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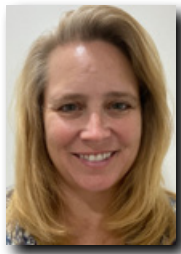


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# Bringing Back the Preparedness Mindset

By Catherine L. Feinman

*Since 1998, DomPrep authors and readers have touted the need to prepare for disasters. There is a consensus among preparedness, response, and resilience professionals that forethought is the key to community resilience following a disaster. The desire to prepare is demonstrated through action: innumerable studies and best practices have been written, trainings and exercises have been conducted, and equipment purchases have been made. However, planning documents, practice scenarios, and more resources are not enough. Preparedness needs to be a mindset that stakeholders embrace daily.*



**C** OVID-19 is a good example. Experts discussed the scenario of a global pandemic, they conducted tabletop and full-scale exercises using this scenario, and yet many organizations and government agencies still were unprepared when faced with the actual event. Going through the motions in a mock scenario may not be enough to ensure rapid response under real-life conditions. [Red teaming](#), which involves out-of-the-box thinking, is one way to maintain a preparedness mindset. It is about more than creating scenarios and participating in exercises. It is about being ready to act and implement plans as soon as they are needed.

[Situational awareness](#), using technology and coordination between key stakeholder groups, is also a critical component for creating the right mindset. [Telecommunications](#) and previously developed relationships can ensure that limited resources are available and positioned where needed. However, without regular interpersonal communications and maintaining a strong preparedness focus, valuable time may be lost in responding to a crisis. [Volunteer and community organizations](#) can help fill this gap and strengthen preparedness efforts, but only if they are fully incorporated into the process.

Preparing for a disaster is not the same as being prepared for a disaster. Athletes are told to practice like they play. When it comes to disasters, though, stakeholders may need a reminder that the opposite is also true: “play like you practiced.” Preparedness needs to be engrained. It is not about remembering what to do in a specific scenario but about taking a practiced scenario and adapting the decisions and responses to the real-life factors and components that may or may not have been previously addressed. This edition of the *DomPrep Journal* encourages readers to keep preparedness on the tops of their minds.

# Red Teaming for Disaster Preparedness

By Kole (KC) Campbell

*Many companies and government offices were unprepared for the COVID-19 pandemic and sustained lockdowns, despite years of warnings and guidance from experts and the federal government. This lack of preparedness cost companies dearly, from delays in setting up work from home software to supply chain disruptions that could have been mitigated against – if not prevented. In addition to better business continuity planning, the use of red teaming could have possibly spared certain organizations' reputation hits and some monetary losses. Similarly, organizations can use red teaming or a red team mindset to bolster disaster preparedness.*



Many organizations engage in business continuity planning and disaster preparedness planning. The thoroughness of these efforts varies depending on executives' support and the competence of the planners. However, humans suffer from cognitive biases, and groupthink plagues many organizations. Red teaming helps to counter these limitations. According to the U.S. Army University of Foreign Military and Cultural Studies ([UFMCS](#), or "Red Teaming University"), "Red Teaming is a flexible cognitive approach to thinking and planning that is specifically tailored to each organization and each situation." Although red teaming is ideally conducted by a group trained in its techniques, simply approaching disaster preparedness with a red team mindset can pay dividends. The first known case of red teaming was conducted not by a group, but an individual.

## ***History of Red Teaming***

In the early 1500s, Pope Leo X established the position of Promoter Fidei, or Promoter of the Faith. Its formal title was advocatus diaboli (Latin for devil's advocate). In 1587, Pope Sixtus V formally established the office. [The role](#) was to scrutinize beatification and canonization – the last steps in the process of the Catholic Church declaring someone a saint. The devil's advocate's scrutiny resulted in a drastically reduced [number of canonizations](#), until Pope John Paul II downgraded and altered the office in addition to implementing other [changes in 1983](#).

Militaries have also used red teaming after major losses or surprises. After the Prussian army's losses to the French in the 1790s, a Prussian officer invented [Kriegsspiel](#), the first table-top war game used by a modern military. It is credited with contributing to the Prussian defeat of the French in 1871. After the Israeli government ignored numerous indicators in 1973 of an impending Syrian and Egyptian invasion that became the Yom Kippur War, [Israeli military intelligence](#) established a devil's advocate office.

## ***Three Types of Red Teaming***

Red teaming has three forms: vulnerability probes, simulations, and alternative analysis. Vulnerability probes, also referred to as penetration testing, is the most common. They are used in both the cyber and physical security fields. Red teaming can also be simulations

such as tabletop exercises. The [New York Police Department](#) conducts these exercises ahead of major events. For example, prior to Pope Francis' visit in 2015, the NYPD simulated a hurricane hitting New York City, which would have eliminated the use of maritime or aerial assets. The third type of red teaming is alternative analysis, which provides decision makers with viewpoints that are usually [outside the "mainline" or authoritative analysis](#).

