



Digital Transformation NETWORK

A Business Software Alliance Initiative



AI for Disasters and Emergencies

Preventing, Predicting, Protecting

Accidents *do* happen—and so do earthquakes, floods, wildfires, tornadoes, and hurricanes. From ambulance crews waiting for the dispatch call to aid workers on the frontline of conflicts, the world is full of everyday heroes willing to help in times of need. Artificial intelligence (AI) is proving to be an incredible resource for them in strengthening systems, predicting natural disasters, and rebuilding lives and infrastructure in the aftermath of crisis situations.

The scale of the task for emergency preparedness and response (EP&R) organizations is constantly growing. According to the UN,¹ in 2026, 239 million people need urgent humanitarian assistance due to the impact of war, climate change, and other emergencies. The economic toll is enormous as well: Swiss Re Institute reported that² last year, natural catastrophes caused \$107 billion in insured losses across 190 events. The Los Angeles wildfires caused \$40 billion in insured losses, the costliest wildfire event on record.

AI can help in multiple ways. Better modeling can give powerful insights into when and where disasters will strike. AI models can help synthesize huge amounts of visual information from civilians on the ground to help emergency management personnel make key decisions in disaster response. Post-disaster recovery is another domain where AI can support operational improvements, from processing aerial imagery to getting critical infrastructure back online.

This report explains how AI supports organizations that respond to disasters and emergencies worldwide.

BEFORE

How AI Works Upstream to Predict and Prepare for Disasters and Emergencies

DURING

Fast, Effective Disaster Response, Powered by AI

AFTER

AI's Utility for Recovering, Reconstructing, and Rebuilding

It can help support aid workers, too. “Many EP&R organizations are strained to unprecedented levels trying to match the enormous scale of disasters while still delivering the individualized care each survivor needs,” [Deloitte noted](#).³ “Fortunately, generative AI has emerged as a transformative force that can potentially ease the pressure on EP&R personnel.”

The practical impact of AI in the world’s most extreme situations is already impressive. This report explores in three sections examples from BSA members where AI has helped mitigate the impact of disasters and emergencies.

BEFORE

How AI Works Upstream to Predict and Prepare for Disasters and Emergencies

“Digital technologies have transformed the information available to crisis policymakers, offering unprecedented insights from disaster settings even as increasing data availability complicates their efforts to separate signals from noise,” the Brookings Institution wrote in [Breakthrough: The Promise of Frontier Technologies for Sustainable Development](#).⁴ Although prediction models are stronger for climate-based incidents than challenges such as forced displacement and deadly conflict, progress is being made across the board.

AI is particularly good at repetitive tasks that may be tiring for humans, such as continuous environmental monitoring, which is important for early warning systems, a [panel of EU scientific advisors noted](#).⁵ An AI-supported step as simple as [translating extreme weather warnings quickly](#)⁶ can help get people informed and evacuated, saving lives. Here are more stories where AI is helping support humanitarian efforts before disaster strikes.

DX AT
WORK**Prepare to CARE With Readiness Research**

CARE works in 109 countries worldwide, supporting women and girls to fight poverty and promote equality. To deepen its understanding of its emergency preparedness in high-risk countries, [CARE teamed with Microsoft Tech for Social Impact and Microsoft partner Valorem Reply](#).⁷ Together, they used Microsoft Azure OpenAI Service to build a sentiment analysis solution that evaluates staff survey responses at scale.

After surveying more than 15,000 women in 15 countries, CARE found that 91 percent led or actively participated in community response. They provide meals and shelter, advocate for change, and offer health services—all to make communities safer. “We have been blessed to have Microsoft as a partner,” says Cherian Varghese, Director of Data Science and Analytics at CARE. “With the greater awareness from the sentiment analysis tool, country offices can act on what they need to do to reach 100 percent emergency readiness.”

DX AT
WORK**A Watershed Moment for Fayetteville**

Fayetteville, NC, has always dealt with flooding from the Cape Fear River, but changes in weather patterns have made the problem worse. Public Services Director Sheila Thomas-Ambat turned to an array of consultancies and **Autodesk's** Infoworks ICM (integrated catchment model) to come up with an ambitious plan to tackle the issue, starting by surveying their stormwater assets across the entire city and developing solutions for watersheds across the entire region.

As Thomas-Ambat told an assembled crowd at Autodesk University, “We were able to show that we reduced the 100-year flood plain by 136 acres, eliminated three-and-a-half miles of impacted lane length, prevented more than 144 structures from flooding, and provided a \$25 million benefit in flood risk reduction and property damage.”

