Stanford SOCIAL INNOVATION Review

What's Next

On-Demand Medical Drone Delivery

By Noël Duan

Stanford Social Innovation Review
Fall 2018

WHAT'S NEXT

NEW APPROACHES TO SOCIAL CHANGE

Zipline's just-in-time drone-delivery technology has helped transform Rwanda's medical supply chain.

TECHNOLOGY

On-Demand Medical Drone Delivery

BY NOËL DUAN

Delivery by drone is not a novelty for Silicon Valley-based startup Zipline—it's a matter of life and death in the regions that the drone-delivery system serves. In October 2016, the company launched an on-demand service in contract with the government of Rwanda to deliver more than 50 different types of blood products (blood, plasma, and platelets) for immediate medical treatment.

Rwanda was an ideal first partnership country for Zipline: It has one of the highest population densities in sub-Saharan Africa, and 70 percent of the population lives in rural areas. Zipline operates two distribution centers carrying three days' worth of supplies, which together distribute drones to all 10,169 square miles of the landlocked country.

While Zipline markets itself to governing bodies as a logistics service, the company does not contract with other drone manufacturers—it makes its own. "There was no technology like this when we started," CEO and founder Keller Rinaudo says. On opposing ends of the price and functionality spectrum, there were $60 million military-operated devices and $100 plastic helicopter toys—both of which were drones. Zipline designed a drone that can handle flights of more than 100 kilometers over autonomous areas and can be easily maintained. It does not plan to sell its self-proclaimed "automotive grade" drones. "Our customers don't care about drones at all," Rinaudo says. "[They] want to focus on taking care of their patients."

Zipline dispatches a drone with a package to the healthcare practitioner who ordered it via SMS or WhatsApp. Delivery takes 15 to 25 minutes. Rinaudo claims that the boxes don't need a cold chamber because the deliveries arrive before the products lose integrity. But more scientific studies must be done before drone delivery can be claimed to be entirely safe for medical supplies, says Bruce Y. Lee, associate professor of international health at the Johns Hopkins Bloomberg School of Public Health. "The situation is that heat can denature proteins in vaccines or other biological products like blood," he explains. "It can change the nature of the product. Most likely it's not a concern, but we need more studies."

Despite his caution, Lee supports using drones in the supply chain because they can reduce costs up to 50 percent compared with land-based transportation, which requires human personnel. Furthermore, a drone-based delivery system could lessen the workload for medical practitioners, who, in many rural areas, simultaneously serve as doctors, transporters, and suppliers.

Integrating with the local community is an essential concern to Zipline. Currently 30 of its 100 employees are Rwandan. "There aren't many other opportunities to become an expert in robots there," Rinaudo says. "In parts of the world, drones have a negative connotation, associated with military," Lee adds. "We can't underestimate the fact that people fear when they see drones." Rinaudo acknowledges this association, but credits the support of the local government for the positive reception of Zipline's integration by Rwandans into the national health-care system. Before Zipline contracted with the Rwandan government, lack of infrastructure contributed to excess waste of blood products—a common supply-chain issue in many other countries.

Though Zipline is the most established example right now, other companies are manufacturing drones specifically for humanitarian purposes. This year, Netherlands-based Wings For Aid is testing its own remotely piloted aircraft in the Dominican Republic. "Tech that is available to military forces should also be available to the humanitarian world," founder and general manager Barry Koperberg says. "A lot of innovation comes from public forces. The Internet, mobile telephones—all invented by the military."

Organizations like Wings For Aid look to Zipline as an excellent initiative for small-cargo payloads. (Wings For Aid's drone is larger and meant for carrying 20-kilogram boxes full of disaster relief supplies, such as blankets and water.) And Zipline has the results to show for its efforts in streamlining the medical treatment supply chain: In Rwanda, access to rare products has increased

PHOTOGRAPH COURTESY OF ZIPLINE

NOËL DUAN (@noelduan) is a writer, editor, and researcher living in San Francisco and New York City.

PRIYA SHANKER is the deputy director at Stanford University's Center on Philanthropy and Civil Society (Stanford PACS).