Although it cannot predict or prevent a disaster, red teaming can better prepare communities to respond to the disaster. Two scenarios demonstrate how red teaming could have mitigated the devastating consequences of past disasters.

#### *Scenario 1: "Red Teaming" Threats to the 1972 Munich Olympics*

In the early 1970s, terrorist attacks were common, including in Europe. Prior to the 1972 Olympic Games in Germany, Munich Police psychologist Georg Sieber developed 26 terrorist attack scenarios. Scenario #21 was very similar to the actual Munich hostage crisis and involved an attack on Israeli athletes in the early morning hours. Based on Sieber's scenarios, he recommended that athletes be housed together in the Olympic Village by sports instead of by nationalities. According to [Sieber](#), "There were all kinds of agencies, from America to China, who said, 'We heard something and this and that will happen'"

*This critical thinking tool on unlikely yet plausible events challenges an organization's assumptions and presumptions about triggering and cascading events.*

Seiber was not mentally constrained by groupthink or the fact that there had never been a terrorist attack on the Olympics. However, his scenario planning was ignored, including by the Munich police chief, who was responsible for the games' security. On 5 September 1972, the Palestinian terrorist group Black September stormed the Israeli dorm in the Olympic Village, killing two Israelis. Nine Israelis and a German police officer were killed in the failed hostage rescue attempt at a NATO (North Atlantic Treaty Organization) air base.

#### *Scenario 2: Black Swan Fallacy of COVID-19*

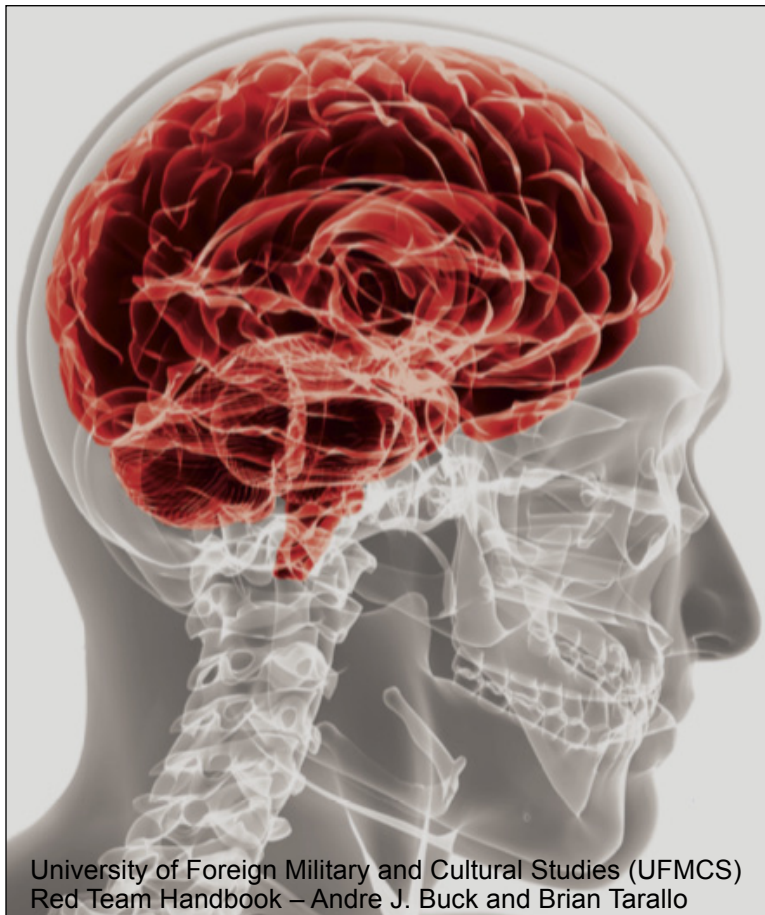
Many corporate executives have claimed that the COVID-19 pandemic could not have been expected or planned for – that it was a "black swan" event. Black swans are extremely negative events or occurrences that are unexpected and nearly impossible to predict. In essence, they are unknowable. However, red teaming or any semblance of such an effort might have noted a few events over the past two decades that could have facilitated pandemic preparedness.

The 2003 outbreak of the Severe Acute Respiratory Syndrome (SARS) coronavirus (named SARS-CoV) resulted in more than 8,000 cases and almost 800 deaths in 26 countries, a case fatality rate of 9.6%. In six months, the outbreak cost the world an estimated [\\$40 billion](#).

