives

The goal of this evaluation report is to reflect upon and determine the future course of the Applied Technology Simulation exercises and to better understand its impact on participant learning during the 2010 Humanitarian Studies Course.

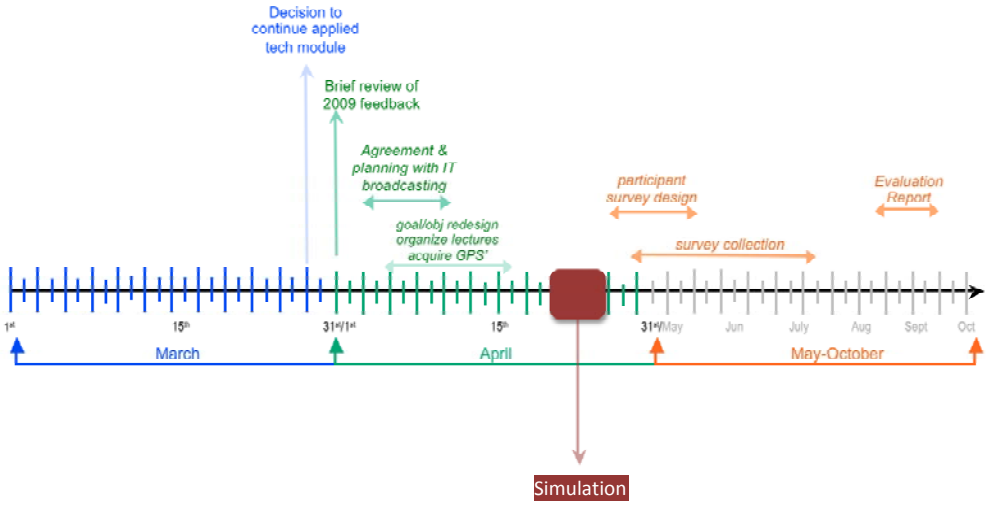
The goal of the HSI Simulation Applied Technology Module is to provide an educational environment for students to use their introductory knowledge of applied technologies in a simulated humanitarian emergency. Communication Technology, GIS/Mapping, and mobile technology are key themes. Cross cutting issues include security, technology stability, and information accuracy.

[1] including the Haitian Diaspora

2010 Applied Technologies Activities

The 2010 applied technology activities spanned from March 2010 to September 2010 including planning, preparation, simulation, participant surveys, and evaluation. (Figure 1)

At the simulation, students SMS texted crisis events and geospatial coordinates (e.g., refugee camps) to the HSI-Ushahidi platform. The volunteer team monitored, verified, mapped and communicated information back to students. Information was transmitted via SMS to Frontline SMS and HSI-Ushahidi. Information was also mapped using open-source GIS programs. The information was fed back to students via Frontline SMS and at scheduled UN meetings.



Findings

Implementing the Applied Technology Module for the HSI Simulation

Technology

Expanding the ICT Environment - The simulation site at Harold Parker State Park has no internet access. IT Broadcasting[2] provided satellite technology and internet access at the volunteer and UN headquarters. Connectivity allowed for real-time use of Ushahidi-HSI enabling the team to confirm, verify, and map Ushahidi data with the aim of providing feedback to students throughout the simulation. Ushahidi staff updated the 2010 platform to include basic statistical analysis and fields for geo coordinates. Categories of reportable instances (e.g., camp locations, deaths, landmines, militia movements, disease, and mass graves) were used.

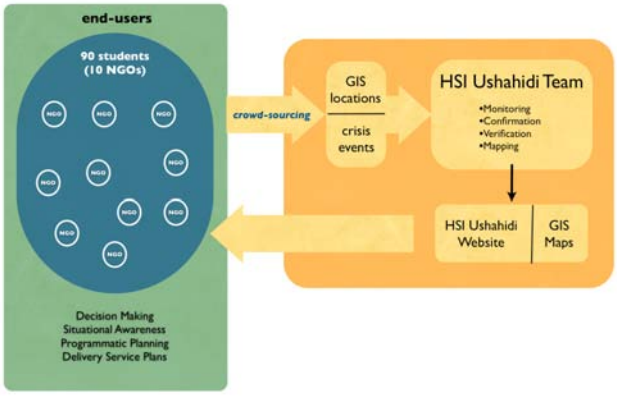


Figure 2 Participant, Applied Technology and Information Flow Diagram

Ensuring the technology "works"- Twelve GPS units were rented and a new cell phone hub for Frontline SMS was purchased. It took two days to find a compatible low-tech cell phone. Because the simulation members increased by over two-fold, renting a total of 12 GPS Garmin units with higher functionality on short notice was not possible. This simplified the skills station exercise and prohibited the "orienteering" exercise during the simulation. GIS base layer files were retrieved from the 2009 simulation for the mapping exercise. One computer was used to update, verify and print the 2010 GIS maps. This silo approach prevented the volunteers from task sharing and only one person was able to update and print maps.

All technology should be tested independently and in series/parallel prior to the simulation. "Test running" the system is of utmost importance to ensure that the simulation will run smoothly. A more efficient system to share files among multiple computers would improving volunteer activities and expedite the time-dependent deliverables needed for student learning.

[2] http://www.itbroadcasting.com/

Human Capacity- The Applied Tech Volunteer Team

During the 2009 simulation SMS texts of geo-referenced information created a nearly overwhelming "data in" effect. Two volunteers struggled with processing the large volumes of information, which detracted from completing the feedback loop to students. Hundreds of SMS texts needed to be screened and triangulated. Geo coordinates were entered into a series of open source GIS programs to create maps. This up stream technical demand resulted in decreased capacity in returning information back to students. In 2010, the applied technology group was increased to a team of nine volunteers. Team members with field experiences in satellite technology, GIS, and Ushahidi Haiti significantly improved the experience. The team was responsible for pre-simulation preparation and all GIS and Ushahidi activities during the simulation. Even more information streamed in creating a large "data in" effect but with nine team members sharing the burden, more information fed back to student users through SMS text and GIS maps in a timely manner.

Increasing human capacity to a nine volunteer applied technology team was one of the greatest improvements in the 2010 simulation. This enabled more efficient data processing and improved return of information back to student groups so that they could achieve their applied technology learning objectives.

