

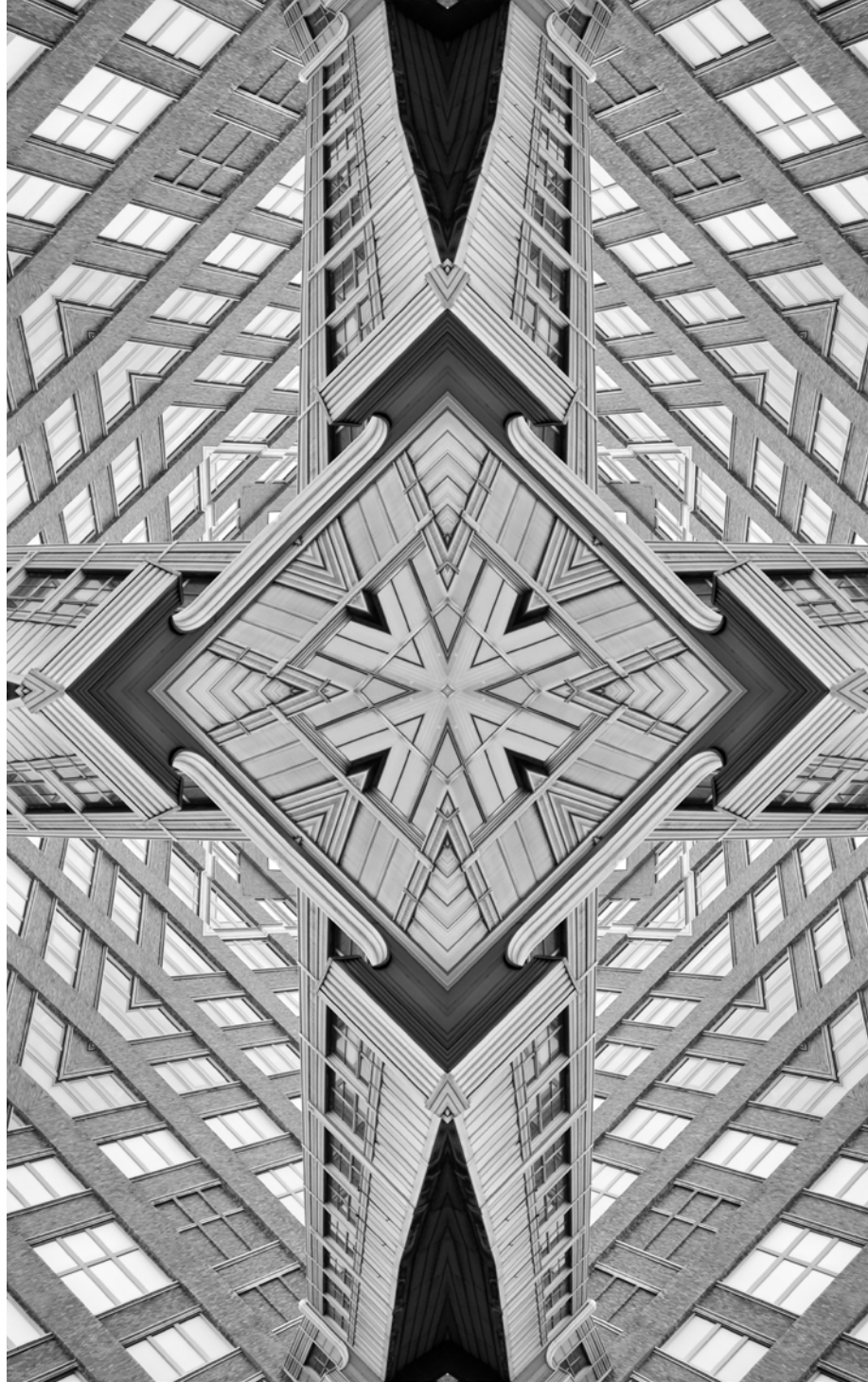
# Issue

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# Brief

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# Promoting Principles-Based Use of Technology in Humanitarian Assistance

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## **Abstract**

The application of emerging technologies in humanitarian assistance has increased in recent years, and they have proven effective in delivering life-saving interventions to populations in need. In a fast-changing technological landscape, the use of such tools is only expected to increase further. At the same time, however, the use of technologies brings certain challenges, such as misuse of data and the spread of misinformation. This brief examines the current use of technology for humanitarian assistance in different parts of the world, and underlines the principles that should frame the practice.