In June 2009, the World Health Organization declared the start of the first flu pandemic in 40 years. The novel H1N1 flu virus (the so-called swine flu) [killed an estimated 284,000 around the world](#) from April 2009 to April 2010.

In 2009, the Occupational Safety and Health Administration, a U.S. Department of Labor entity, published its [Guidance on Preparing Workplaces for an Influenza Pandemic](#). It warns that a pandemic could be “an extended event” with outbreaks that might occur over a year or more. The document also outlines measures recommended by governments and medical professionals 11 years later such as the stockpiling and use of personal protective equipment, administrative controls (e.g., policies that encourage ill employees to stay at home without fear of any reprisals), work practices (e.g., social distancing), and engineering controls (e.g., installing sneeze guards between customers and employees).

In 2012, Middle East Respiratory Syndrome, a novel coronavirus identified as MERS-CoV was first reported in Saudi Arabia. From 2012 into 2019, [MERS-CoV infected 2,442 persons and killed over 800](#) around the world – [a case fatality rate of 35%](#). There is no vaccine for MERS.



The 2014 Ebola epidemic in West Africa was the first in history. It ended in early 2016 with more than [28,600 cases](#) in 10 countries (most of the cases were in Sierra Leone, Liberia, and Guinea) and 11,325 deaths. The case fatality rate is 40%, although the rate could be as high as [90%](#). The U.S. Food and Drug Administration approved an Ebola vaccine in December 2019.

The 2017-2018 flu season is possibly the [worst in recent U.S. history](#). There might have been 61,000 deaths and over 800,000 hospitalizations, based on preliminary data.

Additionally, for at least the past two decades, government officials and medical experts have repeatedly warned about the possibility of a global pandemic, especially as

deforestation increases human contact with wildlife. However, many organizations suffered from the failure of imagination that prevented them from preparing for any type of pandemic. Red teaming, for example, might have prompted companies and government agencies to test and exercise processes and software for remote work long before the start of lockdowns in March or April 2020.



## ***Red Teaming Natural Disasters***

The UFMCS manual notes that natural disasters can be used in a couple of red team techniques. For example, natural disasters can be a triggering event in high-impact/low-probability analysis. Organizations can use this critical thinking tool on unlikely yet plausible events like black swans. So, a natural disaster could be a plausible but unpredictable trigger that causes cascading effects, challenging an organization's assumptions and presumptions. Another critical analysis tool in red teaming is "what if" analysis, which examines less intuitive and less likely outcomes. It challenges expectations. If an organization has the expectation that roads and bridges used by a key supplier will always be available because they have always been available – even after major disasters – it can be best to ask "What if that is not the case?"

Organizations on the west coast – especially in Washington, Oregon, and northern California – would be remiss if they did not red team the potential effects of "the big one" on their organizations. The big one refers to [potentially devastating 8.0 to 9.0 magnitude earthquake](#) caused by the Cascadia subduction zone, a fault line that extends from northern California to southern British Columbia, from well offshore to eastern Washington and Oregon. An earthquake of this magnitude and ensuing tsunami might kill 13,000 and injure over 25,000. In Washington, 350 bridges might take two or more years to repair or replace, and some highway segments might take more than two weeks to repair.

Other potential disaster types in other regions and parts of the world should drive organizations to pursue red teaming. Businesses on the Gulf Coast or those that rely on products from the Gulf, for example, should consider potential consequences of the big one. The effects of climate change – regardless of what is causing it – that are already evident in recent natural disasters makes a new cognitive approach even more urgent. Red teaming is not the panacea for every possible disaster or crisis an organization might face. And the practice often fails to get the support from decision makers that it should. The [defunding](#) of the U.S. Army's Red Teaming University, which takes effect on 1 October 2021, and other [similar military programs](#) are examples of the low priority given to red teaming.

However, groupthink and using the black swan excuse to not think outside the box to prepare for future disasters might be setting up an organization for failure.

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# Situational Awareness for Multi-Stakeholder Collaboration

By Akshay Birla

*In an emergency response, multiple groups of stakeholders such as city, county, state, and federal agencies are brought together to solve a crisis or execute a mission. While groups of individuals from within an agency may have a shared understanding of their mission, organization, hierarchy, and norms of engagement, proper coordination between distinct groups takes time, trust, and practice. By the nature of these missions, these are scarce and often intangible resources. Situational awareness through software and expert practitioners substantially increases the odds of mission success.*



Situational awareness should enable stakeholders to perceive, comprehend, and predict their environment. However, leaders must understand that if their solutions do not enable lower-order situational awareness (i.e., to enable basic perception and comprehension), their ability to meaningfully predict will be limited, fancy graphs notwithstanding. Data analysis is dependent on data collection, which in turn relies on the underlying workflow. The generally underappreciated aspect of situational awareness is that it is predicated on tooling that must span from end-user workflow to higher-order analytics.

