

→ ESSENTIALS:

There's no lack of data during a crisis -
but it needs a filter: the ability to sort
the information by role and context

An aerial photograph of a coastline, showing a large bay or inlet on the right side. The water is a light blue-grey color, and the land is a mix of green and brown. The overall tone is muted and somewhat desaturated.

DATA IN

An aerial photograph of a tropical cyclone, showing a well-defined eye and spiral cloud bands over a vast expanse of blue ocean. The cyclone is positioned on the left side of the frame, with its eye clearly visible.

DISASTER

— SURE, DATA INTELLIGENCE WON'T AVOID NATURAL DISASTERS, BUT IT CAN BE MUCH MORE THAN JUST AGGREGATED STATISTICS. IF DONE RIGHT, IT PREPARES FOR THE UNEXPECTED BY OPENING UP NEW WAYS TO MAKE MORE RELIABLE PREDICTIONS ABOUT FUTURE EVENTS.

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ART OF HUMAN NATURE may be the will to dominate nature: to tame its fire, direct its waters, harvest its air and light. In certain areas of life this might be more or less successful – for example, as far as the use of modern technologies for renewable energies is concerned. Indeed, the elements can be used to a certain extent, but at some point natural forces become unpredictable and incalculable: earthquakes, hurricanes, volcanic eruptions, tsunamis, droughts, and floods have their own rules.

Really unpredictable? Just take a brief look at Mongolia, where pastoral farming communities have seen dramatic changes in the past 20 years, especially in the strength and frequency of so-called zuds. These are severe, blistering winters often preceded by drought, resulting in insufficient pasture and hay production in the summer. Since the year 2000 more than 20 million head of livestock

have perished in zuds – an existentially threatening force of nature for more than 300,000 households, with far-reaching consequences, such as limited access to health care, education, and government support.

How could data intelligence help? With a tiny little device, that most herders can hold in their hands. The majority may have access to radio and television broadcasts, but neither provide the hyperlocal weather information they need to make critical decisions such as when to shear sheep, harvest hay, or go to the market, as the International Institute for Sustainable Development (IISD) writes in “Big Data for Resilience.” Mobile phones, on the other hand, have the potential to close the information gap, the IISD continues. Approximately 95 percent of the rural Mongolian population use them, making text messaging a convenient and cost-effective way to access information.

Aggregating data is just a start

That’s why in 2016 the SMS-platform AWI, short for Advanced Weather Information System, was

NEPALESE VILLAGERS UNLOAD FOOD AND RELIEF MATERIAL AT SIRDIBAS VILLAGE IN GORKHA DISTRICT, SOME 250 KM NORTH-WEST OF KATHMANDU. IN DECEMBER 2015, THOUSANDS OF NEPALIS WERE STILL LIVING IN TENTS MONTHS AFTER A MASSIVE EARTHQUAKE



“DATA SUPPORTS OUR ABILITY TO INNOVATE IN REAL TIME”

Desiree Matel-Anderson, “chief wrangler” at the non-profit Field Innovation Team, on how to create cutting-edge disaster solutions based on data intelligence.



On one hand, disasters are messy, chaotic situations, but on the other, they’re exactly the sort of circumstances in which data intelligence can help to make sense of the chaos. How?

WE LOOK AT A LOT of different sources, points of view, and types of mediums, like Twitter, Facebook, news, and local anecdotes. We take all this information to provide our team with awareness of the situation, and begin to map the data – sometimes through data visualization, and at other times through charting or mapping. We do this to figure out the most complex challenges communities and first responders are facing: where is the need greatest? And what is not currently being solved? We believe strongly that the community and first responders have to be engaged in this. We always defer to communities and first responders as the experts, and check to see if our data is mirroring their requests.

Has big data changed the way that it adopts natural disaster management strategies?

AS FAR AS FIT GOES, big data supports our ability to innovate in real time and to take on challenges that communities and first responders face, by working with them to create solutions for response and recovery. Data helps us focus on what problems to solve. Additionally, big data gives us a perspective, especially when you have resources like social media that provide a voice for impacted citizens. For example, in a disaster, if we perceive that there is a vocal majority in one area describing the same concerns, it helps us to know where to put boots on the ground. Alternatively, if we do not see any data coming from a geographic region, it might lead us to conclude that that area may not have power or Internet and may be in need of resources.

Would you say there’s a “new ecosystem of big data” evolving to monitor and detect natural hazards?

WELL, NOT REALLY a “new ecosystem.” Look, we’ve been working on data for almost a decade and performing analytics, response, and recovery analysis in major disasters. Our role in the ecosystem is to empower humans to create fixes for cutting-edge disasters – we believe that disasters and the events that follow can be unpredictable, and so we need to innovate in real time. We utilize a three-step design process and work with communities and emergency management during emergencies to solve the most complex challenges being faced. And data, as step one out of three, gives us the information that allows us to know which challenges to focus on.

launched “in Mongolia’s most disaster-prone communities, in order to provide weather forecasts, forage information, and emergency alerts down to the sub-district level, using a technology already widely adopted.” Users who submit an information request to the platform can then choose between a three- or six-day real-time weather forecast or a local forage and emergency report. “When the platform receives the request, the system fetches real-time information from a cloud-based server, plugs that information into a text message, and returns it to the user, who can

expect a response within two to five seconds,” as IISD summarizes.

