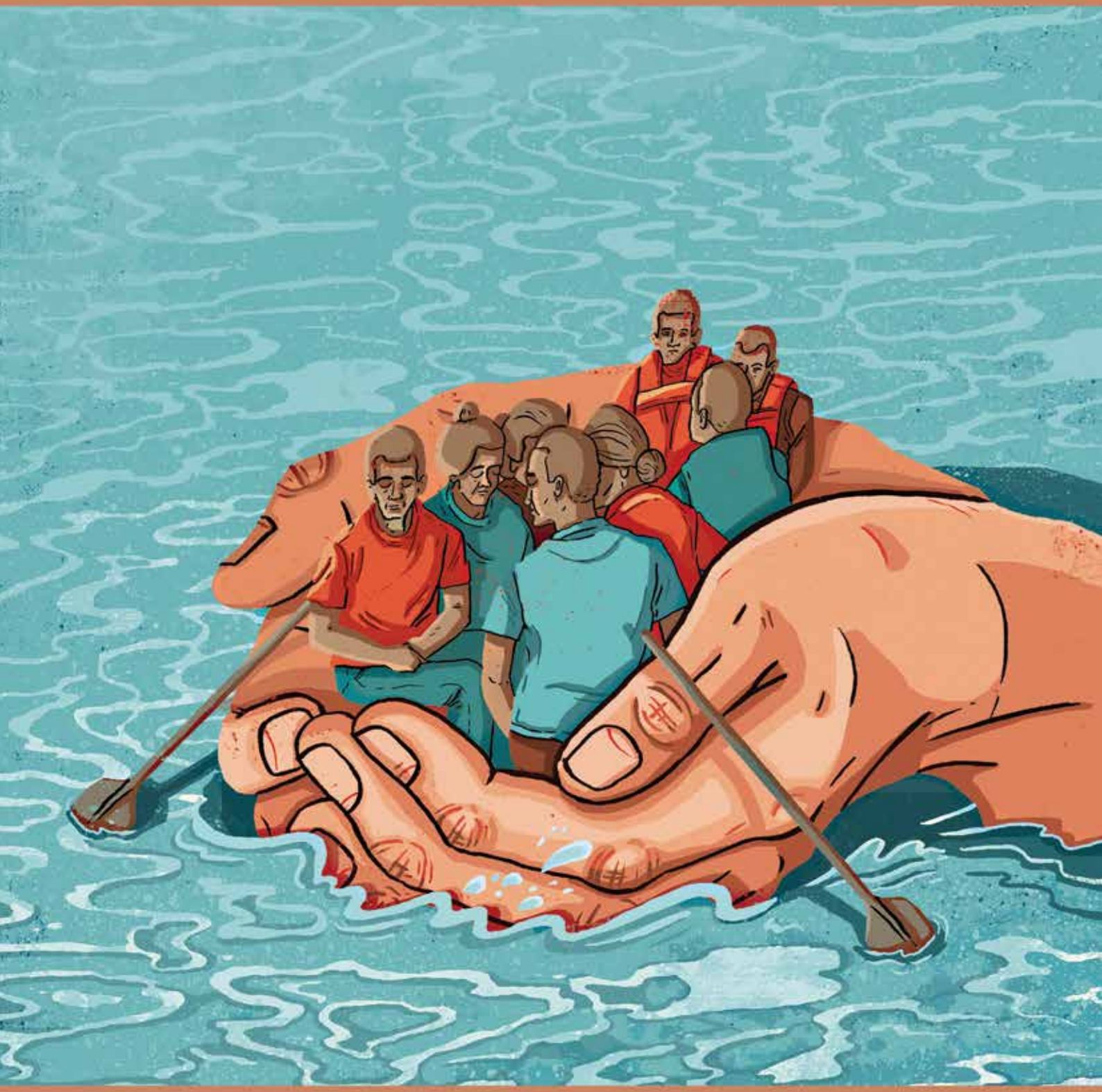
CRISIS RESPONSE

VOL:18 | ISSUE:4 | DECEMBER 2023 WWW.CRISIS-RESPONSE.COM JOURNAL

Protection Prevention Preparedness Response Resilience Recovery



CHASING A MIRAGE?
MIGRANTS AND TRAFFICKING

Bonded Labour & Slavery | Supply Chains | Cognitive Bias | Crisis Communication | Security & Migration | Fashion & Trafficking