## ***Tooling & Process***

However tempting it may seem to standardize workflow for the purpose of convenient higher-order situational awareness, effective workflow must principally meet the operational realities on the ground. It is highly unlikely, for example, that data that would fail to help stakeholders perceive or comprehend an issue can still hold meaningful and causal predictive power. Therefore, situational awareness is predicated on and inseparable from workflow and process.

For example, mass vaccination sites must leverage a collaborative tracking solution to administer thousands of vaccines per day that can be configured to have multiple steps – for example, appointment validation, screening, data collection, vaccination, and observation. For sites that are administering only a couple hundred vaccines a day, such a process would be excessive since two or three people could manage the entire workflow – with everyone doing more of the process and the site requiring fewer specialized queues.

## ***Training, Feedback & Supervision***

If situational awareness is predicated on workflow, workflow is in turn dependent on a system that spans training, feedback, and supervision. When running an activated site, even if fully staffed with individuals familiar with the software that is being used, it is important to recognize that users may not be familiar with the configurations or the implicit assumptions underpinning the workflow.

For example, there is a centralized system used across the country for data collection, including for data that is submitted to the U.S. Department of Health and Human Services

(HHS). However, each state has its own deadline on when data must be submitted. Several states allow several hours for their data teams to be able to review and analyze data before it is sent to HHS, whereas some states prioritize giving their stakeholders additional time. Underlying every operation is a host of such assumptions that must be made explicit to stakeholders as a precursor to training on the technology.

Next, training must be coupled with feedback – human or automated – for it to be appropriately absorbed. For example, daily reporting for HHS data collections automatically displays errors that violate certain logic – such as when the total number of occupied beds is less than the number of pediatric occupied beds – so that users are able to correct these mistakes and trace them down to source systems that may be configured inappropriately to generate this data. Feedback could also be delivered by a person. As an example, several states use their healthcare coalition leaders to ensure data accuracy and provide real-time feedback in instances where that is missing.

Finally, there needs to be a mechanism to hold people accountable to ensure that the workflow is being followed and data is being recorded accurately. This could also be automated or not, which may not matter but most often is missing as part of the initial design. Early adoption should include thinking about how to spotlight appropriate and inappropriate use of workflow. This could take the form of a dashboard that highlights individuals or entities that are following the processes consistently, flagging those that are lagging behind, and surfacing recurring data quality issues.

### ***Governance & Planning***

The ability to train people on systems and protocols becomes easier as general governance, planning capacity, and competency increase. Multiagency responses may occasionally have strategic ambiguity at the top. Stakeholders may believe that they have secondary and not a primary responsibility of an operation in order to protect their agencies from public consequences of poor mission performance. Even with strategic ambiguity, leaders must institute strong governance for processes that provide clarity to their operational teams and create psychological safety for them to conduct their duties.

A governance failure that will become a standard in case studies for future generations is the lack of clarity on a hospital dataset at the onset of the COVID-19 pandemic. In the absence of clear federal guidelines or recommendations, states created their own datasets to understand the impact of COVID-19 in communities, only to have to substantially redo the work in the onslaught of a new dataset, and a subsequent forced change in reporting mechanism that excluded the Centers for Disease Control and Prevention from the hospital data collection business.



Planning and technology are similarly intertwined. It is not uncommon to assume additional reporting obligations as a condition of receiving resources from stakeholders such as the Federal Emergency Management Agency. Part of planning, then, must be to explicitly make a path to compliance for reporting obligations and ensure that the workflow supports such needs. For example, when required to report on requests for public assistance during a disaster, it is highly unlikely to retrospectively collect that information without resorting to anecdotal evidence or collecting scraps of paper. Planning must account for collecting that information as a part of daily duties.

### ***Perspectives & Tradeoffs***

Experienced emergency management professionals know that they are constantly making trade-offs with each decision. Exceptional professionals can also quickly categorize them in order of importance and communicate these tradeoffs effectively. For example, agencies may forgo regular processes to formulate data requirements and ask their stakeholders seemingly simple data such as the number of beds available, only to find that hospitals have spent hours in meetings to decipher how to provide such a metric because of the lack of specificity in the official request. Solutions that improve situational awareness must be able to promptly correct such policy ambiguity to assist stakeholders in focusing their time on their local response. For example, the system that allows informational alerts and flexible updates to data definition prompts can be configured by each regional administrator precisely to ensure that communication is clear and direct.

An often underappreciated area where leaders can meaningfully contribute to situational awareness is by reviewing data and its underlying assumptions and sharing it appropriately with their stakeholders. How much to share often comes with experience – striking the right balance between too much and too little. Effective solutions must be able to partition exploratory analysis, which requires testing prior to wide consumption from reporting that must be shared. By accessing data through a [data lake](#) (a centralized repository to store all structured and unstructured data at any scale) and selectively sharing insights with specific groups, organizations can navigate this situation.