Putting all information in one place, while giving people access to it, is good and crucial for every data-based project. “But aggregating data is just a start,” says Lightship CEO Jaethan Reichel. Lightship, a software platform that integrates information from in-field data capture, sensors, and mobile asset tracking, aims to create a common view that supports better decision-making in emergency management. “What often happens is that people become overwhelmed,”



ANIMAL HERDER ALTAN NARAN, 37, BECOMES MORE PRODUCTIVE AND RESILIENT IN HER HERDING BY TRAINING HER TO USE THE SMS SYSTEM SO SHE CAN GET WEATHER FORECASTS A WEEK IN ADVANCE. "IN 2009 WE LOST MORE THAN HALF OF OUR LIVESTOCK," SHE SAYS. "IT NEARLY WIPED US OUT."

Reichel continues, "there's so much information that they're supposed to review that they may end up ignoring all of it." It needs a filter, the ability to sort the information by role and context that allows even nontechnical users to find and employ the information that's relevant to their specific context or role in making better, faster decisions.

Learning from impact

Beneath these key findings – unlocking the potential of data to make it discoverable and accessible, guaranteeing a robust data assessment to enhance analysis and forecasting capabilities – data in disaster has to be "actionable," as the IISD puts it: "An important element of any initiative is learning from impact. Understanding the way in which data translates into actions that build resilience plays a key role in that process."

Faced with an enormous challenge, such as during and after a disaster, a lot of data from news, social media, and conversation is informally passed along by first responders, survivors, and the community, says

Desiree Matel-Anderson. She calls herself the "chief wrangler" of the Field Innovation Team, FIT, whose volunteers from across the globe not only deploy to disasters but also work on disaster risk reduction and resiliency efforts. "It's important to verify the information and fact-check. An example is what our team did during the Boston Marathon bombings – our Canadian teammates checked news media, social media, and on-the-ground information to verify the data and then help responders, including the FIT members on the ground during the bombings, who were helping to set up the emergency operations center."

From hurricanes to droughts, from severe winters to earthquakes, from volcanoes to tsunamis, data intelligence is much more than just aggregated statistics. If done right, it can put decision makers in the driving seat. Of course, it can't prevent natural disasters, for which appropriate solutions must always be found, so that societies can keep going afterward (see opposite page). But it opens up new ways to make it possible to more reliably predict future events, so that people can be better prepared for the unexpected. ✕

DISASTER MANAGEMENT

JUST IN CASE

Data intelligence might be one example of how to support disaster management in case of emergency. Another one is shown by an ingenious plan designed in 2017 by Banco de México to support the continuity of cash distribution in any specific part of the country affected by natural catastrophes.

THE PLAN IS AIMED AT SECURING

the supply of banknotes in places where the banking infrastructure has collapsed – as cash is the only form of payment that can be used immediately in times of crisis. Operated by Banco de México, Mexico's Banking Association, Banjercito – a bank specifically created to provide banking services for the Army and Navy – the Ministry of Finance, and supported by the Army and Navy, the plan consists of four stages and runs until services are normalized. "When three out of four bank branches in any particular Mexican city are unable to operate, the assistance phase of the plan is activated," says Alejandro Alegre Rabiela, General Director of Currency Issuance and Main Cashier at Banco de México. "Banco de México, the Banking Association, and Banjercito will do their best to install cash service modules in no more than 24 hours," Alegre continues.

Banjercito and Mexico's Banking Association determine the number of cash service modules to be brought to the affected region, the quantities and denominations to be sent, and the maximum amount allowed per transaction at each module. Banjercito notifies Mexico's Banking Association, the Ministry of Finance, and Banco de México when the Cash Service Modules start operation and informs them of their locations, so that they can arrange for the local media of the affected region to publish the information. Residents of the region are subsequently informed about the module locations, the maximum amount that can be withdrawn per transaction, the type of valid cards, and any other valuable information regarding the operation of the cash service modules.

"Banco de México will transport, in one or more aircraft, the banknotes, the cash service modules, and Banjercito's personnel that will operate the equipment," Alegre adds. While the plan is being implemented, banks will not charge customers fees for withdrawing banknotes. When the banking infrastructure is functioning at least at 50 percent of its standard capacity, the assistance phase is over, and the cash modules are removed from the sites.

In general, data intelligence opens up new possibilities for disaster management before, during, and after a crisis; it is changing humanitarian operations and crisis management. For example, the G+D Data Intelligence® suite can help to define the



Mexico City's "Plaza de la Constitución" is one of the largest and most famous city squares in the world

required locations and numbers of cash service modules in advance, based on predicted cash demand. Additionally, it can assist with the transport and logistics of equipment, personnel, and banknotes to ensure the highest possible reliability and efficiency. It allows operators to point all decisions in the right direction based on key data and facts – be it in Mexico or elsewhere.

In Mexico the plan to support the continuity of cash distribution was put into operation, for example, during October and November 2017, after an earthquake affected the state of Oaxaca, where damage to banking infrastructure was severe. Thanks to this plan, cash requirements for 114.7 million pesos or 5.8 million US dollars could be satisfied.

See also: www.gi-de.com/mexico

**KEY CASH-CYCLE COMPONENTS**

Population	121,567,000
Central Bank Offices	1
Bank Branches	17,940
Number of ATMs	48,118

Source: G4S, Global Cash Report, 2018