Pratik Sinha cofounded the nonpartisan fact-checking website AltNews to set the record straight while curbing the spread of misinformation on social media.

by 168 percent and blood waste has decreased to zero. Hospitals no longer have to keep in stock what they don't need. Since the program's inception, the company has delivered 12,000 units of blood on more than 6,000 flights in Rwanda. By the end of 2018, Zipline will operate in rural North Carolina—its first North American contract. ■

CIVIC ENGAGEMENT

Combating Fake News in India

BY PRIYA SHANKER

In early 2017, a gruesome video of a young girl being lynched by an angry mob began spreading rapidly through WhatsApp. The accompanying text claimed that a Hindu girl in the Indian state of Andhra Pradesh was being punished for refusing to wear a burqa after marrying a Muslim man.

When staff at the nonprofit fact-checking website AltNews.in began looking into the authenticity of the video and the accompanying narrative, they noticed that the people in the video did not look Indian, nor did it sound like they were speaking an Indian language. In addition, none of the other women in the video were wearing a burqa. A simple Google search revealed that the video had been shot in a Guatemalan village in 2015 and the girl was attacked for being an accomplice in the murder of a taxi driver.

AltNews shared international coverage of the actual incident with links to the original video through its website, social media accounts, and its WhatsApp broadcast lists. It also traced the earliest instance of the message to a Facebook page with apparent ties to right-wing Hindu nationalists. This was one of dozens of fake news stories that the AltNews team busted in its first year.

"It probably took us five minutes to get to the bottom of this story," says Pratik Sinha, cofounder of AltNews, "yet most people do not think to check the veracity of even the most obviously misleading stories."

Sinha was working as a software engineer in the city of Ahmadabad when he cofounded AltNews in 2017 with the anonymous administrator of "Unofficial: Subramanian Swamy," a parody Facebook page of the Indian politician. They had each spent several years attempting to debunk fake news on social media. While together they had more than one million Twitter followers, they found themselves stuck in an ideological bubble, unable to reach the people that such misinformation seemed to affect most. They launched AltNews with the hope that an independent online platform would have a wider reach.

AltNews' six full-time staff members fact-check stories on a broad range of topics, including politics, science, education, and religion. All content is licensed under Creative Commons and is free to reproduce with attribution. As a new entrant to India's crowded media landscape, AltNews still has to prove its credibility, but its articles are increasingly being referenced or republished in mainstream publications, Sinha says.

The website describes its methodology in painstaking detail in an effort to substantiate its claim as a fair, transparent, and nonpartisan fact-checker. Sinha hopes these guidelines empower other people, including professional journalists, to do their own fact-checking.

Sinha recognizes that AltNews will need to work with local law enforcement, civil society, and technology companies in order to have real impact. In July 2018, the team met with the police commissioner of Ahmadabad to propose a pilot program for collaboration between fact-checking websites and local government and law enforcement to curb the spread of misinformation. AltNews is also working with Google to design a fact-checking curriculum for journalists.

PHOTOGRAPH COURTESY OF MANTHAN

Last year, rumors of child abduction rings began floating around via WhatsApp messages in the Eastern state of Jharkhand, leading to lynchings of suspected child kidnappers. Similar rumors have since spread in different parts of the country, and at least 20 people have been lynched in recent months.

"The peer-to-peer nature of WhatsApp messages and the fact that it is often the only window to the Internet for people in small-town and rural India makes it uniquely advantageous for spreading fake news," Sinha says.

Looking ahead, AltNews plans to develop its own mobile application that will allow individuals to submit stories they would like to see fact-checked. The idea is to track the frequency of requests for a particular fake story and track users' geo-coordinates to determine where fake stories are spreading. AltNews would then notify local law enforcement to curb potential violence resulting from the false rumors.

"Fake news has become an epidemic of sorts in India," says Ravish Kumar, a senior journalist and television anchor for NDTV India. "AltNews has institutionalized the busting of this misinformation machine when few in mainstream Indian media have had the courage to take it on." ■