### ***Situational Awareness Solutions***

Although theoretically easy and intuitive to define, situational awareness is as much an art as it is a science. Software solutions enable the savvy practitioner to perform at the top of their skill and enables emerging professionals to do more than they otherwise would. Regardless of expertise and tenure, however, response professionals have access to more data than ever before to support more informed decision-making. Situational awareness solutions without corresponding expertise are at best incomplete. Since it can be overwhelming, it is best to partner with a technology partner that is deeply grounded in the preparedness and response domain to help translate expertise into scalable workflows, insights, and solutions. It is this type of partnership and mutual collaboration that helps truly further situational awareness.

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# Start or Restart VOADs/COADs During the Preparedness Phase

By Michael Prasad

*Volunteer and community organizations active in disaster (VOADs/COADs) operate best by using their four C's: cooperation, coordination, collaboration, and communication. Emergency managers can build or strengthen this whole community capability in their own jurisdictions through public-private partnerships (PPPs), by performing the four E's – empower, endow, educate, and entrust.*



The concept of government utilizing PPPs in support of events, incidents, emergencies, disasters, catastrophes, etc. is not new to emergency management. When planning the readiness actions needed across the entire disaster phase cycle (preparedness/protection/prevention, response, recovery, and mitigation), jurisdictions need to incorporate whole-community support of both their Emergency Support Functions (ESFs) as well as their Recovery Support Functions (RSFs), including their [mission areas and core capabilities](#)). The U.S. federal government supports and encourages this through both the [National Response Framework](#) and the [National Disaster Recovery Framework](#). Governments at their own jurisdictional levels are ultimately responsible to their citizens for disaster response and recovery (as well as preparedness/protection/prevention and mitigation). As the U.S. Department of Homeland Security (DHS) describes it, “The approach is locally executed, state managed, and federally supported.” Some level of government entity is responsible for each of the ESFs and RSFs, even if it defaults to the local Office of Emergency Management (OEM):

- Sometimes those partnerships lead with a strong supporting (or even co-lead) private sector partner, such as for ESF#12 – Energy. ESF#12 is led at the federal level by the U.S. Department of Energy (DOE) but has strong private sector representation at the state and local levels. Neither the DOE or the local OEM repairs and restores power lines after a storm, the local utility company does.
- For other ESFs and RSFs, there are partnerships where the governmental lead entity has a significant role (leads the strategic, operational, and even tactical missions and resources, for example, across the entire disaster phase cycle). In those scenarios, the private sector partner (and/or nongovernmental organizations – or NGOs) is more of a force multiplier, subject matter expert, or both. For example, in ESF#6–Mass Care, the American Red Cross is the national subject matter expert on congregate care sheltering and also deploys its own resources nationally for sheltering. In fact, the Red Cross is the co-

lead with the Federal Emergency Management Agency (FEMA) for mass care/sheltering at the federal level, and in many U.S. jurisdictions it is the co-lead for overall mass care as well. NGOs and private sector partners can also provide staffing and other logistic elements in many ESFs and RSFs, not just sheltering operations. The PPPs should be considered in scope beyond just a single ESF or RSF – and should encompass activities in the entire disaster phase cycle. The Red Cross also provides blood, community preparedness training and education, disaster health and mental health services, recovery casework, disaster damage assessment, feeding support, distribution of emergency supplies, community planning, and can even independently convene housing recovery groups supporting diverse communities. Many NGOs and private sector organizations can provide much more than just their flagship missions.

These partnerships can also bring in adjunct services that are not normally provided by government. Individual fundraising, collection, and distribution (i.e., support to specific families through donations from the public – especially for incidents where there is no, or insufficient, federal disaster assistance) are prime examples of services government does not normally perform. Many jurisdictions have these PPPs already in their emergency operations plans. The documented pre-planning is crucial – especially in support of cost-share benefits to the jurisdiction from volunteer efforts and donations – during [presidential declarations](#).



### ***Case Study: Joplin Missouri Tornado, 2011***

Using this whole-community approach, emergency management officials in Joplin, Missouri incorporated PPPs for support of the massive tornado that struck their community on 22 May 2011. What may happen after a significant disaster (especially those with high media coverage) is an outpouring of unsolicited financial, material, and human support. These aspects must be managed as well. Unsolicited (and many times untrained) human support of an incident can become a threat – and may even be connected to a possible attack on first responders or complex coordinated attack elsewhere. Material support (logistics supplies, equipment, etc.) also has challenges when unsolicited by incident command. Whether the items are being donated outright or just on loan, and what the liability issues

are if the donated/borrowed items do not work properly (or if responders are not properly trained to use them) are just two issues associated with donated materials and equipment.