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Crisis Response Journal is published quarterly; it is available by subscription in hard copy or digital.
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Published by Crisis Reporting Limited,
71-75 Shelton Street Covent Garden
London WC2H 9JQ UK

Printed in England, UK
ISSN 1745-8633

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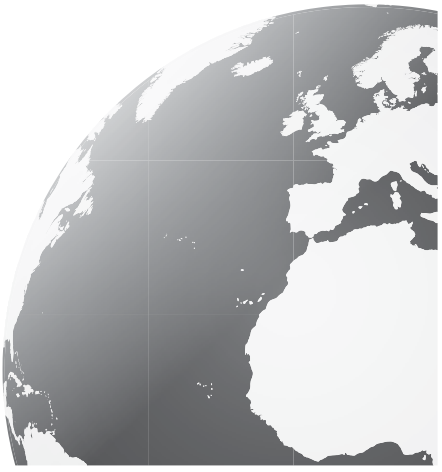

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Cognitive bias p92

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comment

I've spoken to friends and colleagues in the Global North, looking for warmer climates and cheaper price points as they dabble in the digital nomad lifestyle. In the same vein, people in the Global South are headed for mythical greener pastures in the Global North. Each part of this pie holds its own challenges and difficulties, and the people doing all the moving often seem to be running towards a mirage.

And as the world continues to shake from the shocks of climate change, conflict and geopolitical unrest, the lines between what makes a migrant and what makes a refugee are starting to blur. This edition of CRJ covers the on-ground realities of the nexus between migration and trafficking. On p57, Jeannie Barr provides an excellent discussion on the burnout that people on the frontlines of the trafficking and migration issue face.

Dr Christopher Ankersen breaks down key aspects of security when it comes to how migrants are viewed, and how said views can change, courtesy of which lens is used. On p92, Araba Cole's piece on cognitive bias demonstrates the influence cognitive bias can have on crisis management.

There are of course external factors outside one's control that force people to migrate. On p44 James Lodge explores how hazards and disaster can cause social and economic disruptions, forcing people to leave their homes. Meanwhile, Patrícia Nabuco Martuscelli offers an examination of Venezuelans forced to spread into Latin America. On the other hand, Lina Kolesnikova takes on the situation in the European Union in her dissection of the policies and practicalities.

CRJ's Junior Editorial Assistant Shefalika Maini explores how the digital world can fuel trafficking. I report on how Afghan refugees (and astounding, some Pakistanis) are being deported to a state they fled from on p34.

Working on this edition was a complex experience for me. Just as dealing with these issues on the ground is a complex experience for CRJ's community. I hope to hear more from our readers on these important and ever-growing, ever-present issues.

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Look to the stars:
Satellites and the future of emergency communications

Satellite technology offers an innovative solution for broadcasting alerts, especially when traditional communication networks face infrastructure damage, says **Amy Leete**

In 2022, the Emergency Event Database (EM-DAT) recorded 387 natural hazards and disasters worldwide, resulting in the loss of 30,704 lives and affecting 185 million individuals. Economic losses totalled around €210 billion. Without a doubt, the question of how this loss of life and financial cost can be mitigated is at the top of national governments' priorities.