Depending on the nature of the emergency, the kind of humanitarian assistance<sup>a</sup> that is required may vary: refuge, medical care, provision of basic infrastructure, and supply of essential goods such as food, water, and sanitation. Across the world, efforts at extending humanitarian assistance tend to be ad-hoc and involve various actors. These may include the United Nations Office for the Coordination of Humanitarian Affairs (OCHA),<sup>b</sup> United Nations High Commissioner for Refugees (UNHCR),<sup>c</sup> the United Nations Children’s Fund (UNICEF),<sup>d</sup> UN Women,<sup>e</sup> the World Food Programme (WFP),<sup>f</sup> and the World Health Organization (WHO).<sup>g</sup> Other international organisations such as the International Red Cross and Red Crescent Movement,<sup>h</sup> regional organisations, non-government organisations, as well as the private sector play their own roles in humanitarian assistance.

There is constant need for humanitarian assistance in many parts of the world. This year alone, it is estimated that 274 million people will require some form of humanitarian assistance—the highest number in the last decade.<sup>1</sup> Efforts must therefore be made to improve current practices in the conduct of these missions,

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- a Humanitarian assistance is defined as “aid that seeks to save lives and alleviate the suffering of a crisis-affected population.” See: Office for the Coordination of Humanitarian Affairs Policy Development and Studies Branch, Glossary of humanitarian terms: In relation to the protection of civilians in armed conflict (New York: United Nations, 2004) pp.13, [https://inee.org/sites/default/files/resources/OCHA\\_2003\\_Glossary\\_of\\_Humanitarian\\_Terms\\_in\\_relation\\_to\\_the\\_Protection\\_of\\_Civilians\\_in\\_Armed\\_Conflict.pdf](https://inee.org/sites/default/files/resources/OCHA_2003_Glossary_of_Humanitarian_Terms_in_relation_to_the_Protection_of_Civilians_in_Armed_Conflict.pdf).
- b OCHA is the body that deals with responses to emergencies. OCHA also manages the UN Central Emergency Response Fund (CERF), a global emergency response fund established by the UN General Assembly in 2005.
- c UNHCR is a global organisation dedicated to saving lives, protecting rights, and building a better future for refugees, forcibly displaced communities, and ‘stateless’ people.
- d UNICEF works to reach the most disadvantaged children and adolescents, and to protect the rights of every child, everywhere.
- e UN Women is the UN organisation delivering programmes, policies, and standards that uphold women’s human rights and ensure that every woman and girl lives up to her full potential.
- f The World Food Programme is the world’s largest humanitarian organisation, saving lives in emergencies and using food assistance to build a pathway to peace, stability and prosperity for people recovering from conflict, disasters, and the impact of climate change.
- g WHO’s primary role is to direct international health within the UN system and to lead partners in global health responses.
- h The International Red Cross and Red Crescent Movement consists of the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent Societies, and the 192 National Red Cross and Red Crescent Societies.

# Introduction

and technology will play an important role. Integrating emerging technologies can help provide better access to information, provide stronger and faster needs analyses, and develop more meaningful and systematic monitoring.<sup>2</sup> This brief defines “emerging technologies” to comprise any new technology or any continuing development of an existing technology<sup>3</sup> which satisfies five attributes—i.e., “radical novelty, relatively fast growth, coherence, prominent impact, and uncertainty and ambiguity.”<sup>4</sup>

“In 2022, it is estimated that 274 million people will require some form of humanitarian assistance—the highest number in the last decade.”

