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CASE COMPETITION

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Collaborating, learning, and adapting (CLA) have long been a part of USAID's work. USAID staff and implementing partners have always sought ways to better understand the development process and USAID's contribution to it, to collaborate in order to speed and deepen results, to share the successes and lessons of USAID's initiatives, and to institute improvements to programs and operations. Through this case competition, USAID and its LEARN mechanism seek to capture and share the stories of those efforts. To learn more about the CLA Case Competition,

Mapping a Crisis: AidData Students Respond to Nepal Earthquake

Ashley Napier, AidData

What is the general context in which the story takes place?

On April 25, 2015, a 7.8 magnitude earthquake occurred in Nepal with a remote, mountainous region at its epicenter. Following the event, AidData connected with local partner organizations to determine how staff and students could assist both short-term disaster response efforts and long-term reconstruction activities. Several undergraduate students at AidData - William & Mary took a strong leadership role in coordinating AidData's response efforts to the earthquake. Through two, on-campus open mapping training events and a data portal, built and supported in coordination with AidData's Research and Evaluation Unit, students, faculty, and staff created an online dashboard to provide information resources in direct response to needs of partner organizations on the ground in Nepal. Because of AidData's current partnership with USAID to improve the provision of sub-national, georeferenced data, the organization was uniquely positioned to assist our partners on the ground.

What was the main challenge/opportunity you were addressing with this CLA approach or activity?

In the wake of the earthquake in the Kathmandu Valley in late April, AidData staff contacted in-country partners in Nepal to identify how we could best support recovery efforts. Several partners, including Save the Children, highlighted the need for sub-national, geo-referenced data on the location of critical infrastructure, such as hospitals and schools, in the Kathmandu Valley and surrounding region, as well as raw satellite data on sites of damage from the earthquake. Ultimately, with the help of a diverse array of actors, AidData was able to provide georeferenced YouTube videos, mapped news reports, OpenStreetMap data, crowdsourced satellite-based damage reports via Tomnod, and NASA damage estimates on its portal in order to guide on-the-ground decision-making.

The key challenge for AidData staff involved quickly collecting such granular data and being able to package it with other forms of available online data in an accessible format for our in-country. How did we overcome such obstacles? Students at the College of William and Mary proved instrumental in being able to gather en-masse and on short notice to find sources of available data and coordinate closely with AidData's data analysts to upload such data, in real time, on AidData's Nepal online decision support portal. The "first responder" work demonstrated the ability of a massive pool of capable, hardworking, and motivated students to leverage the tools and skills that they have learned from AidData in order to swiftly and decisively respond to real-time disasters.



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The next challenge remains formalizing such data collection processes in order to shorten the gap between the next disaster and the first response to it - we believe that AidData's response to the Nepalese earthquake proved a step in the right direction for doing so in future efforts.

Describe the CLA approach or activity employed.

In the days immediately after the Nepal Earthquake, AidData students organized to support crowd-sourced mapping efforts through two venues: OpenStreetMap (led by Lu Sevier '16) and Tomnod (led by Harsh Desai '14). These events trained approximately 60 students to support relief efforts by providing data which could help responders identify areas of need. Additionally, AidData students and staff mobilized to create new geocoded data on the location of news reports and YouTube videos of the event to be included in an online data portal to assist partners on the ground.

Students were given a brief presentation by the AidData research assistant team on how to use the [Humanitarian OpenStreetMap Team](#) (HOT) platform, which allows volunteers and users from around the world to create online maps when major humanitarian and natural disasters strike. The students then carefully combed through incoming aerial imagery of Nepali landscapes for buildings, roads, and residential areas damaged by the earthquake. Students joined thousands of other mappers around the globe to document the damage, and as of late July, this global effort had provided over 111,000 updates to the map of Nepal. Students also examined before and after satellite images of the earthquake to pinpoint areas of destruction outside of Kathmandu for rescuers and aid groups using [Tomnod](#) — a project owned by [Digital Globe](#). Students targeted both specific regions outside of the city proper as well as georeferenced information on where shelters were located. In response to direct requests from local partners in Nepal, AidData provided landslide risk data to better assist targeted relief efforts.

With support from Tomnod, the USAID GeoCenter, ESRI, and CartoDB, this data was packaged with other forms of data (i.e., raw satellite imagery) and delivered via an [online portal](#) to on-the-ground partners as well as partners in the U.S. Government involved in the earthquake response. Partner organizations then gave feedback, helping to better guide both the types of data students were collecting as well as the locations students focused on. Ultimately, this effort led to the provision of georeferenced YouTube videos, mapped news reports, OpenStreetMap data, crowd-sourced, satellite-based damage reports via Tomnod, and NASA damage estimates. The data was then used by our partners to drive on-the-ground decision- making.