Early warning systems have already been shown to reduce significantly the cost and human casualties associated with natural hazards and disasters. Early warning systems are an integration of hazard monitoring, forecasting, and prediction, disaster risk assessment, communication, and preparedness activities systems and processes that enable both citizens and governments to take timely action in the case of a natural hazards. In the United Nations Office for Disaster Risk Reduction's (UNDRR) 2022 Global Status Report, the statistics spoke for themselves: countries with substantive-to-comprehensive early warning coverage have disaster mortality rates eight times lower than countries with limited coverage. The Global Commission on Adaptation highlighted the economic value of such systems: investing €750 million in developing countries' early warning systems now would prevent losses of up to €15 billion annually.

There is a growing problem that can render both sirens and traditional telecommunication methods ineffective: when a natural hazard destroys the physical infrastructure. A siren does not work if an earthquake, for example, has destroyed it

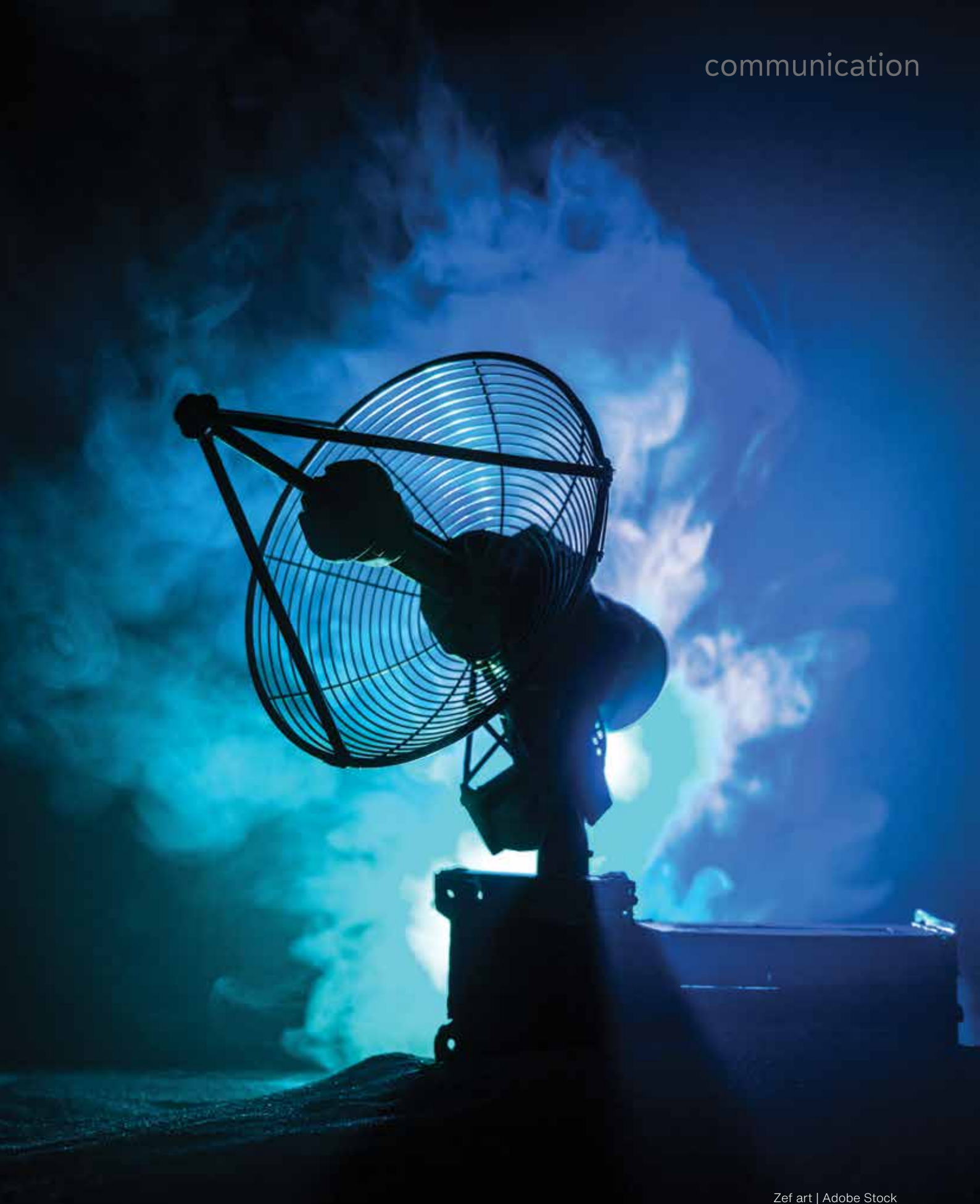
Before mobile phones became so widespread, many early warning systems consisted of sirens (and still are in many cases). The most prominent benefit of these is that the calling is universal: regardless of language or if you possess a mobile phone, as long as you are in the area, you are likely to hear it. However, this also comes with limitations. Sirens require the pre-training of citizens to know what to do when the siren sounds, as instructions cannot be given. In the case of the 2023 Maui wildfires, this posed a problem. Maui Emergency Management Agency Administrator, Herman Andaya, made the decision not to sound the sirens during the fatal wildfires because of this. His decision was based on how citizens in Hawaii are trained to head to high ground when they hear the siren, as typically, they are used for tsunamis. With the wildfires coming directly from the higher ground (the mountainside), this would have led people directly into danger.