# Tech For Humanitarian Assistance

The OCHA recognises that the use of emerging technologies can transform the present humanitarian assistance mechanism by changing the approach from “reaction to anticipation.”<sup>5</sup> This would then allow for swifter and more coordinated responses amongst various actors. Further, technologies such as mobile phones, social media networks, and digital payment solutions allow the affected communities to access relevant information, communicate with humanitarian assistance actors, and mobilise resources.

The benefits of incorporating emerging technologies in humanitarian operations are seen in the use of telemedicine during disasters; in the past two years, for example, the COVID-19 pandemic necessitated the targeted use of this technology. There is also the use of Earth Observation (EO) and geospatial technologies for humanitarian relief, demonstrated during the Kerala floods of August 2018; and the use of social media for relief missions during the ongoing Russia–Ukraine conflict.

## Telemedicine

Telemedicine is the use of Information and Communication Technology (ICT) to provide healthcare solutions remotely.<sup>6</sup> Earlier, telemedicine was used to improve the quality of health services by providing two-way voice communication across countries using satellite technology.<sup>7</sup> Today, its scope has widened to include not only teleconsultations, but also teleradiology, teleradiagnostics, and telesurgery.

While telemedicine has the potential to improve the overall healthcare infrastructure, its importance increases manifold in times of emergency as it allows participants to overcome geographical barriers. Due to the important role that telemedicine plays in such occasions, a new discipline of humanitarian telemedicine (HTM)<sup>i,8</sup> has emerged that provides for immediate medical aid, secondary care, and training for health professionals remotely.<sup>9</sup> Various international programmes such as the Swinfen Charitable Trust, Medecins Sans Frontieres (Doctors Without Borders), the Extension for Community Health Outcomes Project (The ECHO Project) and Shriners extend HTM services.<sup>10</sup>

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i HTM refers to the provision of telemedicine (primary and/or secondary) to developing countries in times of immediate and/or permanent medical need with the aim of improving personal health.

Beginning in early 2020, as governments imposed restrictions on movement to attempt to contain COVID-19, telemedicine has helped provide healthcare services to large numbers of people. The technology allows patients and doctors to engage in contactless consultations, thereby reducing the risk of transmission.<sup>11,12</sup> Several policy initiatives and regulatory changes were introduced in different parts of the world to facilitate its use.<sup>13,14</sup>

For instance, in India, the Telemedicine Practice Guidelines<sup>15</sup> were introduced, allowing registered medical practitioners to provide healthcare using telemedicine. Several states in India had also introduced telemedicine helplines for assisting people who are in need of consultation.<sup>j</sup> eSanjeevani, the telemedicine service launched by the Union Ministry of Health and Family Welfare in 2021, facilitated more than 14 million consultations in the first six months of operations alone.<sup>16</sup>

## Earth Observation (EO)

For humanitarian aid, EO<sup>k</sup> data is processed and analysed to detect disasters and conflicts and even to locate affected communities and refugees from outer space.<sup>17</sup> The EO data is useful to determine camp mapping, population estimation in rural and urban settings, population monitoring, destruction monitoring, determining migration, tracking movements of displaced people, detection of mass graves, and mapping of changes in land cover to understand the distribution of vector-borne diseases.<sup>18</sup> The EO data is timely and accurate and is valuable in times of humanitarian crisis as it is used for creating maps for supporting decision-making and deployment of missions to the field.

The use of EO can help in disaster risk reduction and management.<sup>19</sup> For instance, during the Kerala floods in 2018, the EO data collected from various satellites were analysed by the DSC at the NRSC.<sup>120</sup> The data was used by experts to predict the level of rain and forecast the conditions in the forests and the water reservoirs.<sup>21</sup> Based on the analytics, inundation maps were prepared and

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j For instance, the “Apthamitra tele-consultation helpline” was launched by the Karnataka Government, “HITAM application” was developed by the Telangana Government, and QuikDr Healthcare along with the Kerala Government provided a telemedicine app.

k Earth observation (EO) is the “collection and analysis of geospatial data and information about our planet using a variety of platforms and remote sensing and other technologies.” See UN, “Evolving technologies”, UN, <https://www.un.org/geospatial/about/technologies>.

l The Decision Support Centre (DSC) is established at the National Remote Sensing Center (NRSC) as part of the ‘Disaster Management Support Programme’ to monitor natural disasters using space and aerial remote sensing in real-time.