DX AT
WORK**Disaster Resilience for a Tropical Paradise**

United Nations Educational, Scientific and Cultural Organization (UNESCO)'s Disaster Prevention Strengthening Program aims to establish a scalable, data-driven model for disaster preparedness and responses of small island nations that face increasingly severe natural disasters. The Solomon Islands, located in the South Pacific Ocean, face frequent threats from earthquakes, tsunamis, cyclones, droughts, and flooding—making it an ideal blueprint for other small island developing states to see how cutting-edge technology can democratize disaster resilience.

[UNESCO selected EDiSON](#),⁸ an AI-powered disaster risk management system that runs on **SAP** Business Technology Platform, to serve as a transformative solution to enhance national preparedness and response capabilities. It integrates diverse types of information, including real-time, visual meteorological data and historical data records, to drive predictive insights and smarter operations assisted by SAP Business AI and machine learning.

DX AT
WORK**World Class Weather Prediction, for Anyone in the World**

AI-powered weather forecasting has done an incredible job of predicting hurricane paths in recent years, [enabling faster and better preparedness](#)⁹ before the storm hits. Using these systems has traditionally required a supercomputer, but now [IBM has worked with NASA to build Prithvi WxC](#),¹⁰ an open-source foundation model that can be customized for numerous weather and climate-related applications—and run on a desktop computer.

Their goal was to build a general-purpose AI model that could be customized for a range of practical weather and climate applications, at varying spatial scales. Researchers used the model to accurately reconstruct the track of Hurricane Ida, which struck Louisiana in 2021 and caused \$75 billion in damages, making it the fourth costliest Atlantic hurricane on record. In the future, this model could be used to more accurately track where to strengthen defenses against oncoming hurricanes—by anyone with access to a regular computer.

DURING

Fast, Effective Disaster Response, Powered by AI

AI has a wealth of use cases in disaster management. These include enhancing data collection, allocating tasks, and streamlining communications. AI models can help address the “data avalanche” by processing huge amounts of visual information gathered from drones or images shared by those on the ground.

A drone imaging team might produce 350 gigabytes of imagery, which then needs to be uploaded to decisionmakers’ systems, explained [Thomas Manzini, a computer science PhD candidate at Texas A&M University](#),¹¹ who has worked on developing AI systems at Microsoft in addition to also being a firefighter and pilot. The images produced by the drone team are equivalent to simultaneously streaming 32 high-definition movies—from the middle of a disaster scene. Although all the information is critical, the sheer volume is overwhelming. AI models can take this imagery and evaluate the damage, assign it a score, and create actionable summaries for emergency managers.

From getting emergency teams where they need to be quickly to finding the resources they need, AI is a great support in the moment of crisis. These real-world experiences enabled by AI and BSA members show how AI came through in the hour of need.

DX AT WORK

→ AI Supports Veterans Past the Point of No Return

Team Rubicon (TR) was established in January 2010 as a veteran-led humanitarian organization in response to the earthquake in Haiti. Their name hails from the saying “Crossing the Rubicon,” which means passing a point of no return. Since then, it has gathered more than 160,000 volunteers, many of them veterans who appreciate the environment of camaraderie after service, along with first responders, teachers, and mental health providers.

Managing such a huge team is complicated, so [Microsoft Cloud for Nonprofit provided TR](#)¹² with one connected platform that uses Office 365, Dynamics 365, Generative AI, Azure, and Microsoft Teams. It automates the creation of TR teams with the skills required to help a community in need, getting them into the field faster. “AI is going to play a significant part in the way that we operate in the future. It’s going to continue to allow us to maximize the impact that we make for every dollar we get, do more with less reach, serve more people, and empower more of our [volunteers] on a daily basis,” says Sheng-Te Yang, Vice President of Data and Technology at TR.

DX AT
WORK**Pan-Asian AI for Disaster Relief**

OpenAI realized people were turning to ChatGPT for information and guidance in times of crisis, so they brought together 50 disaster management leaders from 13 countries across Southeast and South Asia to discuss how to improve disaster response on the ground, in partnership with the Gates Foundation, Asian Disaster Preparedness Center (ADPC), and DataKind. The question guiding this initiative is simple but urgent: How can AI help governments and nonprofits respond faster and more effectively when it matters most?

Asia remains the world's most disaster-prone region, accounting for an estimated 75 percent of people affected by disasters globally. There is a clear opportunity to integrate AI more directly into how response teams gather information, make decisions, and communicate during emergencies.