With 95 per cent of the world's population having access to mobile broadband networks and nearly 75 per cent owning a mobile phone, mobile networks are incredibly powerful communications channels. Mobile-based public warning systems offer the ability to send a personalised message, giving citizens a certain amount of information that is vital to the situation. There are slight differences between the two most commonly used technologies, cell broadcast and location-based SMS, but the European Emergency Number Association (EENA) believes that using both technologies is the best solution to exploit their potential fully and make sure that citizens are appropriately informed of a developing disaster. With them, customisable messages can be sent to millions of phones in less than ten seconds.

Chocolate teapot?

But there is a growing problem that can render both sirens and traditional telecommunication methods ineffective: when a natural hazard destroys the physical infrastructure. A siren does not work if an earthquake, for example, has destroyed it. In a similar vein, damaged cell towers cannot broadcast messages. This is believed by many to be the case in Maui, where power and mobile phone service were reported to have been cut well before any warnings were received. In the 2023 Türkiye/Syria earthquake, 278,000 buildings collapsed or were damaged seriously, with another 450,000 buildings sustaining medium or minor damage. At the 2023 EENA Conference, Dr Turhan Sofuoglu, President of the Emergency Disaster Ambulance Physicians Association of Türkiye, explained that critical infrastructure collapsed as a result of the earthquake.

Typically, base stations, which are used for sending calls and messages to and from mobile phones, are based on the top of buildings for the best coverage. Over 30 per cent of the base stations in the earthquake region were instantly and completely disabled, and telephone and internet connections were interrupted as a result of widespread power cuts and damaged fibre lines in the region. This means that while you may have a working phone in your pocket, there is no guarantee you'll receive the vital information you need in an emergency if the infrastructure that communicates with your phone is down.



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So where do we go from there? In short, up. Satellite communications, where satellites in orbit above the earth form the network for transmitting signals, may mitigate some of the problems of traditional telecommunications networks. But how do these satellites actually work? We can focus on Galileo, Europe's global navigation satellite system, as an example. The current Galileo system consists of 28 satellites, with 26 in orbit above the earth and 23,222km in altitude (if you are wondering where the other two are, they were launched into the wrong position and, as a result, only used for search and rescue). Spread across three orbital planes above the Earth, the Galileo satellites broadcast navigation signals all over the globe, including over the poles. The loss of one satellite would have no discernible effect on users of the service. Two Galileo Control Centres, in Italy and Germany respectively, monitor and control the state of the constellation by receiving signals from these satellites and sending back corrections and navigation data.