Informing End Users

Students who are both the source and recipient of applied technology information are expected to use the information to influence their decision-making (Figure 2). The 2010 learning module aimed to inform the students (or end-users) at three stages. The didactic session educated students on the broad overview of crowdsourding and GIS. Students learned how to use GPS units at the skills exercises. Tools and real-time support (e.g., information cards, in-field support by volunteers) were provided to students during the simulation (Appendix 2). During day 1, volunteer team members visited NGO teams and answered technical GPS questions while encouraging students to text information.

Incorporating various learning methods (didactics, skills stations, in-field support) before and during the simulation improved the educational experience. More in-depth skill stations that train students on how to interpret and integrate Ushahidi information and GIS maps into decision making are need to enhance the learning experience. Optional sessions on how to manage GIS data and Ushahidi crowdsourced information can further educate a subset of students interested in applied technologies.

Frontline SMS

A total of 775 messages were transmitted through Frontline SMS and 287 SMS text messages were received from students. Figure 3 depicts an hour-by-hour timeline of student generated SMS texts. On the afternoon of day 1, students identified refugee camps and texted the camp geo coordinates to the volunteer team. The second large burst of SMS texts occurred during the evening of day 1 during a planned raid of the NGO compound. The third burst of texts occurred during the day of day 2, and abruptly tailed-off mid day during the planned "hack" of the IT system and its subsequent shutdown.

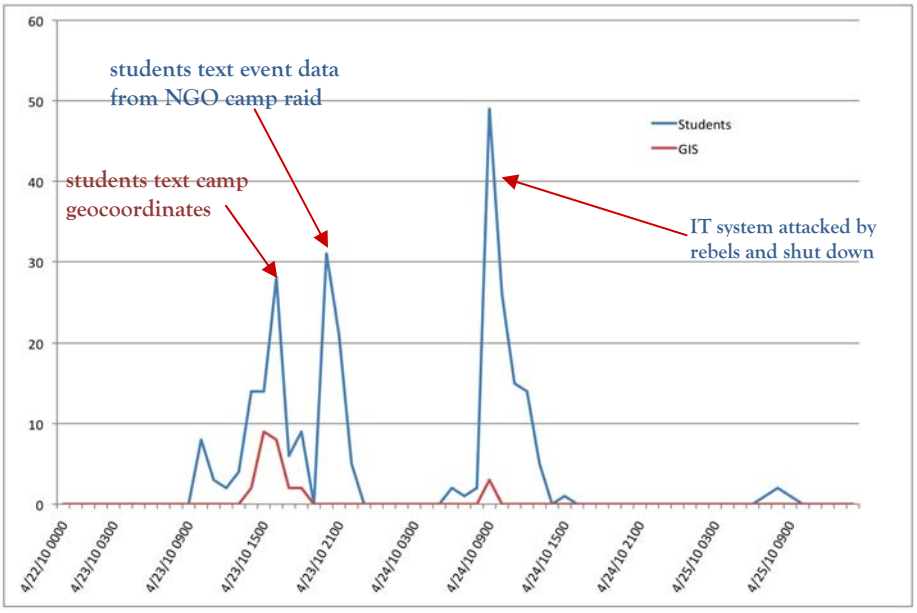


Figure 3 Frontline SMS Texts

Some Frontline SMS messages were not automatically forwarded to Ushahidi, and many were frequently delayed. This hindered the team's ability to process information in a timely manner. This was thought to be due to the Frontline SMS technical limitations and the teams' ability to set up the platform to manage large volumes of information. The form function of Frontline SMS has the potential to further organize SMS text coming into the HSI-Ushahidi platform. This would require all teams to receive a pre-formatted java enabled cell phone. This advanced level of organization has the potential improve the systems of information collection and analysis with the end goal of improving return of information back to teams for decision-making. This may further organize Frontline SMS information so that real-time data analysis for response and tracking can occur in advance.

Benefits of Form Enable Mobile Phones

- GPS coordinate templates
- Event categories
- Student activity monitoring
- Streamlined mobile communications

Purchasing at least one GSM modem may improve the reliability and efficiency of receiving and sending messages through FrontlineSMS. Consider providing java-enabled phones for each NGO team with pre-formatted forms that can sync with Frontline SMS.

GIS Maps

Seven maps were created during the simulation. Base maps were given to teams at the beginning of the simulation. A stepwise series of crowdsourced location, population number, security event and health information maps were provided to NGO teams at UN meetings (Appendix 3).

Pre-existing template maps were used to improve the efficiency of mapping. When SMS texts from teams confirmed the location of a refugee camp it was tagged on an existing map. The additional steps needed to print maps were further simplified. Figure 4 is an example of the overlay of location information and qualitative crowdsourced security information that has the potential to improve situational awareness and communication among all stakeholders.

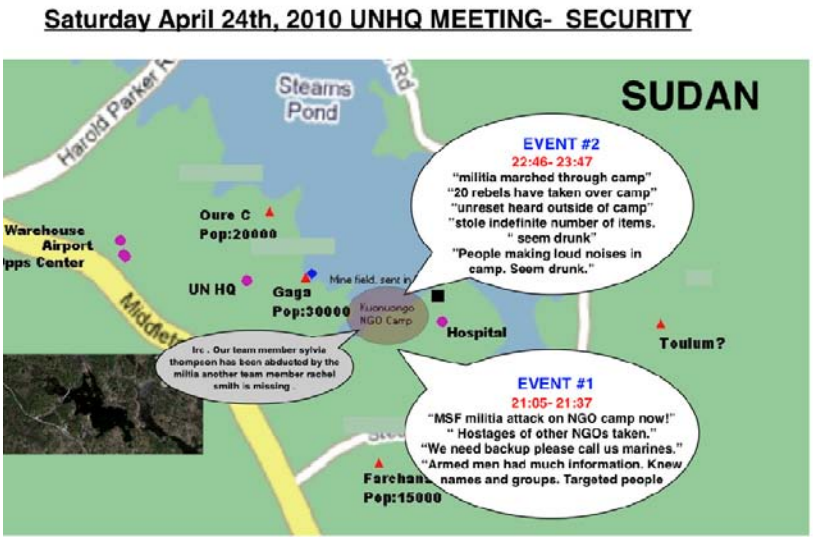


Figure 4 GIS-Security Events Map

Crowdsourcing/Crisis Mapping (Ushahidi)

All messages were monitored. Information that could be verified was subsequently mapped resulting in 41 mapped reports on the HIS-Ushahidi website. (http://www.hhi.ushahidi.com/) Messages were received every few minutes and during a simulated militia raid security related messages were received multiple times a minute.

