Riding the wave of preparedness

From raging wildfires throughout California, to devastating floods in Peru and back-to-back cyclones across Australia's northern coastlines, the last year has reminded us once again that natural disasters are an unfortunate but inevitable reality.

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The need to keep a vigilant eye on the world's most disaster-prone areas – and indeed to improve preparedness wherever possible – never stops. In this wave of preparedness, we can already see emergency services agencies, community members and government authorities collaborating to make moves for a safer future across land and sea.

Whilst interagency collaboration is key in this movement, integrating state-of-the-art technology tools is what is keeping emergency services agencies ahead of the game.

From Virtual Reality used to train new personnel and the public on exit routes, to LiDAR technology used to scan areas to assess their level of fire risk, we know that whilst technology can't prevent natural disasters, it holds the undeniable ability to build powerful preparedness and response tools. One common denominator across many of the advanced preparedness tools is Geographic Information Systems (GIS). GIS provides a vital function by injecting an understanding of the where into preparedness and response action, leading into more efficient response and recovery.

Powered by this technology, what we are seeing across the board, is that by following a few simple steps – and with support from emergency services agencies – individuals within at-risk communities can improve their level of preparedness, before a disaster or emergency occurs.

Let's look at some of the key considerations in community preparedness.

Communication of risk

First, it is important for individuals to know their own risk level and the areas of highest risk of disaster or fire within their local area. By mapping and analysing hazards within the community, and considering the land makeup of an area including vegetation level, slope density and wind speed, we can begin to prioritise where to begin preparations before a disaster strikes – even narrowing in to which areas are most at risk and what preparations can be tailored to such areas to reduce this risk. Collating this information requires collaborative action at the government, agency and citizen levels.

When we look at the events of Houston's Hurricane Harvey of 2017, many of the impacted people and businesses were not even aware they were in or near a high-risk flood region. This resulted in a lack of personal preparation for many families, including unplanned family evacuation routes and a lack of flood insurance that would have helped after the devastating flood damage to many homes.

Learning from Houston's experience, the county of San Diego, California took a proactive approach to tackle similar issues. In an effort to help citizens understand their personal risk and promote the importance of their own personal preparedness, the county developed an interactive mapping tool – Know Your Hazards. It allowed residents to enter their specific address and see the precise level of risk they faced from hazards specific to their geographic location.

As most of San Diego's hazards can occur without warning, the reality is that citizens are likely to have less than 15 minutes to evacuate when an emergency strikes. Therefore, informing the community of their risk has been a high priority for the region. The key takeaway here is that by knowing their hazard risk, residents can understand what actions they need to take in order to be better prepared. With autonomy around safety placed directly in the hands of members of the community, we can see that with more preparedness steps in place comes more resilient communities.

The benefit of the advancements in technology we are continuing to see means that every community now has the ability to create a tool like this. Providing citizens with access to information in an easy-to-use interface that can be used on a computer or mobile device, gives everyone a powerful dose of situational awareness.

The nuts and bolts

Evacuation routes and zones have long been regarded as one of the, simplest, yet most impactful tools in an emergency situation. However, to be successful, this important tool needs to be communicated accurately and effectively to the public. With the right information, people living in at-risk areas can develop a personal evacuation plan well in advance of a disaster or emergency. When an evacuation order is issued, people can know when to leave based on their location, and they will be familiar with their directed route to safety.

Even before Hurricane Irma ripped across Florida, Puerto Rico, Saint Martin and other at-risk areas, the Florida Division of Emergency Management distributed an interactive map which provided information on evacuation routes and zones to better inform the public. This online map allowed citizens to access this tool from any device – a smart phone in the car, or a desktop at home – to monitor the situation and take action as early as possible.

Data sharing

Data sharing has been a key theme for improved efficiency and transparency across the board. When looking to support collaboration during a disaster, sharing emergency data is no different. Communities need to prepare their data just like they prepare other critical systems. From a few common data feeds – such as traffic data; weather and storm tracks; precipitation forecast and accumulation amounts; and flood gauges – not only do emergency services personnel better understand the situation in real-time as it unfolds, but members of the community can gain a deeper understanding of their area and what might still be to come.

For information sharing to be effective, it's important to remember that no response effort occurs in a silo. With today's more complex and violent disasters, outside agencies and mutual aid are necessary to support the response effort in saving lives and property. In order for multiple agencies and organisations to have access to this vital data, developing a well-thought-out method of sharing information before a disaster strikes will facilitate a productive collaboration during the emergency response.

Social media can be used as one of the key channels for this kind of information to be communicated to the public in real-time and across multiple social media platforms. During Hurricane Harvey, the crowdsourced information gleaned from Facebook and Snapchat for example, were extremely important for rescue operations. This public information also helped response personnel by painting a picture of the rapidly evolving impact the flooding was having across the city. Authorities could see the areas that were underwater and those that remained dry whilst the disaster was still unfolding.

Providing readily available access to both agency and government open data, along with crowdsourced information provides first responders with stronger situational awareness to use within response efforts – a vital preparedness step.

Understanding the 'where'

Within all of the information required for both preparedness and response, it is critical to understand the where in every situation. From knowing where your response assets lie, to identifying the locations of at-risk communities requiring specialist response techniques:- understanding where this all sits on a map ties this information together. At the core, location is vital in the lifesaving practice of preparedness.

Whether mapping resource locations as they are deployed for response and recovery, or mapping shelter locations, medicine caches, and food banks, knowing the location of these assets can support the release of vital resource information to the public when it is needed the most. This information is critical for everyone, but for vulnerable populations relying on certain medications or treatments, knowing where to find the necessary resources and support in an emergency could be the difference between life and death.

As an example, organisations like Direct Relief, a US-based aid provider, use demographic information to analyse different factors that may contribute to populations showing increased vulnerability to disaster. Direct Relief recognises that in extreme weather events, the heaviest price is usually borne by the most vulnerable communities because lower income areas within cities are often located in areas with a higher flood risk. Before Hurricane Harvey made landfall in Texas, Direct Relief created a map showing the exact locations of vulnerable areas within Houston, enabling informed decisions to be made as to how best support these citizens and where to target aid to support those who needed it the most.

The old adage goes, 'an ounce of prevention is worth a pound of cure'. When it comes to preparedness, an ounce of preparation allows response teams to recapture a pound of time when every second counts in the face of an emergency.

Meet Ryan Lanclos when he comes to Australia this October to share his expertise on emergency management – drawing on his experiences from across the globe.

Learn more at esriaustralia.com.au/lanclosaus