

# CRISIS RESPONSE

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Protection Prevention Preparedness Response Resilience Recovery



**CHASING A MIRAGE?  
MIGRANTS AND TRAFFICKING**

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Cognitive Bias | Crisis Communication |  
Security & Migration | Fashion & Trafficking

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# contents

## News & Comment

**News ..... 4**

**De Profundis ..... 8**

Matt Minshall delves into short-termism, slavery, and migration

**Complexity of practical solutions...12**

There's no moving forward on migration and trafficking without a global approach argues Dr Christine Jessup

## Book Review

**A world on fire .....16**

Emily Hough reviews a new book, 'The heat will kill you first: Life and death on a scorched planet,' by Jeff Goodell

**Dilemmas & borders .....20**

Border officials face complex dilemmas, from leadership challenges in the midst of urgent situations to ethical conflicts, writes Dr Jori Kalkman

**Clever Security, Clever Business ...24**

Andy Blackwell and John Wood's new book describes the latest thinking in managing security.

## Trafficking

**Digital evolution of trafficking .....26**

Shefalika Maini investigates the digital evolution of human trafficking, exploring its intricate web of recruitment, exploitation, and coercion

**Defying trafficking ..... 30**

Ekaterina Kostoukhina explores the urgent need for international collaboration

**Can't see the forest for the trees...32**

Frontline security officers play a crucial role in human trafficking, especially at transit locations, writes Matthew Porcelli

**Expelling refugees .....34**

Pakistan's government is forcibly removing Afghan refugees from the country. Luavut Zahid reports...

**Through the eyes of children..... 37**

Chloe Higginson explores Invisible Traffick's Junior Education Programme, which works with children to prevent exploitation

## Migration & Modern Slavery Latin America's Reaction to the Venezuelan Migration Crisis .....38

Patrícia Nabuco Martuscelli explores the regional responses to the forced migration of Venezuelans in Latin America

**Migrants & security .....42**

Viewing migrants purely as security threats misses the broader picture, according to Dr Christopher Ankersen

**Personal resilience & migration .....44**

Mass migration events stemming from environmental disasters and conflicts have swelled, causing disruption globally, says James Lodge

**Europe's migration maze .....46**

Lina Kolesnikova dissects the prolonged and unresolved nature of the migration crisis in European Union states

**Slavery & fast fashion .....50**

Shefalika Maini explores modern-day slavery within the fast fashion industry

**Empowering business to reduce the risks of modern slavery ..... 52**

The issue continues to mushroom across industries and supply chains, writes Caroline Sapriel

## Trafficking & tech p26



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## Migrants & security p42



Boris Séméniako | Ikon Images





Cover story: *Chasing a mirage*  
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## comment

### Beyond borders .....54

Anita Punwani examines the nexus between international migration and modern slavery

### Through the cracks..... 57

Jeannie Barr examines the role of emergency planners in addressing human trafficking and migration

## Response systems

### Indicators and warning..... 58

Robert Hall explores the significance of indicators and warnings in anticipating and preventing crises

### AI and disaster management:

### Potential and applications .....62

Chiara Munno, Irene Proto and Patrick Trancu provide a review of how AI can transform how we tackle crises

### Emergency operations centres & airport crisis management.....66

This is the first of a two-part series by Rania Khbais on aviation, crises and security

### Dodging the disaster bullet .....70

How to avoid disasters? Gareth Byatt, Ilan Kelman, and Ana Prados provide some answers

### Cloud-based systems & AI .....73

How can emergency services share data externally to better prepare and respond? Nick Chorley takes a look

### AI & strategic management.....74

Identifying problems is not enough, managers must develop and implement AI-powered strategy, write Mostafa Sayyadi and Michael J Provitera

## Aviation, security & crises p66



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## Communications

### The AI-powered public warning chatbot .....76

Rachele Gianfranchi and Jumanah Al Awfi explore the transformative influence of AI on emergency communications

### Look to the stars.....78

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

## Bias, Business & Continuity

### Culture and reputation: Where your next crisis will be..... 82

Organisations cannot afford to ignore culture and reputation crises, says Amanda Coleman

### Blockchain and its influence in the new era of digital disruption ..... 86

Blockchain is becoming the forefront of business success for organisations in the new era of digital disruption. Mostafa Sayyadi and Michael J Provitera explore the reason behind the trend

### Eating an elephant, one bite a time.. 88

Fiona Galbraith explores the application of Systems 1 and 2 thinking in intelligence analysis

### Cognitive biases & crises ..... 92

Araba Cole explores what practitioners can do about it...

## Plus

### Events .....96

### Frontline .....98

Miguel Clarke served nearly 24 years as a special agent with the FBI. Explore his insights on cybersecurity

## Cognitive bias p92



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### 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 Shetalika 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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# The AI-powered public warning chatbot

**Rachele Gianfranchi** and **Jumanah Al Awfi** explore the transformative influence of AI on emergency communications, and how this can reshape emergency response

**I**n its second year since the public launch of ChatGPT, artificial intelligence (AI) has begun to produce ripples reaching well beyond the engineering field. It has grabbed the interest of financial markets, the concern of governments and regulators, and changed workflow management for numerous sectors that are witnessing its transformative effects.