# Tech For Humanitarian Assistance

shared with the disaster management organisations. Any changes in the condition of the flooded areas were also relayed in real time. These elements were helpful in planning for better coordinated relief operations.

## Social media

Social media has altered the ways in which humans interact. Its role during times of crises and disasters cannot be underestimated as it allows information to be collected and disseminated quickly, in turn resulting in better planning and coordination. Social media also helps in crowdfunding<sup>22</sup> for humanitarian assistance-related initiatives and crisis mapping<sup>m,23</sup> as it facilitates the distribution of relief to affected communities by gathering data on them.<sup>24</sup>

The Russia–Ukraine crisis illustrates the effectiveness of social media. In the case of Indian students who got stranded in Ukraine, for example, social media helped facilitate their evacuation.<sup>25</sup>

“Technology changes the approach of humanitarian assistance ‘from reaction to anticipation’. - OCHA”

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<sup>m</sup> Crisis mapping is an inter-disciplinary field that aggregates crowd-generated input data, such as social media feeds and photographs, with geographic data, to provide real-time, interactive information in support of disaster management and humanitarian relief.

While the use of digital technologies helps increase the efficiency and effectiveness of humanitarian missions, there are a number of risks and challenges involved. Common concerns such as privacy, data protection, security, interoperability, lack of standards, lack of regulations, misinformation, disinformation, and hate speech (MDH), and issues of access remain.

## Privacy, Data Protection, and Security

With the privacy concern looming large, caution is needed when technology is being incorporated in humanitarian missions that use personal identifying information. Misuse of personal data has the potential to further harm the already affected communities.<sup>26</sup>

Most emerging technologies are data-reliant in one form or another. However, the exact scope of data protection available to a particular data set is often unclear. Different humanitarian actors collect and process huge volumes of data, and it is necessary to ensure that the data is being processed according to good data management practices. The 2018 UNHCR–Bangladesh–Myanmar data-sharing fiasco offers lessons in this regard.<sup>27</sup>

In 2018, the UNHCR registered data of Rohingya refugees in Bangladesh to allow the Bangladeshi government to issue them identity cards for obtaining essential aid and services. Additionally, data was also being collected to be submitted to Myanmar for repatriation eligibility assessments. While information was being collected for these two different purposes, the refugees reportedly felt that they could not refuse sharing the information for repatriation if they wanted the identity cards; this implies that the principle of “free and informed consent” was not followed during data collection.

In the absence of a uniform global data protection infrastructure, it is important to see how the technology used for humanitarian assistance interacts with appropriate national and regional data protection frameworks. This is especially relevant in relation to the provisions on cross-border data transfer, local data storage requirements, and data consent.

Also in 2018, a cyber-attack on a North Korean refugee resettlement organisation in South Korea led to a data breach of around 1,000 North Korean defectors,<sup>28</sup> raising concerns of potential harm.<sup>29</sup> More recently, in January 2022, ICRC servers were hacked and personal data of around 500,000 people



were compromised,<sup>30</sup> triggering concern that the data would be “used by states, non-state groups, or individuals to contact or find people to cause harm”.<sup>31</sup> In such cases, if the identities of any vulnerable affected communities are disclosed or if the data is leaked or is stolen, it could result in not only security risks for vulnerable community members but also a trust deficit between humanitarian actors.