Already, the Galileo service is saving lives through a search and rescue (SAR) service. When a ship at sea activates its emergency position indicating radio beacon (about one million vessels have one), the satellite service can pick up that distress signal, which is helpful because there is frequently no mobile coverage in the middle of the sea. The satellite can then relay the position of the vessel back down to ground stations, which can initiate a rescue.

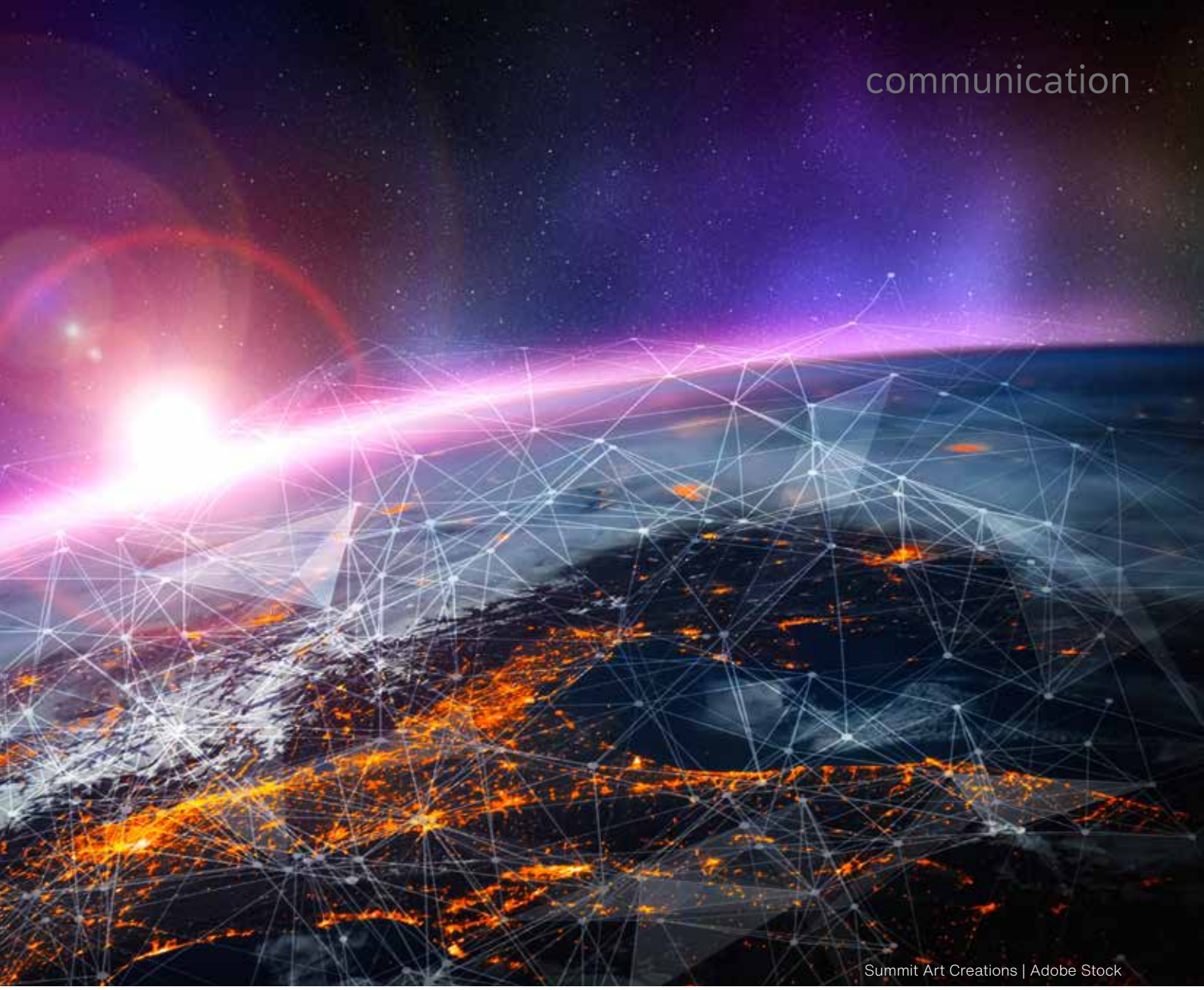
Diamond in the haystack

Apple's Emergency SOS service also utilises satellite coverage when you are out of range of traditional cell networks, showing existing commercial interest in emergency satellite communications. If you try to call your local emergency number – whether that is 999, 112, 000, 911, or otherwise – and you have no signal, you will be prompted on certain models of iPhone to use the satellite SOS service. Unlike a traditional emergency call, where you will speak to a dispatcher, you are instead given a series of questions to respond to via your phone interface, followed by a text conversation with an emergency call-taker where your location and previous answers (plus any pre-noted medical information) are transmitted. Already, news reports from around the world have shown this service has saved the lives of hikers, car crash victims, those caught in wildfires, and more.

Sirens require the pre-training of citizens to know what to do when the siren sounds. During the Maui wildfires, Herman Andaya made the decision not to sound the sirens during the fatal wildfires because citizens in Hawaii are trained to head to high ground when they hear the siren, as typically, they are used for tsunamis

It is easy to see how, with a few developments, satellite service could be an excellent avenue of communication for public warning. An accurate and personalised message to mobile phones, resistant to natural hazards that may take traditional communication networks down. The potential is already being explored in the EU through the Emergency Warning Satellite Service (EWSS): utilising Galileo's messaging function to transmit an alert to smartphones with instructions to follow depending on the area where a user is located. It is being tested through the Stellar project, funded by the Horizon Europe programme and managed by the Directorate General for Defence Industry and Space (DEFIS) of the European Commission.