The importance of effective communication during disasters becomes evident when we look at previous crises where vital communication channels, including emergency lines, failed under congestion due to overwhelming calls, limiting accessibility to essential information (for instance, storm Eunice resulted in the 112 emergency call centres becoming overloaded). Direct experience from system implementation in 25 countries over 10 years taught us how to deploy one-way and two-way communication systems on-premises and in the cloud successfully.

To recognise the critical importance of effective communication in times of emergency, this article explores a pivotal solution that has emerged as a response to these challenges: an AI-powered public warning chatbot enabling automated responses to an otherwise one-way technology, as well as facilitating the management and analysis of dynamic information for government authorities in charge of keeping people safe.

## New horizons

The Chatbot is part of Everbridge's efforts to research and develop artificial intelligence and machine learning as they apply to emergency management. The Engage project supported this research to study in depth the usage of a variety of AI-powered chatbots for enhancing societal resilience and information accessibility during emergencies and critical events. This research produced a blueprint for an AI chatbot for emergencies and disasters. Advancing research and analysis of 45 chatbot types into the prototype phase, the research showcased how dynamic alert information can be handled by a chatbot trained on a set of official emergency communication management data.

The developed chatbot is simple to incorporate into routine public warning messages sent by civil protection authorities. This would allow for a quick response to citizens with additional information on the emergency and therefore enhance emergency communication by providing actionable information precisely when it is needed most.

In the subsequent sections, we will delve into the workings of this AI-powered chatbot, its capacity to significantly improve emergency communication, the progress made so far, and the tangible impact it can have on mitigating the destructive consequences of unforeseen events.

Improvements in the response capacity of emergency

lines can lead to a sudden inflow of citizen queries, resulting in a surge in network traffic and potential blockages from congestion. The implementation of a chatbot becomes helpful in mitigating this challenge, as citizens can seamlessly ask questions related to the emergency through the chatbot interface. This not only lightens the burden on traditional communication systems but also guarantees that efficient and accurate information is accessible to all.

The notification process begins with the publication of an alert through the Public Warning Platform. Once the alert is published, the public warning message, which includes a link to the chatbot, is transmitted to the user using cell broadcast or SMS. Simultaneously, the Public Warning Platform dispatches the Common Alerting Protocol (CAP) file containing comprehensive details of the alert to the chatbot server. Upon receiving the public warning message, the user gains access to the chatbot alert homepage by following the embedded link, thereby enabling a smooth and user-friendly interaction. The chatbot server, leveraging the information embedded in the CAP file, supplies appropriate responses to user queries.

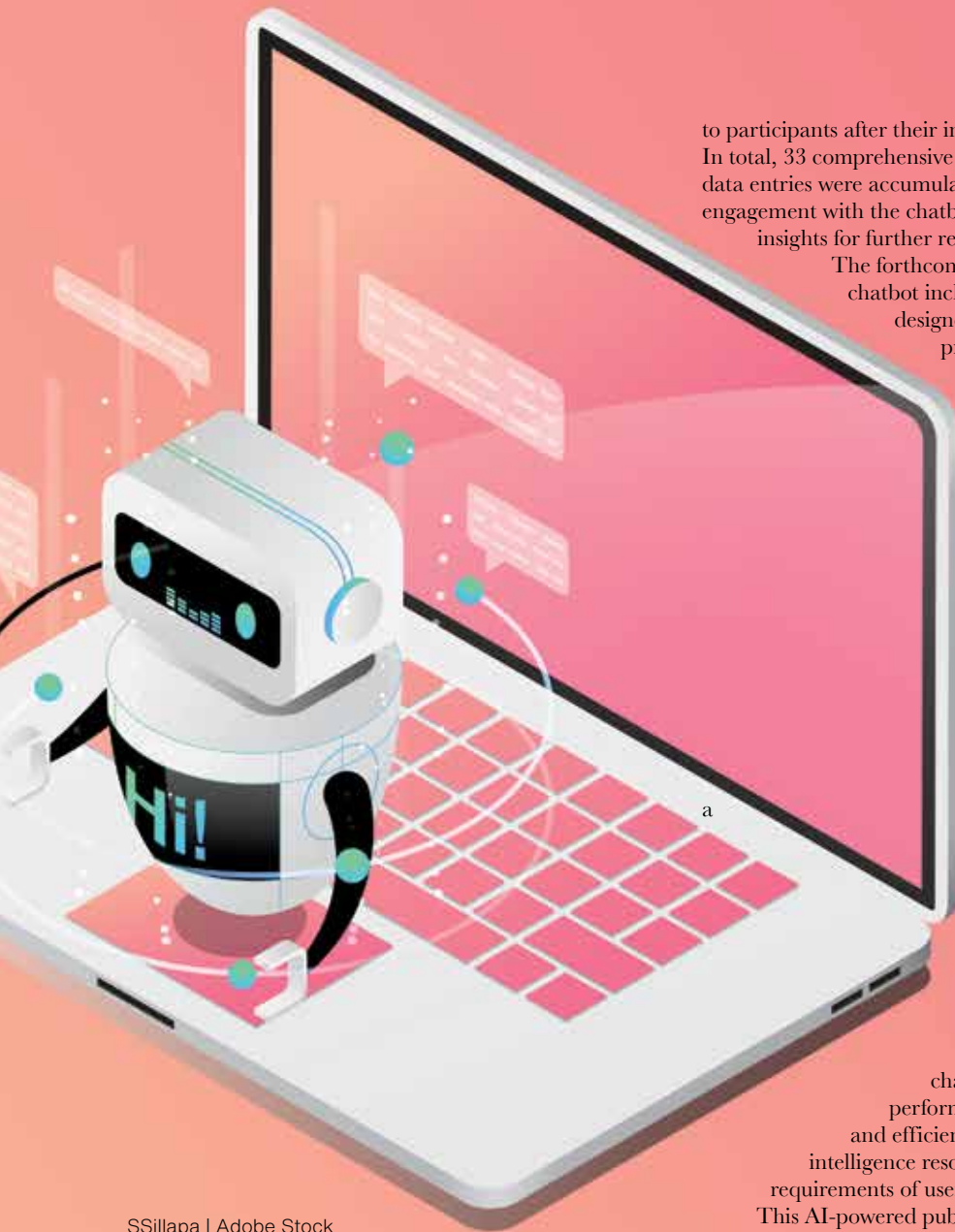
An initial validation exercise of the chatbot was executed during the Engage project meeting in Romania in May 2023, where the functionality of the chatbot was demonstrated and feedback was collected by surveying users after they interacted with it. Based on the feedback received, this research identified three areas for improvement.