## **Interoperability and lack of standards**

Given the multiple players in the humanitarian assistance ecosystem, information-sharing is a pillar in these missions. Often, however, the data sets of different organisations are not interoperable and some participants may be reticent to share data due to mistrust. Thus, to ensure interoperability and improve collaboration between different platforms, it is necessary to set up standards to bolster trust amongst the different agencies.<sup>32</sup>

To be sure, data-sharing may also lead to challenges in relation to privacy, data protection, and security. Establishing standards and utilising them for data collection, storage, and processing can help reduce these risks. It will also help prevent inefficiencies and duplication, and fill gaps in delivery.<sup>33</sup>

## **Magnifying inequalities**

Artificial Intelligence (AI) and Machine Learning (ML) are increasingly being used by humanitarian assistance actors for data analytics. The use of AI is valuable for prediction and early-warning.<sup>34</sup> For instance, the Cholera Prediction Modelling System<sup>35</sup> used AI on different datasets to accurately predict the risk of cholera in Yemen in 2017. The accurate prediction allowed donors and humanitarian relief operators to better focus their efforts and be prepared for the outbreak.<sup>36</sup>

However, improper application of AI may lead to serious consequences. Due to the black-box nature of AI and the lack of transparency and accountability, there could be chances that automated decisions result in misuse.<sup>37</sup> Existing literature has little mention, if at all, of harms caused by AI, especially in the context of humanitarian assistance in light of poor tracking, tendency to not report such incidents, and lack of information in the public domain.<sup>38</sup> AI and ML often tend to magnify existing inequalities in terms of gender, race, class, and caste and may cause unintended bias. For example, there have been recorded cases where AI misidentifies non-white faces<sup>39</sup> and where AI shows bias against women.<sup>40</sup> Thus, it is essential to carefully design the applications of AI and have sufficient testing to evaluate and understand their unintended consequences.

## **Misinformation, disinformation, and hate speech<sup>41</sup>**

Digital technologies have a huge potential for spreading MDH, especially because affected communities rely on them for information.<sup>42</sup> Harmful information can spread, and resonate with and influence different audiences. Vulnerable communities can be targeted from a distance, creating further challenges to humanitarian assistance missions in the absence of concrete measures to verify information.

## **The Digital Divide**

There exists a digital divide across the world and it varies across different parts of the world. Due to this digital divide, certain vulnerable communities will not be able to access information supplied by the humanitarian agency on a certain platform.<sup>43</sup> For instance, studies suggest that due to “racial/ethnic, language, and income-level disparities with telemedicine use,”<sup>44</sup> high-risk patients are unable to access telemedicine.

# Principles to Redefine Emerging Technology

The International Red Cross and Red Crescent Movement has identified seven Fundamental Principles for humanitarian assistance: “humanity, impartiality, neutrality, independence, voluntary service, unity and universality.”<sup>45</sup> While the latter three principles are exclusive to the movement, the first four are considered fundamental to any humanitarian assistance mission.<sup>46</sup> These four principles show “a remarkable degree of continuity”<sup>47</sup> throughout history as they are “distinctly humanitarian in character.”<sup>48</sup> The UN also considers these four pillars as the fundamental humanitarian principles.

The UN General Assembly Resolution 46/182, “Strengthening the coordination of humanitarian emergency assistance of the United Nations”, states that “humanitarian assistance must be provided in accordance with the principles of humanity, neutrality and impartiality.”<sup>49</sup> Moreover, in UNGA Resolution 58/114, “independence” was added as another guiding principle.

Even when technology is being used for the delivery of humanitarian assistance, these four principles must not be undermined.

## Humanity

The principle of humanity suggests that humanitarian assistance should aim to address “human suffering wherever it is found and that the purpose of humanitarian action is to protect life and health and ensure respect for human beings”.<sup>50</sup> Thus, ethical standards must be put up to “ensure the innovation process and outcomes do not create additional vulnerability, dependencies, risks or other harms.”<sup>51</sup> The technologies must be incorporated in a way that additional harm is not caused to the individuals.<sup>52</sup>

However, often technology fails to abide by this principle. For instance, while social media can help in the dissemination of information, the threat of MDH is pervasive on these platforms. The spread of MDH has the potential to cause additional harm to individuals—an issue that needs to be resolved at the level of design.

## Neutrality

Neutrality implies that the humanitarian actors must not take sides and that the sole aim is to assist the affected communities.<sup>53</sup> It must be ensured that the application of technology is without bias and that data collection should not

# Principles to Redefine Emerging Technology

favour any group. Further, the technologies must be incorporated in a way that any military advantage is not provided to any party during conflicts.<sup>54</sup> Any databases/ identifiable information must be properly safeguarded to prevent misuse.