Were there any special considerations during implementation (e.g., necessary resources or enabling factors)?

One critical challenge to implementation was the need for an extremely fast turnaround. Because of the nature of disaster response, we needed to act quickly and accurately. There was no room, or time, for errors. Our in-country partners had to make decisions quickly about how to mobilize scarce resources. The on-the-ground situation was changing *by the minute*. We were finding more information as time went on, especially damage in remote villages. The question was, how should we navigate this firehose of information? AidData's efforts to collect the data and build the data portal required technical expertise to be applied with agility and rapid iteration and learning.

The most critical success factor for implementation was the combination of William & Mary data science researchers and undergraduate students. Their contributions to data collection and mobilization made our efforts to respond to requests from partners not only possible, but also reasonably sustainable. Implementation was also made possible by staff members who were willing to act first and ask questions later. AidData is by no means a disaster response or "first responder" organization, but in this particular instance we had researchers and students who spent a weekend diving into the creation of an online data portal, a task totally separate from their regular work responsibilities. There was no organizational precedent for taking on such a task, but AidData's Research and Evaluation Unit and AidData students saw a need and a way they could help, so they acted decisively and adapted their approach along the way.



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What have been the outcomes, results, or impacts of the activity or approach to date?

In Fall 2015, we will return to conducting activities and providing support in-country with local partners who utilized the data. In the interim we have a few quotes that point to potential positive impacts from such real-time response-based collaborations:

USAID GeoCenter (in a communication to the Global Development Lab)

“William & Mary students and staff rallied earlier this week to initiate their own voluntary geocoding effort in support of the open mapping community. Their map of geocoded videos is particularly insightful.”

Save the Children - Local Nepal Office

“Thank you Dan for your effort and support. Please send message to students as well that their effort has really supported us to make decisions on recovery in Nepal.”

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“As the geographic information officer for USAID’s Nepal response, I am working with folks at the embassy to put together a product to aid them with situational awareness. There are a couple of layers that have been included on the AidData web map portal that really add to what we are putting together.”

Inspired by the response following the Nepal earthquake, the students that led the mapping effort plan to create an OpenStreetMap club this Fall for more opportunities to gain cartographic and technical skills and to equip a body of students to be prepared to respond to support future disaster response mapping efforts.

What were the most important lessons learned?

Be creative. Disaster data can be useful to a wide range of actors, provided that it is available in a timely fashion. Think broadly about the types of useful and relevant data that you can produce - and do it quickly.

Be usable. Satellite data can be difficult to use if you don’t have the right tools at your fingertips to effectively interpret the data. AidData’s online portal is one such tool, but even that platform posed difficulties in being able to integrate and readily display a variety of data in a low-bandwidth scenario.

Be humble. In the aftermath of the earthquake, a multitude of organizations within Nepal and around the world sought to improve information flow for relief efforts by providing data portals. Don’t get caught up in the fray, but instead respond to direct requests for assistance. Don’t step on anybody’s toes, especially those working in-country to provide much needed relief.

Be resourceful. AidData’s Nepal Information Portal would not have been possible without the help of students at the College of William and Mary. Leveraging the power and “wisdom of the crowd” can help make fast headway on critical data challenges.

Be instructive. Students are a frequently untapped resource in addressing data shortages in times of disaster. With the right training and guidance, these young people can help quickly scale data collection efforts. Offering both video tutorials and short, in-person trainings are relatively low-cost ways to provide students with the necessary skills to contribute quickly and effectively.

Be realistic. Data is useful, but it is not a panacea. It is not a substitute to effective, on-site disaster response and relief. It is one part of a larger toolbox to quickly and efficiently tackle significant obstacles due to limited information.

Is there any other critical information you would like to share?



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The partnership of the Global Development Lab with institutions of higher education is an example of how it is possible to leverage top scientists and the enthusiasm of students around pressing development challenges. Due to this pre-existing and ongoing relationship with USAID, via the Higher Education Solutions Network and with Save the Children (a Cornerstone Partner), and to motivated William & Mary, AidData staff were positioned to rapidly collect, collate, and transmit spatial data to practitioners. In addition, partnerships with key organizations in Washington, D.C. and in Nepal were able to guide our data collection efforts and ensure that the spatial data collected was relevant and timely.