*In the aftermath of the tornado, a very large number of volunteers spontaneously descended on Joplin to participate in response and, later, recovery operations. These volunteers were motivated, in part, by television broadcasts. Many of these lacked the training, supplies, and affiliations necessary for disaster response operations. AmeriCorps personnel from 6 different teams established and managed a Volunteer Reception Center on the [Missouri Southern State University] MSSU campus, which received 3,000 volunteer intake forms within its first 16 hours of operation. ([Federal Emergency Management Agency, 2011, p. 16](#))*

The combination of properly matched and collaborative donations of every kind, was also successful in Joplin to assist that community through response into recovery. Those PPPs and ad-hoc connections for material donations and volunteer hours provided that



community with the ability to cover their cost-share match (estimated at \$17 million) associated with federal disaster assistance (usually 25% of all project costs). In other words, for every dollar that the federal government (through FEMA, for example) sends to a local community, federal officials expect that local government to cover 25%. However, they will allow part, if not all, of that 25% to be covered by volunteer work and donations (in lieu of local

spending on materials and paid staff). The 2011 tornado was the first substantial declared disaster where the cost-share match was fully covered, so that the municipality (and the state) had [no bill to pay](#) for the federal public assistance provided.

### ***Case Study: New Jersey's Back-to-Back Declared Disasters – Hurricane Irene in 2011 & Superstorm Sandy in 2012***

In New Jersey between 2002 and 2011, the state level VOAD was a little more than a shell organization, kept active in name only by four lead partners: The American Red Cross, The Community Foodbank of New Jersey, NJ's 2-1-1 system, and The Salvation Army. Those four partners each had their own direct relationships with the New Jersey's Office of Emergency Management (NJOEM), which operates as a unit within the New Jersey State Police, as well



as directly with most of the counties and municipalities within the state. The Red Cross and Salvation Army are also national partners with FEMA and members of the National VOAD (NVOAD). When Hurricane Irene struck the state in 2011, [the 2012 summary report](#) from the NJOEM noted:

*Seventeen New Jersey counties opened shelters to support the evacuees. The night prior to Hurricane Irene's predicted arrival (August 27/28) there were 16,191 registered evacuees supported in shelters across the State. County shelters supported 13,864 evacuees and the State-sponsored shelters supported 2,327 Evacuees.*

[VOAD and COAD groups](#) were the lead entities to help individuals and families with clean-ups; as [only five counties](#) were part of the Federal Individual Assistance coverage, so not all families statewide with unmet disaster needs were assisted by government disaster programs. Five long-term recovery groups were stood up at the county level, coordinated through the NJVOAD at the state level.

*VOADs/COADs provide force multipliers, situational awareness/intelligence, and community connections; and have strong relationships with vulnerable populations.*

When Superstorm Sandy hit the East Coast of the United States in 2012, the damage to New Jersey was roughly ten times as strong as Hurricane Irene the year before. Those same four NJVOAD lead member organizations knew that even with a full presidential declaration with individual assistance for all 21 counties (which was received), there would be large numbers of families who would not have enough resources to recover fully from this storm. Many communities (especially in those five Irene-struck counties) were still recovering from the 2011 storm when the 2012 storm struck. The NJVOAD members *collaborated* for missions along three distinct areas:

- To organize recovery *coordination* calls, *communicating* statewide needs and capabilities along four specific areas, for which PPPs could support: construction, volunteer and material donations management, fundraising, and case management. These four series of calls included state level OEM officials and other applicable ESF and RSF leads. The NJVOAD and its member organizations would *cooperate* with government on missions. Governmental groups cannot use federal disaster public assistance to help in individuals' homes (Cat A debris removal work, for example), but NGOs can.
- To build out capability for each of the counties to support both the immediate need for long-term recovery groups (representing each of the 21 impacted counties – some counties chose to work together in two or three county

groupings, as their needs, as well as local resources were in many cases consolidated together with each other) and the structure to revert back to COADs and VOADs at the county level after the recovery phase had ended for that jurisdiction. In performing this mission, the NJVOAD needed to be bolstered with more direct staffing and support. Those four member leaders were performing double or triple duty: covering their Sandy Response missions for their own organizations and in many cases the day-to-day operations that restarted after the initial response period ended. The NJVOAD was awarded a \$250,000 Sandy Recovery grant from the American Red Cross to fund full-time staff positions (the first time in recent history that any state level VOAD has had paid staff) to support these and other continuing missions of the state's Sandy recovery. The NJVOAD has been successful in continuing these paid staff positions beyond Sandy, even today nearly ten years later. They have also been successful in supporting and sustaining all of the COADs/VOADS at the county level to be more resilient for the next major disaster to strike the state.