Monitoring and Creating Reports

As experienced in the 2009 simulation, there were many duplicate messages of similar events. This provided a means for verification, but also congested the system. The temporary solution was to have the team visually screen all Ushahidi messages and transform the information into reports when appropriate. This required human capacity and resources during the simulation, but the learning curve for new members was fast.

Swift River was not used this year, but may have the potential to decrease this demand and increase accuracy in future simulations.

Verification

There was no pre-defined automated or agreed upon verification algorithm for the team to verify information. In order to maintain the educational goals, at least two to three similar SMS event messages from distinct end-users constituted a confirmed report. Student groups often needed prompting from the volunteer team to verify information in order to validate an event and create a report. This process also aimed to indirectly educated students about the value of triangulated and verified information for decision-making.

During the simulation, militia raids destroyed the "Toulum" refugee camp. Figure 5 reflects the series of texts, followed by prompting NGOs to confirm the event.

Received	4/24 5:20	Mer: toulum attacked last night. Desroyed. Mother and child need emergency med help
Received	4/24 5:33	One refuge left in Toulum. Camp destroyed
Received	4/24 5:34	Save confirms Toulum is destroyed. Are we safe? Where should we bring refugee?
Sent	4/24 9:46	USHAHIDI- need confirmation of destruction of Toloum camp. What's the population at this site?
Sent	4/24 9:50	USHAHIDI- health update: aware you are caring for woman/child at Toulum. Unable to contact health cluster lead- you should contact them indpdtly

Figure 5 Frontline SMS Texts

Further experience is necessary to determine how to verify rapid influxes of heterogeneous information. Events should be weighted appropriately and verified based on the priority rather than solely on the number of duplicative messages and linked to appropriate response.

Security Events

Security was a major theme throughout the simulation, especially during the evening of day 1 as the NGO camp was raided. In one hour, Ushahidi received 58 text messages about the crisis event but because the applied technology team also acted as volunteer "militia" they were unable to verify, confirm, or respond to the crowdsourced information in real time. Mapped findings were presented the next morning during the UN meeting.

In order to further improve the feedback loop to students applied tech volunteer members should manage the HSI-Ushahidi platform during the NGO raid event. This event is a great opportunity to feed back information to students. More advance GIS maps can also be presented at the following UN meeting to reflect how crowdsourced information can be triangulated.

Ushahidi Mapping Capabilities

Ushahidi's mapping capabilities were challenging because the geo coordinate entry field was in decimal units while the student SMS texted coordinates were in degrees/min/min-seconds. This demanded the extra work of entering data into conversion tables on an independent website and then transferring the converted geo coordinates back to the Ushahidi-HSI website. This was time consuming and due to multiple demands placed on the volunteer team the SMS coordinates were never entered and volunteers "eye-balled" locations using a paper map.

Creating a unit conversion system for geo coordinates on Ushahidi will prevent this time consuming task and significantly improve the accuracy and utility of geo coordinate reporting. Until this can be achieved the HSI 2011 simulation volunteer team should set the GPS units to decimal units so that they can be quickly "cut and pasted" by volunteers.

After day 1, the majority of crowsourced events/information came from a few locations with known geo-coordinates. When the volunteer team continued to "map" events from these common locations, visual *noise* was created, making it difficult to interpret the Ushahidi maps. Certain categories of events (e.g., NGO harassment, population movement, health events) clustered around specific locations, but were not easily identified by the Ushahidi maps. This limitation may be due to the small geographical areas and controlled environment of the HSI Simulation rather than the real time dynamic environment during disasters and humanitarian crisis.

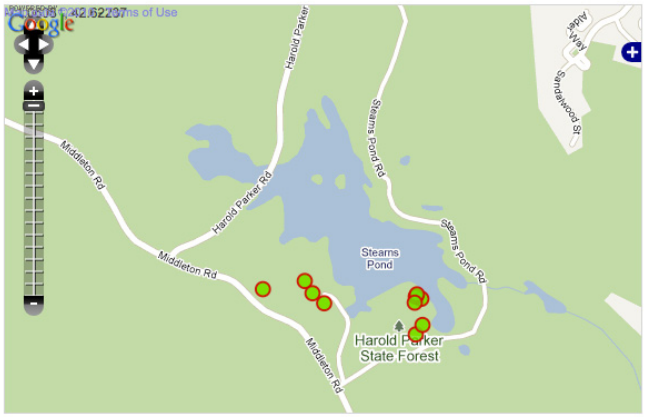
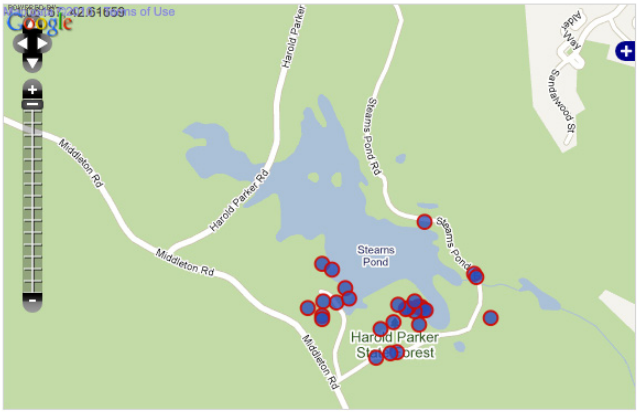
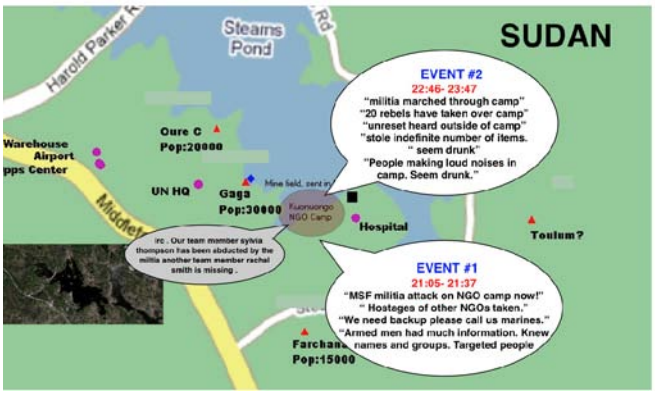


Figure 6 Ushahidi Map of Refugee/Camp Locations





CAN SOMETHING LIKE THIS BE ACHIEVED?