The project aims to show the viable potential of using satellites as a method to alert citizens during both natural and manmade disasters through demonstrations that replicate scenarios where satellite service may be more effective than traditional telecommunications networks. The demonstrations conducted by the Stellar project have been greatly successful, efficiently transmitting distress messages to mobile phones within seconds of activation and within an incredibly accurate area.



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The first Stellar demonstration aimed to replicate the deadly AZF factory explosion that took place in Toulouse, France in 2001, in which 31 people died and 2,500 were wounded. In the explosion, approximately 300-400 tonnes of ammonium nitrate exploded, creating a crater 70 metres long and six metres deep, with an earthquake of magnitude 3.4 being recorded. The explosion caused significant destruction in the southwestern part of the city, with two billion euros of damage and approximately 45,000 people requiring evacuation. Two-thirds of the city's windows were shattered. The Stellar demonstration aimed to replicate alert messages that citizens would need to receive during such a disaster, avoiding confusion and panic as well as advising citizens on the best course of action depending on their exact area.

Eric Guyader, responsible at the European Commission's DG DEFIS for the definition and development of EWSS and for the Stellar project, explained that: "With EWSS, civil protection authorities can now make use of satellite navigation capacity for broadcasting alerts to citizens. Alongside Copernicus' Emergency Management Service, EWSS can be seen as a strategic asset to support the policies of the European Union and of its member states in the field of disaster management." What next? Satellite technology is new – much, much newer than traditional telecommunications networks. As a result, we are in the very early stages of harnessing the potential for satellite communications for public warning. But like any new technology, the first innovative uses of it may prove a compelling demonstration for national governments to consider their own usage.

This is not to say that the methods we currently use for early warning systems are useless; they have been proven to save countless lives and substantial financial costs. But as the frequency and severity of natural disasters and hazards intensify, we have to find creative solutions to mitigate the challenges we face. And for that, we may just have to look to the stars. CRJ

■ The *Stellar* project is executed by a consortium led by *Telespazio France and composed of Thales Alenia Space, CNES, F24,* and *EENA*

Author

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