- To support the FEMA voluntary agency liaison and the NJ State voluntary agency liaison (the emergency management lead from the NJ Department of Human Services, which is the lead for ESF#6) at the Joint Field Office, by interfacing with national (and international) NGOs who were flooding the state with human and material resources [in support of recovery efforts](#). Without a concentrated effort to manage both spontaneous volunteers and unsolicited material donations, there is a real probability of a “[disaster within the disaster](#).”

Although this state and all subordinate jurisdictions ultimately had a zero-dollar cost-share portion for federal public assistance of this massive storm – due in large part to the congressional funding obtained through the Hurricane Sandy relief bill – the volunteer hours and donated materials were in the tens of millions of dollars in value to the state (the NJ Red Cross assistance alone was valued at \$22 million).

### ***The Four C's & Four E's***

Emergency managers can capitalize on the VOAD movement's four C's – [cooperation, coordination, collaboration, and communication](#) – for not only the relationships between VOAD/COAD groups, but also internally within governmental groups that support disaster response and recovery, and in-between the governmental and NGOs/private sector groups. The application of [meta-leadership](#) by emergency managers can help influence and direct the support provided through PPPs, especially since those groups are not under their day-to-day command and control. As with all partnerships, these must be established and cultivated throughout the disaster phase cycle, especially for preparedness/protection/prevention. The “Four E's” can make that happen:

- **Empower** – Emergency managers need to write VOADs/COADs into their emergency operations plans. Follow the standard planning, organization, equipping, training, and exercising for all hazards and all disaster phase cycles, with VOADs/COADs as equal partners to any other support partners (the jurisdiction may not allow them to be lead partners). Incorporate them with other ESF and RSF partners, both governmental and nongovernmental. Treat them and support them as any other professional partner. If the model is to share situational awareness and intelligence beyond law enforcement to all other command and general staff branches of the Incident Command System (as it should), do not exclude the VOADs/COADs simply because they are considered “outsiders” or “just volunteers.” This also works both ways. With this PPP, the emergency management group will have a force multiplier of information and intelligence gathering capabilities.



- **Endow** – At the top level within the jurisdiction, VOADs/COADs need to be continually funded, especially at the state/territorial level. Unlike a long-term recovery group, which can be turned on after a presidential declaration event, COADs/VOADs need to be active throughout the disaster phase cycle. This takes funding. Include COADs/VOADs in mitigation project funding, preparedness grant requests, etc. Support them through policies, public information, and partnerships, and try not to compete for funding against them. The Red Cross has a preparedness program that installs free smoke alarms in homes across the country. They get donations of these alarms from national manufacturers. Therefore, a jurisdiction that solicits for alarms for their own fire department to distribute would be effectively circumventing the PPP and hindering that NGO’s ability to fundraise and respond to other disasters.
- **Educate** – Part of the PPP should include cross-training and educational opportunities. The jurisdiction needs to train PPPs on their specific EOC protocols, for example, the same way they train any other partner. VOAD/COAD

members should be able to take ICS courses and other NIMS positional training alongside governmental organization partners. In addition, the VOAD/COADs' own training should be made available to the governmental organization groups. These collaborations build networking as well. Again, as noted in "empower" above, exercise with the VOADs/COADs and cross-pollinate the observers and evaluators for the after-action reviews/improvement plans. Many of the VOADs/COADs have professionals on staff who have national-level experience in a wide variety of disaster scenarios. The jurisdiction will benefit from their outsider viewpoint much more substantially than from just hired consultants.

- **Entrust** – Although empowerment is the first step in formalizing the relationship and connecting the VOAD/COAD with the ICS (i.e., empower), the last and most critical step is to build mutual trust and belief that they and any other internal group (police, fire, emergency medical services, public works, etc.) can perform well. A fire department, for example, has rules, duties, missions, etc. that they will perform regardless of their paid/volunteer status. In other words, as an emergency manager, one already entrusts fire departments with completing these actions. There can certainly be a demand and requirement that the VOADs/COADs bring to the table the training and leadership experience needed for life safety, incident stabilization, and property/asset protection. However, when they are part of the response and recovery missions, they should be treated the same as any other internal partner, or even members of that jurisdiction's own emergency management team. If this aspect is considered too much of a burden, or just considered as a whole community checkbox to be checked, this PPP will not succeed.

Observe how other emergency response groups in the jurisdiction must be nurtured and sustained – a VOAD/COAD is no different. They must stay active and engaged in all disaster cycle phases to be continuously available and resilient to serve in response and recovery.