Changes in the Ushahidi platform that can cluster and simplify map information could improve students' ability to interpret Ushahidi maps for timely decision-making. This may have been due to 1) the teams limited understanding of the Ushahidi platform 2) lack of Swift River capabilities or 3) need for future platform development.

Transforming Applied Technology data into Decision Making and Response

The purpose of incorporating applied technologies into the HSI simulation is to educate students on how ICT and GIS can improve humanitarian response. While skills sets (e.g., acquiring GPS coordinates, sending SMS texts and accessing Ushahidi) are needed to generate information, the process of integrating collected information into *timely and relevant* decisions is what makes the educational process successful.

One of the greatest challenges was providing real-time analyzed GIS and crowdsourced information back to student end-users. The volunteer team managed large volumes of data; simultaneously transforming geo coordinates into maps while processing and mapping Ushahidi information and communicating information back to users via Frontline SMS. When the volunteer team was able to confirm an event, the incoming hits of new event data and only one computer with Frontline SMS capabilities to mass text information back to end-users resulted in a cumbersome and often delayed response system.

The training of volunteers (or ICT teams in the field) on dynamic prioritization of events that are matched with feasible response mechanisms is absolutely necessary to efficiently processing crowdsourced information. While some volunteers need to be skilled in creating tech savvy workarounds to unanticipated changes in the ICT platforms, equally important is a complement team of experienced ICT-informed humanitarians who can facilitate a system to communicate key information back to decision makers.

ICT limitations

- Frontline SMS often stalled and even crashed when batched messages were sent to NGO teams. This delayed and prevented information return to students.
- The Ushahidi HSI website had a few bugs that made it difficult for even the volunteer team to view the crisis maps (Appendix 6).
- In order to simulate the challenging humanitarian environment, student access to computers was not ubiquitous and internet access was unavailable to them. As a work around to this true to life limitation, printed screen shots of the Ushahidi website were presented at the meetings.
- Limiting printing at the simulation site restricted student's ability to view maps and retain maps for future activities with their NGOs. Students often scribbled information on their original maps or on paper to collect posted information.

A skills station may be a valuable controlled environment for students to learn the value of crowdsourcing ICT and GIS. In this setting students can learn the potential impact of technology and ideal impact on humanitarian activities. A future interactive computer station at UN meetings can allow students the opportunity to view the HSI-Ushahidi website and learn how to interpret this information into their assessments and service deliverable plans. Students with smart phones can also be encourage to access the Ushahidi website, expanding the learning activity to a larger number of students.

End-user Expectations and Unclear Communication Roles

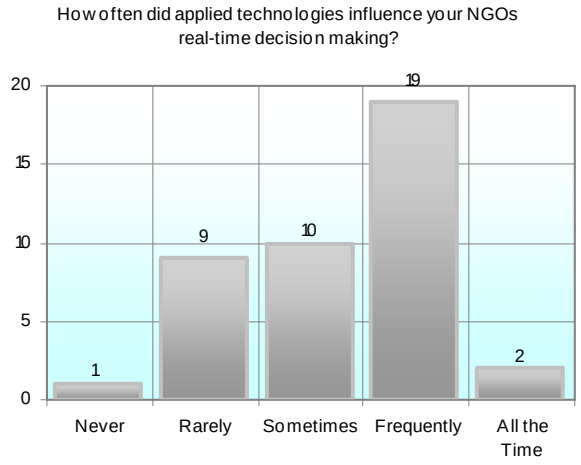
The volunteer team acted as GIS specialists, Ushahidi crisis mappers and at times a central communication hub for "UN headquarters" which cause confusion among students about the overall role of the applied technology team. This may have blurred students' understanding of GIS applications, crowdsourcing, and traditional communications roles of UN coordinating agencies. At times, students requested assistance from Ushahidi that were outside its activities. This was likely due to the fact that Ushahidi communicated through Frontline SMS which was the most efficient communication system outside of traditional verbal methods of communication.

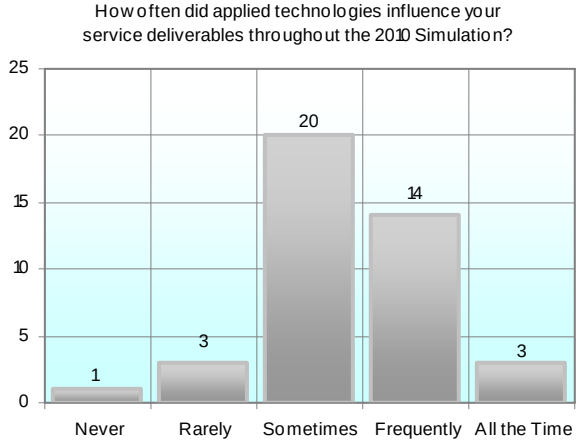
Further thought is necessary to clearly define the multiple roles that the applied technology team will take on during the simulation. Once defined, the roles of UNHQ communications, GIS specialists, and Ushahidi should be clearly distinguished either before or at the beginning of the simulation. Two Frontline SMS systems, one for general communications and another for GIS/Ushahidi can be considered to better define roles.

Student Feedback

HSI student feedback was positive and many students requested more didactic teaching and simulation feedback. Forty-one of ninety-eight students responded to the online survey emailed three weeks after the simulation. Half of the responding students were from the January session and half from the April session. Every NGO team was represented among all respondents.

