How technology helps communities

Everyone in today's world has a part to play when it comes to planning and prevention for flooding, says **Christopher Berry**. And technology can give communities the tools they need to help protect themselves

"You lazy f***ers!" The call was loud and clear and said with angry gusto. The man's house was one of 50 or so now full of muddy water and sewage.

However, what he didn't know was that we responders had already been out working for 17 hours. Indeed, not only us, but every pump the brigade had available and several from other counties were involved in the response.

A series of violent storms had been raging; water had been falling from the heavens in a way that none of us had seen before.

Bodies recently buried were excavated from the local graveyard and deposited against a cemetery wall at one stage. I won't say where this is, but bereaved people have been visiting the wrong person's grave for years. It was a nightmare scene that remains with me today.

The angry man, exclaiming loudly to anyone in any form of authority, was right, in part. The government had not been doing its job, but neither had he.

Does this sound familiar? It should do. His persona still exists to this day. People who pay their taxes expect these things to be under the authorities' control. But the truth is that the authorities can never hope to get on top of everything.

Watercourses with grates designed to stop culverts from flooding had remained uncleared for years; ditches and land drains filled with rubbish had become blocked, causing roads to turn into streams and rivers; and flood relief gates remained closed (they had been planned for flood fields, but not towns).

The events described above took place towards the end of the 1970s when climate change did not raise the warnings it does now.

The situation is only going to get worse unless we have a shift in mindset.

Flooding is a modern-day commonality; there is hardly a six-month gap between significant events. Climate change means floods can happen anywhere and at any time. And all of those gullies, those that councils and the environment agencies decline to adopt, will not clear themselves.

But with technology, it doesn't have to be this way.

For example, regular, automated and prompt reminders now send working parties of volunteers to clear non-maintained grates and gullies. These teams already exist in the UK and the European Union to maintain and protect the community and reduce home insurance costs.

Volunteers now patrol many of the roadways around where I live, taking bags and bags of rubbish away from gullies and ditches. They have made a significant difference.

It's all about mobilisation – the ability to mobilise first responders, contractors and volunteers. Everyone in the modern world has their part to play.

Of course, paid first responders will already have some form of mobilisation and control mechanisms in place, but local councils and volunteer agencies generally do not. Typically handled in an ad hoc manner, many incidents go unprepared for, relying heavily on word of mouth. Planners focus on more significant happenings when the reality is that minor incidents can soon get out of hand, connect with other incidents and become substantial, major events.

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Simply logging what a responder does just does not cut it any longer. Incidents need to be planned for. The mobilisation of experts, paid workers or volunteers is essential in order to be proactive about what incidents we want to deal with and prepare for.

And it is in this area that environmental sensors have made leaps and bounds. Sensors and warnings are available for flooding, general weather, water quality and power management (robotic river patrols) and for tide and recreational water safety.

And sensors can also be used for other purposes, such as mobilising tree surgeons based on public reports of fallen branches and trees; or they can deploy flood barriers when groundwater and sensors indicate a rapid water rise. It is possible to send alerts to the public before people decide to river bathe or surf in testing conditions.

Indeed, almost any aspect of modern-day life can now be modelled and dealt with efficiently. The key is to make plans and build responses, and such libraries of resources are becoming more significant by the day. Companies like Initsys and its Merlin software, which is developed from techniques used on the battlefield, convert an increasing number of incidents into actionable strategies; all that is required is a connection to those agencies that are detailed with dealing with the incident.

Local Resilience is a low-cost subscription service providing a managed platform that gives communities all the tools they need to deal with incidents – actionable rules, secure document storage, secure written and voice communication, notification and mobilisation. It has been designed to help small or large communities turn what would otherwise be paper processes into actionable digital scripts, many of which are automated.

Community empowerment

The UK Government is now giving communities more control in handling events themselves without the need to call Category 1 responders such as the emergency services, local authorities and National Health Service (NHS) bodies.

Traditionally, it would be down to several recognised responders to put any plans into action. In the case of a flood, these plans would include warning the local community, placing road signs out to close certain roads in the event of the flood presenting a danger to life, and alerting Category 1 responders if necessary.

Many of these processes can be automated using the Local Resilience service. For example, mass notifications can be sent out to the community and these alert recognised responders who are trained to carry out specific tasks.

We can do this owing to the data that tells us a flood is imminent or through a 'call to action' by a community member who will have access to a simple, easy to use web-interface that is custom-built for that particular community (see the article, *Calls to action in incident response*, *CRJ 17:1*).

Imagine how a well-thought-out, well-tested process could speed up the handling of an event such as a flood. Automating the steps that would otherwise necessitate a recognised responder flicking through a folder of contacts, picking up the phone and calling each one manually, can save hours of critical time.

What is more, by using the applications designed to work with Local Resilience, we can allow responders the flexibility to change the way an event is dealt with as it evolves, by escalating or de-escalating based on its severity. It is also possible to keep track of all the data received as the event is taking place.

This, in turn gives, communities the tools they need to fine-tune their processes themselves and to assess how they can perform better. CRJ

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