"AI is opening new possibilities for how we understand and respond to disasters. ADPC integrates AI into geospatial tools and risk analytics to transform satellite and earth observation data into actionable insights," said Aslam Perwaiz, ADPC Executive Director. "We can combine AI tools with regional expertise and partnerships to...support faster, more informed decisionmaking for communities and governments across the region."

DX AT
WORK**Doing Good, Better, With AI**

Good360 is a nonprofit organization that matches items from corporate donors with local partners to put items like clothing and household items to good use. When wildfires raged across Los Angeles in January 2025, Good360 was ready to help, by taking essential supplies to Angelenos who had lost their homes in the blaze, as well as the first responders who helped them.

Good360's two-person disaster relief team was able to do this at scale [thanks to an AI agent from Agentforce](#),¹³ the **Salesforce** platform for building and deploying agents. Matches that once took the disaster relief team 30 minutes now took 10. The agent also anticipated needs the team hadn't, such as tents for one nonprofit, and sourcing workboots for another. "Traditional disaster relief efforts have built an incredible foundation," said Sunya Norman, Senior Vice President of Impact at Salesforce. "But now, AI offers a way to accelerate our response by supercharging human expertise—it represents a step change in how we can save lives and support communities in real time."

AFTER

AI's Utility for Recovering, Reconstructing, and Rebuilding

AI is a powerful tool when it comes to identifying post-disaster damage: analysis of aerial images was deployed in cities like Quelimane, Mozambique, after Cyclone Freddy and Adiyaman, Turkey, after a 7.8 magnitude earthquake, to [aid response efforts](#).¹⁴ It can help spot gaps in infrastructure and get vital services up and running again.

Of course, human oversight is indispensable in such extreme situations. As [RAND pointed out](#),¹⁵ “After a hurricane, aid could plausibly first go to the areas with the highest storm surge, the areas with the greatest property damage—which may also be the wealthiest—or to the poorest areas with less capital to rebuild.... Humans will need to make the value judgments that underlie AI systems to prioritize and deliver aid.” Here are examples of where humans—and AI—have worked in harmony to support recovery after disaster has struck.

**DX AT
WORK**

→ The Map, and the Territory, Reconciled by AI

Originally established in 1992 in northwestern Kenya, the Kakuma refugee camp has grown into a sprawling community of more than 300,000 displaced individuals from more than 20 countries. The refugee camp is the largest in Africa, covering about 15 sq miles (40 km), with residents from South Sudan, Somalia, and other neighboring countries.

Outdated, inaccurate maps of the camp were hindering aid delivery, infrastructure planning, and emergency response. Manual mapping, while valuable, was slow and labor-intensive, but the [Microsoft AI for Good Lab team saw an opportunity](#)¹⁶ for AI and machine learning to help give human mappers the tools they needed.

“Once you’ve trained a model on a small amount of data, it’s very fast to get predictions on new areas,” said Dr. Amrita Gupta, Applied Research Scientist, Microsoft AI for Good Research Lab. “We have open-source code for mapping solar panels, buildings, roof types, sanitation facilities, and anyone can independently use it.”

Refugees became mappers, interpreters, and stewards of their own environment, creating ground truth data. Their local knowledge added depth and accuracy, giving them ownership of the process. “AI was primarily used for pattern matching and time saving. It helped us find signals in the data that would be hard to spot manually,” says Dr. Gupta. By leveraging both local expertise and AI, the team was able to overcome the challenges posed by the refugee camp’s unique structures, enabling rapid analysis and pattern recognition that would be difficult to achieve manually.

DX AT
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Using Experience to Respond Better in the Future

Cisco's responsible AI has been an invaluable support to partner Kobo. [KoboToolbox is an open-source platform](#)¹⁷ that more than 35,000 organizations across 220 countries and territories rely on to design surveys, collect data, and generate insights to inform programs and interventions in some of the world's most challenging environments. With KoboToolbox AI FormBuilder, the team is taking that one step further: using generative AI features to help humanitarian organizations build better survey forms faster.

Critically, the tool is built with human oversight at its core. By design, the “human-in-the-loop” model requires users to review, edit, and verify AI-generated transcripts and translations directly within the platform before any data is acted upon—a deliberate design choice that reflects the transparency and accountability required for the responsible use of AI. “Humanitarian data needs strong safeguards,” said Tino Kreutzer, Chief Operating & Innovation Officer at Kobo. “That’s why we prioritize ethical principles such as accuracy, privacy, and reliability in all our work.”