Seventy-five percent (n=31) of students reported that applied technologies at least "sometimes" influenced their *real-time decision-making*. Forty-six percent (n=19) of students responded "frequently," while 22% (n=9) reported that it "rarely" influenced them. An overwhelming majority of respondents, 90% reported that applied technologies "sometimes", "frequently" or "always" influenced their *service deliverables.*





How did the following applied technologies influence your learning during the 2010 Simulation?					
Top number is the count of respondents selecting the option. Bottom % is the percent of the total respondents selecting the option.	Never influenced	Infrequently influenced	Sometimes influenced	Frequently influenced	Always influenced
GPS	5 12%	8 20%	16 39%	10 24%	2 5%
GIS Maps	2 5%	9 22%	21 51%	8 20%	1 2%
Ushahidi	3 7%	9 22%	18 44%	9 22%	2 5%
Phone Calls	1 2%	2 5%	7 17%	17 41%	14 34%

"Phone calls" were reported as the most influential technology during the simulation. GIS and GPS appeared to be at least moderately influential. Although 44% of respondents reported Ushahidi to "sometimes" influence learning, there appears to be an equal distribution of student who were either "frequently influenced" or "rarely influenced".

Students found the overall applied technology module valuable, responding that they learned more about its potentials and its role in information sharing. Students also submitted insightful recommendations that will be incorporated into future HSI Simulations.

"What did you like best about the applied technology activities?
Applied Technology Feedback Survey (n=41)

Learning to use it and get acquainted with the tech. I haven't used it in the past so it was important to learn how and the possibilities it provided.

I found the use of cell phones to be invaluable during the sim

I was really impressed that we were able to use ushahidi in real time and that we had concrete GIS maps to illustrate our findings

Ushahidi and multiple pathway of communication e.g. satellite could be down. We learned not to assume technologies work all the time.

Seeing the results of the Ushahidi texting. i.e. seeing other NGOs information to triangulate with ours.

Being introduced to new technologies that I have not used before and acknowledge the importance of its value

I liked the ability to send text messages, but would have loved more feedback during the simulation.

"What did you like least about the applied technology activities?
Applied Technology Feedback Survey (n=41)

Ushahiti-did not understand what it was. I was talked about in such glowing terms but initially the feedback was delayed and thus constantly behind.

I still do not understand how it could have influenced our real-time decision making. We put a lot of information into the Ushahidi system via sms, and we received very little information in return. I think there was a breakdown in connecting that information to the decision- makers on the ground (as I think there is in real-life).

It was unclear what was expected of us re. deliverables using these technologies.

CARE wasn't receiving texts from higher-ups, and we felt very out of the loop.

As a member of the Jan cohort, I did not receive training/extensive information on applied tech. That said, I did not use it in the sim; those who had received the training were more apt to use the gps etc.

What recommendations do you have to improve applied technologies activities during future HSI simulations?

- *I was confused if texting to the ushahidi/gis system was the same thing as informing the UN OCHA—a bit more clarity here might have helped*
- *The Ushahidi map could be more detailed, and either protected or put on a screen that would give us a real time representation of the situation*
- *Train us how to actually use Ushahiri*
- *Please teach more about Ushaihaidi.com—I hadn't heard of this before and didn't even know how to spell it to go to the website. There were mumblings in the crowd as we talked about this amongst ourselves*
- *Have more on hand and have a place where participants could see the results of their work themselves. For instance, if the participants have a station where they could go and print out the maps.*
- *More time to learn how to use the GPS devices and learn their possibilities*
- *Skill session illustration strengths and weaknesses of technology. Each of us have a GPS (I know…it's expensive)*
- *18 More debrief. Rather than just posting the maps, perhaps incorporate some discussion.*

Recommendations

Implementing the Applied Technology Module for the HSI Simulation

- All technology should be tested independently and in series/parallel prior to the simulation. “Test running” the system is of utmost importance to ensure that the simulation will run smoothly. A more efficient system of sharing files among multiple computers would improve volunteer activities and expedite the time-dependent deliverables needed for student learning.
- Increasing human capacity to a nine volunteer applied technology team was one of the greatest improvements in the 2010 simulation. This enabled more efficient data processing and improved return of information back to student groups so that they could achieve their applied technology learning objectives.
- Incorporating various learning methods (didactics, skills stations, in-field support) before and during the simulation improved the educational experience. More in-depth skill stations that train students on how to interpret and integrate Ushahidi information and GIS maps into decision-making are needed to enhance the learning experience. Optional sessions on how to manage GIS data and Ushahidi crowdsourced information can further educate a subset of students interested in applied technologies.

Frontline SMS

- Purchasing at least one GMS modem may improve the reliability and efficiency of receiving and sending messages through FrontlineSMS. Consider providing java-enabled phones for each NGO team with pre-formatted forms that can sync with Frontline SMS.

Crowdsourcing/Crisis Mapping (Ushahidi)

- Swift River was not used this year, but may have the potential to decrease this demand and increase report accuracy in future simulations.
- Further experience is necessary to determine how to verify rapid influxes of heterogeneous information. Events should be weighted appropriately and verified based on the priority and linked to appropriate response rather than solely on the number of duplicative messages.
- In order to further improve the feedback loop to students, applied tech volunteer members should manage the HSI-Ushahidi platform during the NGO raid event. This event is a prime opportunity to feed back information to students. More advance GIS maps can also be presented at the following UN meeting to reflect how crowdsourced information can be triangulated.
- Creating a unit conversion system for geo coordinates on Ushahidi will prevent this time consuming task and significantly improve the accuracy and utility of geo coordinate reporting. Until this can be achieved, the HSI 2011 simulation volunteer team should set the GPS units to decimal units so that they can be quickly “cut &pasted” by volunteers.
- Changes in the Ushahidi platform that can cluster and simplify map information could improve students’ ability to interpret Ushahidi maps for timely decision-making. This may have been due to 1) the teams limited understanding of the Ushahidi platform 2) lack of Swift River capabilities or 3) need for future platform development.

Transforming Applied Technology data into Decision Making and Response

- The training of volunteers (or ICT teams in the field) on dynamic prioritization of events that are matched with feasible response mechanisms is absolutely necessary to efficiently processing crowdsourced information. While some volunteers need to be skilled in creating tech savvy workarounds to unanticipated changes in the ICT platforms, equally important is a complement team of experienced ICT-informed humanitarians who can facilitate a system to communicate key information back to decision makers.

