

Technology to the Rescue

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The trio of powerful hurricanes that impacted Florida, Texas, Puerto Rico, the Virgin Islands and the rest of the Caribbean in 2017 left large swaths of destruction in their wake and much work to be done to restore business and infrastructure operations. To assist in the response and recovery processes, many organizations turned to technology, such as drones, digital imagery and remote sensors, cloud computing, business intelligence software, social media and smartphone apps.

There is no shortage of technology that can be used to help keep people in touch today, and that is particularly instrumental in weathering disaster for businesses and individuals alike. Al Berman, former president of the Disaster Recovery Institute International (DRII) and current president of the Disaster Recovery Foundation, believes the most important aspect of disaster recovery efforts is “communication, communication and more communication that can advance search and rescue efforts.”

Indeed, amid natural catastrophes, the most valuable technology tools are those that can help guide and inform people before, during and after disaster, Berman said. Technology can offer critical insight to first responders, helping them survey the full scope of damage, identify precisely who needs help and where, and establish whether travel to execute these efforts is possible and safe. Such tools are also critical to businesses as they try to stay in touch with staff and stakeholders and work to restore and maintain operations.

In preparing for disaster, companies must navigate the ever-growing market of emergency technology products to identify which will be most appropriate, relevant and affordable for their specific disaster recovery needs. To that end, every enterprise needs to assess their business continuity and recovery requirements. According to Ali Asgary, associate professor of disaster and emergency management at York University in Ontario, Canada, there are seven key business continuity considerations that an organization must assess:

1. What is the situation for your employees pre- and post-disaster? How will they be able to communicate with management and each other after such an event? Will you have disaster-proof facilities and technology in place to allow them to continue to either work from a safe, centralized location or work remotely?
2. Do you have a business continuity plan that employees and management can easily access in a reliable and, possibly, disaster-proof format?
3. How will you protect your enterprise's critical data? What sort of technology or technological redundancy can help you protect and retain access to this data during and after a crisis?
4. How can you best manage post-disaster communications with stakeholders, including customers, suppliers and distributors?
5. Can technology assist in protecting your business facilities and equipment from disaster-related damage?
6. Can technology assist in assessing and managing your supply chain and distribution routes post-disaster?
7. If the use of technology is critical to your business, to what degree can this technology operate with alternate or redundant power sources? Do you have such a backup power source in place?

It is also critical to assess to what degree the technology used for everyday business can double to assist in the event of a weather-related disaster.

“For business, it's very important that any technology you select be transferrable to everyday business life so that there is no learning curve and you and your employees already know how to use it,” said Desi Matel-Anderson, former chief innovation advisor at FEMA and current chief wrangler at the Field Innovation Team, a nonprofit that creates disaster solutions for organizations.

Several technologies have become increasingly common and essential tools for government agencies, rescue groups and business entities in their disaster recovery efforts, including in the wake of this year's hurricanes:

Social Media and Smartphone Apps

Social media tools are “democratizing” disaster response efforts, allowing people to communicate more easily with first responders, said Jeff Schlegelmilch, deputy director of the National Center for Disaster Preparedness at Columbia University. They also help businesses stay in touch with both their customers and employees. “When 911 goes down, as it often does in a disaster, social media can help people stay in touch,” he said.

Social ties within communities have long played a role in disaster recovery, and Daniel Aldrich, director of the



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Security and Resilience Program at Northeastern University, believes social media can really live up to its name in that regard. From Facebook and Twitter to community-focused platforms

like Nextdoor, social media can be equally if not more important than physical infrastructure or disaster kits in ensuring recovery. For example, he said, "We saw in Houston, after Hurricane Harvey, the power of the Cajun Navy, an ad hoc, volunteer group of boat owners who have their own Facebook page and successfully helped many people get out of dangerous situations."

Some people used Facebook's Safety Check feature or posted on Twitter to share their location and safety status. Aggregated data for such Twitter activity can also be analyzed in real-time to identify important disaster trends.

When communications go down, some businesses stay connected through social media messaging platforms like WhatsApp or Facebook Messenger. Businesses should provide guidance on how to communicate via social media with employees, suppliers and customers during and after a disaster. "Such tools can provide confidence and helpful information to customers and make them feel that the business is making an effort to come back," Asgary said.