DX AT
WORK

SIEMENS

Keeping the Grid Running, Whatever the Weather

Getting power back to people in the aftermath of adverse events is an essential part of disaster recovery. **Siemens** Energy opened a new facility for [using AI to improve America's electric grid](#)¹⁸ at the company's Innovation Center Orlando. The new Grid AI Lab integrates NVIDIA AI infrastructure with Siemens Energy grid expertise to train AI models that will enable utilities to better manage their grids in real time, optimizing operation and grid maintenance.

This multi-source data will be analyzed at the new Grid AI Lab to develop and validate AI driven insights that support grid planning, operations, and resilience—helping utilities operate the grid more efficiently and strengthen preparedness, response, and recovery for extreme weather events.

Conclusion

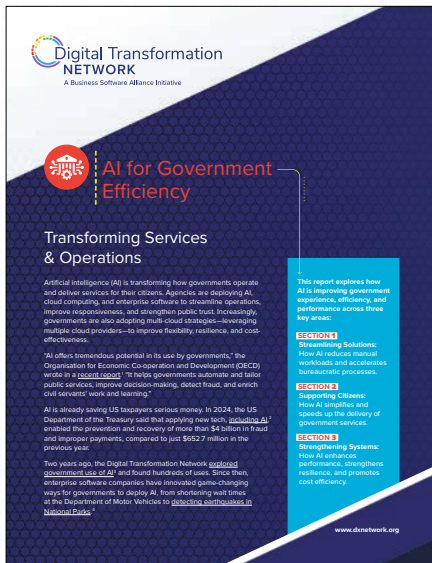
AI provides the ability to transform vast amounts of data into actionable and insightful information that can improve outcomes before, during, and after crises. These insights can save lives by gauging preparedness, supporting first responders and getting systems up and running again quickly. AI innovation for EP&R organizations can massively improve disaster management, with new use cases constantly emerging.

Endnotes

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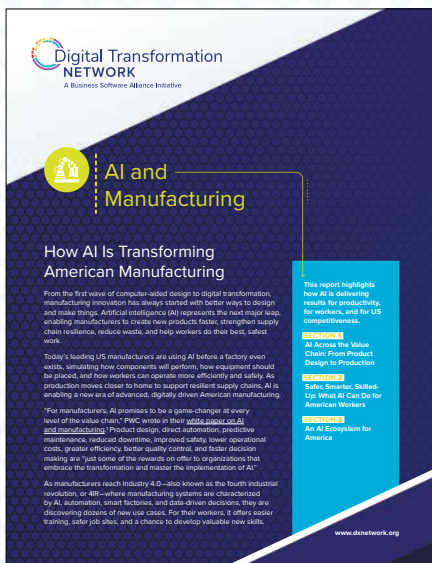
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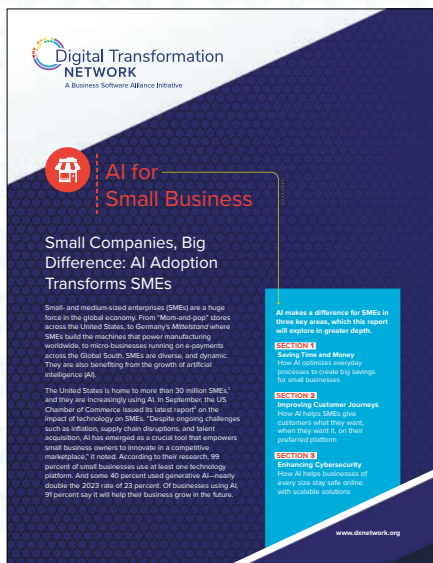
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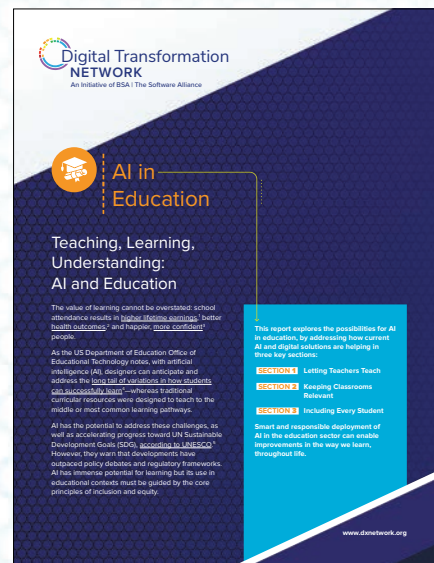
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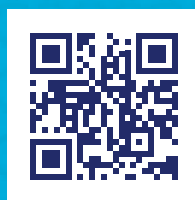


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