- A skills station may be a valuable controlled environment for students to learn the value of crowdsourcing ICT and GIS. In this setting, students can learn the potential impact of technology and ideal impact on humanitarian activities. A future interactive computer station at UN meetings can allow students the opportunity to view the HSI-Ushahidi website and learn how to interpret this information into their assessments and service deliverable plans. Students with smart phones can also be encouraged to access the Ushahidi website expanding the learning activity to a larger number of students.

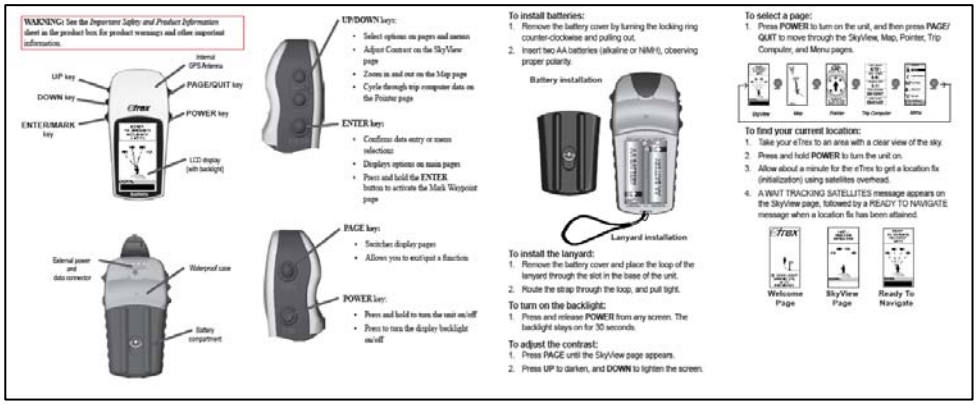
End-user Expectations and Unclear Communication Roles

- Further thought is necessary to define the multiple roles that the applied technology team will take on during the simulation. Once defined, the roles of UNHQ communications, GIS specialists, and Ushahidi should be clearly defined either before or at the beginning of the simulation. Two Frontline SMS systems, one for general communications and another for GIS/Ushahidi can be considered to better define roles.

Appendix 1- Team Activities/Responsibilities

Team Activities/Responsibilities		
Preparation		- GPS units (batteries, units, etc) - Information Cards - Frontline SMS group lists - Confirm prior camp coordinates with current field coordinates - Test Frontline SMS - Test Ushahidid-HSI - Template GIS maps for days 1-3
SIM Day 1	AM	- Distribute GPS unit, info cards at boarder - Last minute GPS training for students who didn't take skills training sessions. - Test Frontline SMS to all logisticians - Field visits to teams for tech support/encourage event texting - SMS reminders on SMS formats - Monitor Frontline SMS - Demand driven SMS responses for confirmation of events - Ushahidi- receive, confirm, create reports
	PM	- Select groups to send GPS coordinate of camps/locations - SMS reminders on SMS formats - Ushahidi activities continue/monitor Frontline SMS/create GIS maps - Print out maps, and Ushahidi screen shots for UN PM meeting. - Ushahidi-continues as NGO camp is raided in the evening
SIM Day 2	AM	-(Early) triangulate NGO reports of population numbers-prepare -Print AM Map for meeting. Security Map is created based upon evening raid. - Ushahidi activities continue/monitor Frontline SMS/create GIS maps - Members create a imaginary security breech and "hack into the system" Ushahidi and Frontline SMS are shut down. - Print/present updated GIS/Ushahidi maps at evening UN meeting
SIM Day 3	PM	Wrap up

Appendix 2- Information Cards



REPORT ANY CRISIS INFORMATION TO USHAHIDI:

SMS: (773) 206-4588

INCLUDE NGO NAME FIRST
(EX. MSF: *REPORT)*

REPORT:

KIDNAPPINGS
MASS GRAVES
HARASSMENT
DISEASES
HUMAN RIGHTS VIOLATIONS
REFUGEE CAMPS
MILITIA MOVEMENTS

Appendix 3- Crowdsourced GIS Maps

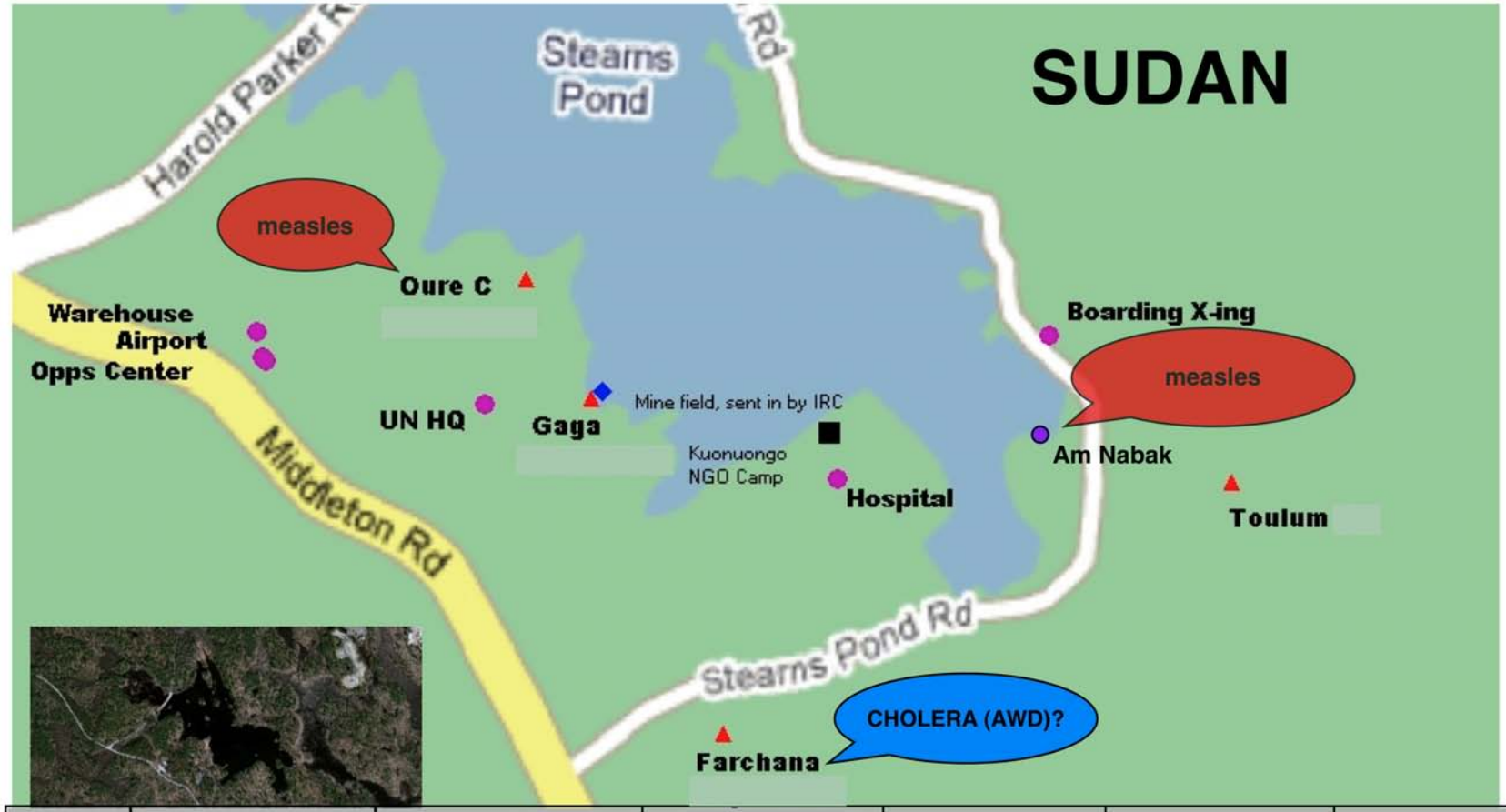
Friday April 23th- AM, 2010

Friday April 23rd, 2010- 17:33

	Oure C	Toulum	Am Nabak	Gaga	Farchana	TOTAL
Pop Total		15,000 (Mercy Corps)				
Deaths						0
U5 Deaths						
Rebels						0

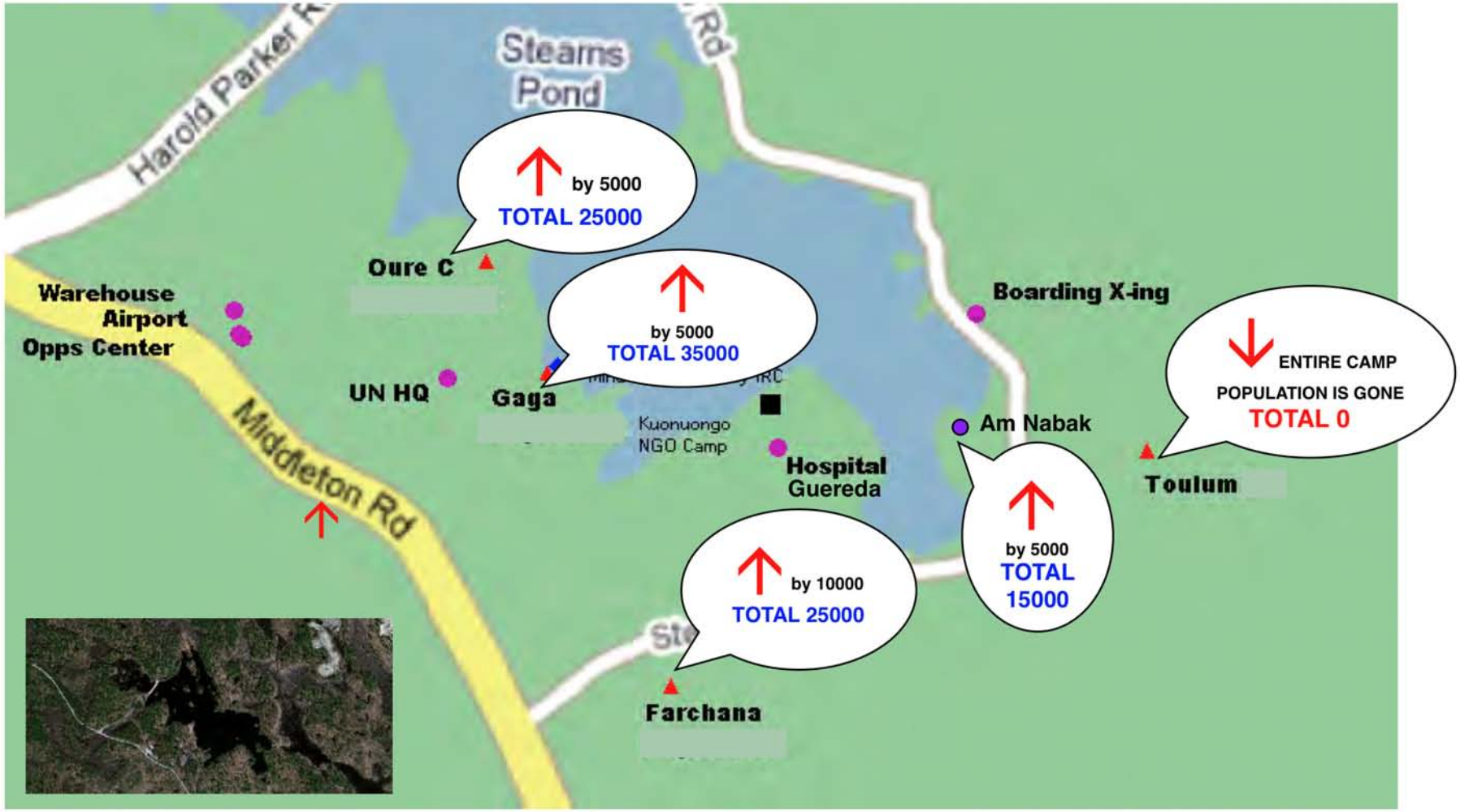
Saturday April 24th, 2010 UNHQ MEETING- SECURITY

Sat April 24th, 2010 UNHQ AM MEETING- HEALTH STATISTICS- UPDATED!!!!