Their use can backfire if companies fail to respond to customer queries or to provide helpful information, however. Matel-Anderson pointed out that there have been instances where social media posts and algorithms have distributed misinformation, for example, so businesses using these tools should make sure any safety information sent out via social media is verified by at least two other sources.

Ideally, experts say, a business will have access to multiple tools to ensure it can spread timely information in the event of a disaster. Such tools include pagers, two-way radios, or rescue base stations that allow mobile phones to receive signals and operate despite network limitations. After Hurricane Harvey, for example, rescuers used a walkie-talkie app called Zello to stay in touch, save people from floodwaters and locate supplies.

There are also smartphone apps that can allow employees to remotely access the company's disaster recovery plan and other business continuity resources. The Extreme Events Institute at Florida International University developed one such app, Bizaster, specifically for small and medium-sized businesses. It is available in English and Spanish for iOS and Android devices and features a toolkit with resources for creating risk assessments and customizable checklists. FEMA's app also provides business continuity planning information.

Business Intelligence Software and Cloud Computing

Schlegelmilch sees business intelligence software—which is "already in the DNA of many companies" and familiar to employees—as an essential tool for business in the aftermath of disaster. "It can inform a business about the status of its overall systems, identify what operations are open and what are not, what is functioning and what is not, and what stores in a given system are selling and not selling," he said.

Project management software and newer tools like Slack that facilitate communication among decentralized work groups can also help employees stay in touch so that businesses can continue operations as much as possible. Unfortunately, all of these platforms fundamentally require access to electricity and/or the internet to function, and those may not be available in a disaster zone.

For companies that have operations both in and out of a disaster zone, use of the cloud can help mitigate the risk of business disruption during a disaster by providing redundancy and distributing data across multiple locations. When a hurricane or other catastrophe occurs, business data stored in the cloud can be accessed outside of the disaster zone to continue conducting business. Companies can also implement continuous availability technology that can simultaneously update transactions in mirror systems at multiple sites in real-time to avoid disruption if a disaster occurs at one site.

Of course, no backup and redundancy system is foolproof and storing data in the cloud or making it remotely accessible carries cyber risk implications, so businesses must assess the risks and benefits of such solutions and mitigate the associated risks.

Digital Imaging and Remote Sensing

Digital imaging and remote sensor devices can be valuable after a disaster, helping to provide precise, real-time information about terrain and the condition of business facilities. Cameras or thermal imaging tools, for example, may be positioned on-site or attached to drones, planes or satellites for aerial views.

Specifically in the aftermath of a hurricane, flood or earthquake, such images can help assess facilities' infrastructure status or flooding conditions and provide valuable information about routing and road conditions. Meanwhile, shortwave infrared cameras and LIDAR sensors—a technology that uses laser pulses to make precise elevation measurements—can help with the development of 3D models and algorithms that can quickly detect debris piles and dangerous routes. This can help first responders and businesses get people and supplies in and out of damaged areas. Virtual and augmented reality technology can also be employed to help employees familiarize themselves with emergency evacuation routes and procedures.

Drones can be very helpful in both rescue efforts and insurance adjustment after a disaster, but their use is currently limited by flight range and by FAA requirements that drone pilots be certified and keep drones within their line of sight.

Planning Ahead

The list of disaster recovery technology products grows continually. For example, when cellphone service goes down, wireless spray antennas can be used to provide connectivity. Flatbed trucks equipped with solar panels provide portable power stations that can charge hundreds of mobile devices and even function as temporary cell towers. After Hurricane Maria destroyed the power grid in Puerto Rico, Tesla's solar panels were used to restore power in some areas, and Alphabet's Project Loon program deployed its solar-powered, high-altitude balloons to help provide internet, Wi-Fi and cellphone service to residents.

Technology is fundamental in modern disaster recovery, but even as these innovations power better, faster catastrophe response, traditional risk management practices remain critical. In addition to evaluating and implementing new tools, businesses still need to focus on traditional disaster planning and a well-rehearsed business recovery strategy. "Good planning is a critical piece of the disaster recovery process and is interdependent on your technology choices," said Eric Kant, digital engagement committee chairman for the Internal Association of Emergency Managers. "Your business recovery depends on both."



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