To enhance the user-friendliness of the chatbot, efforts were dedicated to presenting hazard-specific instructions spanning pre-emergency, emergency, and post-emergency phases. To improve clarity, these instructions were integrated with visual elements, including images and infographics. This visual aid offers a more enjoyable and simple experience by vividly conveying the suggested actions for users.

Moreover, the incorporation of images and infographics includes, for instance, who the user should contact based on the severity of the damage encountered and guides users on prescribed measures based on the specific hazard or emergency they are experiencing. Additionally, the Chatbot has been equipped to support videos regarding various hazards. These videos offer a comprehensive and visual explanation of recommended actions before, during, and after an emergency event, enriching the user's understanding and preparedness.

The latest enhancement introduced to the chatbot entails a location-based feature, enabling users to inquire about their proximity to the emergency site. Upon user






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to participants after their interaction with the chatbot. In total, 33 comprehensive survey responses and 212 data entries were accumulated, reflecting a substantive engagement with the chatbot and providing valuable insights for further refinement and optimisation.

The forthcoming enhancements for the chatbot include an advanced feature designed to address the user's proximity to the emergency location. In the event that the user is situated at the emergency site, the chatbot will dynamically present information on the nearest emergency shelter or recommend safe locations such as police stations, hospitals, or Red Cross centres. This expansion aims to provide location-specific guidance, enhancing the user's safety and decision-making capabilities. Additionally, development in progress involves the integration of an AI driver. This component functions as an abstraction layer, facilitating seamless transitions between various AI engines and models. This integration is utilised to elevate the chatbot's adaptability and performance by enabling the swift and efficient utilisation of diverse artificial intelligence resources based on the contextual requirements of user interactions.

This AI-powered public warning Chatbot is an important innovation in emergency communication, addressing the limitations of traditional channels during crises. The success of the Trondheim demonstration and ongoing improvements highlight a commitment to real-world impact. In facing an uncertain future, the evolution of technologies such as the AI-powered chatbot becomes crucial for fostering resilience and safeguarding communities globally. This innovation underscores the transformative potential of AI in navigating the challenges of emergency response in our ever-evolving world. 

■ *The chatbot is one of the outcomes of Project Engage, which is funded by the European Union's Horizon 2020 Research and Innovation Programme*

## Authors



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request, the chatbot initiates the interaction by seeking the user's consent to access their location. Upon permission, the user's location will be pinpointed by a marker on the map, in combination with displaying the emergency area.

This mapping page includes a message at the bottom of the screen specifying the precise distance in kilometres between the user's location and the emergency area. This feature provides a clear and concise understanding of the user's proximity to the unfolding emergency.

On September 27, 2023, the Chatbot was demonstrated live in Trondheim, Norway, to a few hundred people. The Trondheim Red Cross organised this demonstration as part of a landslide emergency evacuation exercise. Participants were able to interact with the chatbot (provided with a landslide alert) and learn more about its capabilities. The event was dedicated to strengthening the preparedness of the local community in response to a quick clay landslide disaster.

The demonstration attracted participants of all age groups. To assess the efficiency and user experience of the chatbot, a structured survey was administered

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