## **Impartiality**

Due to the growing reliance on governments and private entities for raw data and communications infrastructure, often the principle of impartiality is affected. It is often observed that the most distressed community members cannot avail aid due to a lack of digital resources or illiteracy. These parameters should be taken into account and alternative solutions need to be provided.<sup>55</sup>

## **Independence**

The humanitarian actors must be allowed, without any interference, to move around the population to deliver aid. The principle of independence suggests that “humanitarian action must be autonomous from the political, economic, military, or other objectives that any actor may hold with regard to areas where humanitarian action is being implemented.”<sup>56</sup> Often, infrastructure and ICT assets are provided to the humanitarian actor by the government or private sector; this might cause a conflict of interest in case the humanitarian agency wants to work for a population that the government or the private sector entity does not support.<sup>57</sup>

# Conclusion and Recommendations


The global humanitarian assistance ecosystem will continue incorporating more advanced technologies in the future. These innovations can improve existing efforts, but their role must not be overplayed, and their potential harm should be measured and mitigated.

This brief makes the following recommendations for the principles-based utilisation of technology in humanitarian assistance:

- **Incorporate the four humanitarian principles:** Attempts must be made to incorporate these principles while designing technological interventions for humanitarian assistance. This will help reduce the possible harms and biases that may result from incorporating different technologies, and would distinguish humanitarian action from actions of “political, military and other actors.”<sup>58</sup>
- **Implement appropriate data management practices:** The different actors in the humanitarian assistance ecosystem need to adopt policies to ensure that the data is managed ethically and effectively. For instance, the ICRC Rules on Personal Data Protection<sup>59</sup> were adopted in 2015 and revised in 2019, and the second edition of the Handbook on Data Protection in Humanitarian Action<sup>60</sup> was released in 2020 by the International Red Cross and Red Crescent Movement. Similarly, OCHA introduced the OCHA Data Responsibility Guidelines<sup>61</sup> in 2021. While the larger players in the ecosystem are increasingly focusing on data protection, it is also necessary to ensure that the smaller players understand and are able to provide adequate levels of data protection on the ground.
- **Setting standards for interoperability:** To ensure interoperability, standards—previously agreed-upon norms or requirements about systems<sup>62</sup>—should be established and adopted by participants in the humanitarian sector. At present, there are no common regulatory standards for technological innovations in humanitarian assistance.<sup>63</sup> Interoperability can help reduce personnel requirements and improve mission planning, mission rehearsal, and decision support for the operations.<sup>64</sup> Standards for communication interoperability are also critical due the number of participants in the humanitarian assistance ecosystem.<sup>65</sup>
- **Need for international cooperation:** It is integral that different states along with international organisations cooperate to ensure that the benefits of technological advancements reach different geographies. For instance, keeping in mind the importance of EO data for Humanitarian Assistance

# Conclusion and Recommendations

and Disaster Relief, the leaders of QUAD—a strategic security dialogue between Australia, India, Japan, and the United States—have endeavoured to provide resources on EO data through a Quad satellite data portal to help track climate events, disaster preparedness, and sustainable use of marine resources in the Indo-Pacific region.<sup>66</sup>

- **Reducing MDH:** Since MDH has the potential to seriously harm vulnerable and affected communities, efforts need to be made to reduce the spread of MDH. For instance, MDH on social media was used to allegedly target and erode the humanitarian status of the White Helmets group in Syria.<sup>67</sup> Online platforms need to curb the spread of MDH, strengthen their policies, and ensure their proper implementation. Further, steps must be undertaken to use AI and ML to reduce MDH on the platforms.<sup>68</sup>
- **Reducing the digital divide:** Any advancement in incorporating technologies in humanitarian missions must also be accompanied by mass access to digital infrastructure. Without basic access to digital infrastructure and in the absence of digital literacy, technological interventions will be rendered useless. Digital transformation allows humanitarian responses to be more inclusive.<sup>69</sup> Among the imperatives, therefore, is to undertake measures to reduce the existing digital divide. 

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