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# Telecommunication Overload – The 2021 Edition

By Erik Westgard

*“Telecommunication overload” is a commonly used term that is a regular feature of various emergency scenarios. However, one fact needs to be remembered. Although some copper carrier network pieces are still in place in the United States, nearly all new investment is going into fiber backbones and updated wireless services. Fiber networks are designed to handle extra capacity easily and wireless technology is advancing rapidly.*



There is a fine line between reading after-action reports and preparing to fight a previous battle. People are still talking about the cellular telephone network overload observed just after the 1 August 2007 I-35W [bridge collapse](#) in Minneapolis. There was also an overload of cellular services in Boston, Massachusetts after the 13 April 2014 Marathon Bombing. However, the carriers were able to make some adjustments in each case to [handle more load](#).

At the start of the 2020 COVID-19 lockdown, questions were raised about whether carrier/service provider networks would be able to handle the increased and changing load caused by the COVID-19 shift to working from home. There was a significant surge in the use of video conferencing services like Zoom. And the increase in work-from-home conference calls was certainly testing the capacity of cellular and landline telephone networks.

In May 2020, telecommunication carrier leaders released some figures. Traffic was [up nearly a third](#) in voice calls and data/internet services.

In general, the U.S. carrier networks were fine. The fact that response times to key applications and services such as Google and Amazon were normal was a good sign. Internet and network access can be [hindered](#) when small data units (i.e., packets) are unsuccessful in completing the send/receive process. Slow network response time is a fairly solid indication of such packet loss from network congestion and an overloaded network.

## **Legacy Networks**

Decades ago, microwave radio networks and copper coaxial [cable networks](#) crisscrossed the country. Telephone wires were actual wires and undersea cables to places like the United Kingdom and Europe were copper. An iconic invention around 1960, [T-carrier](#) and [T1](#), allowed over a million bits per second of data or up to 24 telephone calls to travel reasonable distances over two pairs of copper wire. The network T1 service was designed to be (and was) over 99.7% reliable.

In modern times, this reliability and solid engineering turned out to be a problem. In the face of vast increases in data rates and changing call patterns (such as the cellphone), many T1 users (including carriers) were reluctant to get rid of them. Nevertheless, the current demand for data transmissions is far beyond the capabilities of the T1. If a T1 was full, a new one would need to be installed, which was normally a 30-day process. With copper wire's fairly poor handling of higher data rates over long distances, telecommunication carriers are trying to phase out [legacy copper services](#).

### ***Current Technologies***

Fiber optic technologies are now widely used. Over a fiber optic cable, made of strands of glass or plastic, [wavelength-division multiplexing](#) can be used to add more colors of light to carry more data, and carriers can light up unused fiber strands to add capacity. So, if there were a traffic spike, say during a pandemic, carriers could fairly easily add capacity in the fiber network.

*After several generations of new technical standards and a few hundred billion in investment, is telecommunication overload less likely?*

Vast capital has been deployed (and is still needed) to install fiber networks. The need for more investment in fiber is widely known, often in the context of rural broadband projects.

### ***Voice Services***

The transmission of voice is also changing. Analog voice technology was common for home phones, which could generally use one pair of wires. These wires would connect, for example, the copper plant to the local central office a few miles away. Calls were multiplexed onto a T1 and sent over the network.

Currently, voice over IP technology is taking over, albeit more slowly than expected. Calls are converted to data traffic using a technology called a CODEC (Coder Decoder). A common one in modern cellular/LTE networks is [adaptive multi-rate audio CODEC](#). This requires less than 40 or so kilobits of bandwidth per call, including overhead.

In addition, many cell sites are being upgraded to support [5G](#), with a minimum speed of over 50 megabits. More than 100 megabits is more common, usually with fiber pulled to the cell site. A fiber-fed cell site can then handle many calls. Prioritization systems have been developed to manage priority site data and voice use, with voice as the top priority followed by levels and types of data users.



Cell sites for data services (like LTE or 5G) can also utilize traffic prioritization. For example, after voice calls, a public safety official who needs a building drawing would be able to obtain priority over the crowd of bystanders at a fire scene streaming live over the Internet.

Hackers, malicious attacks, and misconfiguration can still cause circuit overloads. Very long power outages can strain fuel distribution to generators. However, the fiber is there, and the newer wireless standards are as well.

COVID-19 tested the durability of modern telecommunications systems and, in general, the systems passed the test. For public service agencies and emergency responders, this is promising. Unless a local cell tower is toppled by wind or flooded by storm surge, it is likely to be operable during an emergency. If an organization or agency needs or is eligible for prioritization services, those are often available as well. Although ongoing technological developments are needed to meet or exceed the growing demand for voice and data services, the fear of telecommunication overload tends to be greater than the actual threat – at least for now.

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