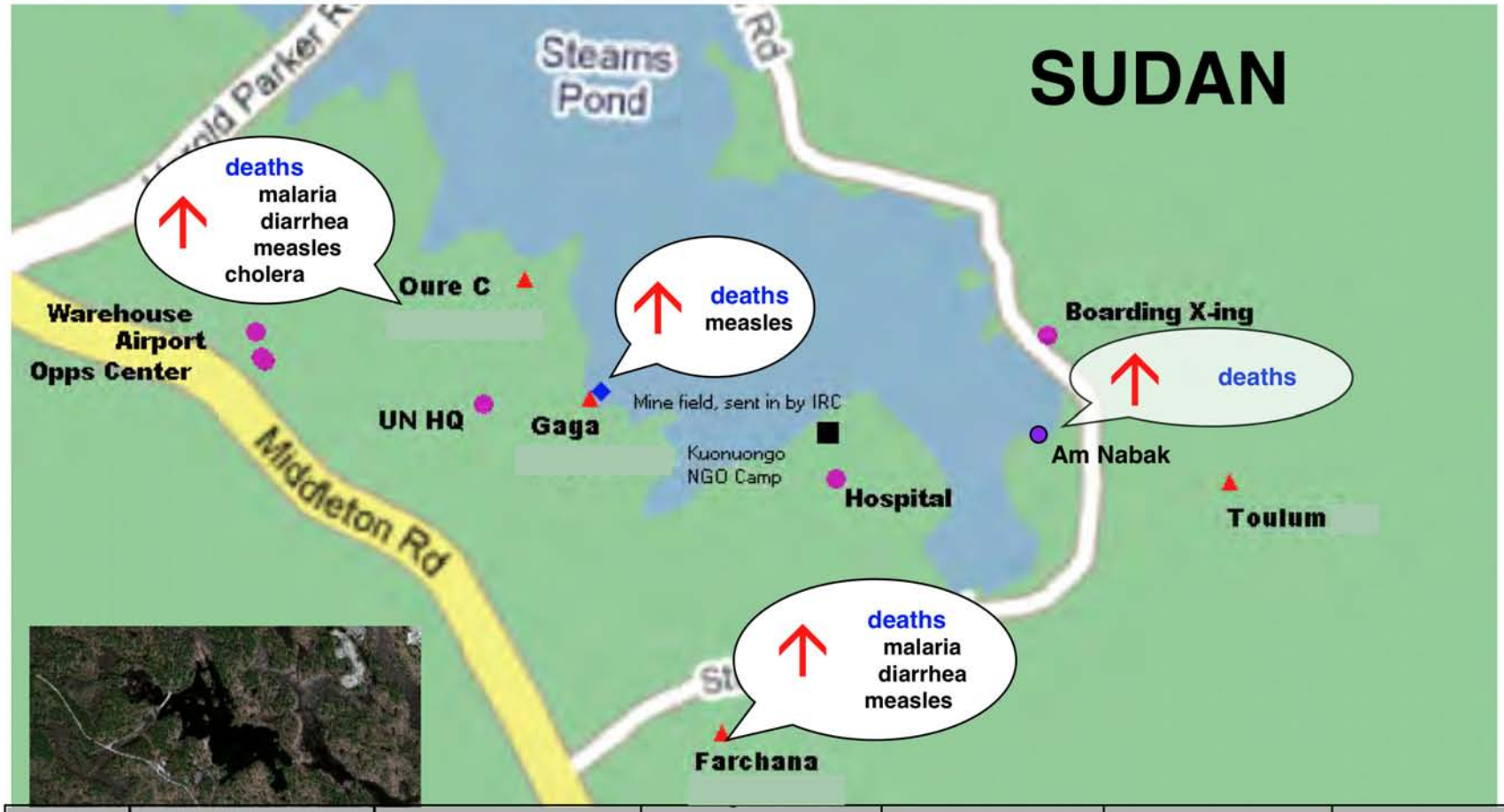
	Oure C	Toulum	Am Nabak	Gaga	Farchana	TOTAL
Pop Total	20000- 22000	15000-17000	10000-11163	5000-10000	10000-13000	60000-73163
UM/ Children	2000	2000	500-1500	1500- 2000	3000	9000-145000
Malaria	100-250	50- 500	50	50-100	100	350-1000
Diarrhea	150 (confirmed)	200- (50 per WHO)	50	50	100	200
Measles	1		1	1(per WHO)		2
Cholera					3, confirmed by WHO)	1

SUNDAY April 25th, 2010 FINAL UNHQ MEETING- POPULATION NUMBER CHANGES



	Oure C	Toulum	Am Nabak	Gaga	Farchana	TOTAL
Pop Total	20000--->25000	15000-0	10000--->15000	30000---> 35000	15000--->25000	100,000
Host Pop	20,000---> 20,000	20000--->0	30,000---> 30,000	10,000---> 15,000	25,000-25,000	90,000
UM	2000----> 2500	2000---> 0	500 ---> 500	2000---> 2500	3000--> 2500	8,000
Rebels	500---> 500	500---> 0	500---> 1000	500 ---> 500	1000 ---> 1000	3000

SUN April 25th, 2010 UNHQ FINAL MEETING- HEALTH STATISTICS- CHANGED



	Oure C	Toulum	Am Nabak	Gaga	Farchana	TOTAL
Deaths	120--->178	90--->0	30--->49	162--->217	117---->248	
Malaria	50---100	50---0	50--->50	50---> 50	100--->200	400
Diarrhea	150--->500	50---->0	50--->50	50---50	200---->400	1000
Measles	1--->10			1---5	100--->200	
Cholera	0--->2					
CMR	2--->2.3	2-->0	1---> 1.1	1.8--->2	2.6---->3.2	0.44--->0.9

Appendix 4- Bugs on the Ushahidi HSI Platform

When viewing the main webpage, the site would stall for prolonged periods of time. Reloading the site or clicking on another tab and returning to the main page would often fix the problem.

We were also unable to set the background timeline to the current 2010 simulation, excluding the data from 2009. With a few clicks this was possible, but we anticipate students with multiple demands would best learn from more a more controlled interface.

Unique to the HSI simulation, a broad range of events occurred in a compressed area and time period. A more granular timeline (by the hour) would have been more useful, but may not be reflective of other real events.