

# Satellites and Their Humanitarian Applications

## *Time to Highlight Their Human Aspects?*

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Humans are the only species that communicate with words, not only by actions or instinct, and communications involve at least two individuals or entities. Technological progress in the last few years, especially the advent of the social media, such as Facebook, Instagram, Twitter, youtube, etc., allow us to communicate with anyone, anywhere. Thus, ‘personal messages’ tend to become impersonal, especially if they ‘go viral’ on the internet.

At the same time that we can flood the world with our ‘personal’ messages, these messages can also be deleted by pressing a key on our smartphones, tablets or computers, a rather impersonal means of disconnecting, with no one being the wiser of the disconnection or ‘unfriend-ing’, à la Facebook.

While the new social media have facilitated the prevention of some disasters, or have brought them to the world’s attention and assisted in rescuing people and animals, many communities do not receive the humanitarian aid they need in a timely manner. During natural disasters, electricity and roads are often unavailable, so that the most basic means of communication are inaccessible: no power for TVs, radios or cellular phones, or access to the disaster area.

Satellite communications and other forms of radio communications can surmount some of these impediments, with the cooperation of the local authorities, and the International Amateur Radio Union members (“ham operators”). The Disasters Charter, adopted in 2000, has been used extensively in most areas of the world. The Tampere Convention (2005) could be more widely used (upon ratification by more countries), and both could be applied to provide aid or assistance or initial responses to humanitarian crises, not only to natural disasters.

We need to emphasize the human aspects of these situations, and perhaps rely less on ‘hi-tech’ solutions when simpler ones may be available. Satellite communications need to revert back to basic communications among people,

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to ‘personalize’ them, rather than continue to depersonalize them, as can occur with reliance on the social media ‘gone viral’. (Are these media the best use of the radiofrequency spectrum, a limited natural resource?)

The Outer Space Treaty states that outer space is the province of mankind, to be used for the benefit of all humankind. We need to emphasize the *human* in humanitarian endeavors, and facilitate access to the crisis area or point to first responders.

This paper is comprised of two parts: Part I will focus on technological changes / advances, while Part II will focus on the influence and impact of these technologies in the access to and delivery of humanitarian aid.

## I.

It seems that every day the media present us with at least one new crisis, with striking images of a disaster that has occurred, or is on-going. Photos and videos of refugees or displaced persons fleeing their homeland, subject to famine and starvation have become so commonplace as to nearly desensitize the viewer to these atrocities. On the one hand, the images help keep these crises at the forefront of the news. On the other hand, these same images tend to numb us, to the point of feeling impotent to resolve them, particularly when the crises are occurring in countries far away from our own ‘comfort zone’.

The media rely or depend on satellites to convey the images and messages, but are the media exacerbating the situation, or helping to promote solutions? The answer to this question perhaps depends on the viewer. Since the Disasters Charter was implemented in 2000,<sup>1</sup> and the Tampere Convention entered into force in 2005,<sup>2</sup> there have been vast technological changes, such as the advent of the social media, widespread use of “Smartphones” and greater access in general to the new means of communication, including the Internet, thanks to the Internet of Things (IoT).<sup>3</sup>

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1 Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters [Cited hereinafter as the Disasters Charter.] For the full text, see [www.disasterscharter.org](http://www.disasterscharter.org).

2 Tampere Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations, adopted by the Intergovernmental Conference on Emergency Communications (ICET-98), entered into force 8 January 2005. It now has 60 Signatories; Albania is the most recent one (2014). [Cited hereinafter as the Tampere Convention.] For the full text see [www.reliefweb.int/telecoms/tampere/icet98-e.htm](http://www.reliefweb.int/telecoms/tampere/icet98-e.htm).

3 The Internet of Things (IoT) is defined as a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. [internetofthingsagenda.com](http://internetofthingsagenda.com).

Further, ‘cloud computing’ helps businesses and other entities expand their reach, and enables city agencies to improve the ways they serve and connect with constituents. The cloud can be used to build, deploy, and manage applications.<sup>4</sup> According to PC magazine, “cloud computing means storing and accessing data and programs over the Internet instead of your computer’s hard drive. The cloud is just a metaphor for the Internet. ... [W]ith an online connection, cloud computing can be done anywhere, anytime.”<sup>5</sup>

All these innovations are wonderful, and promise to simplify life, if you have access to the technologies and know how to use them. What happens during a natural disaster, when there’s no electricity, and the computers cannot be operated or accessed? Or if a system has been ‘hacked’? Numerous instances of ‘hacking’ are prominent in the daily news, and many articles have been written on ways to protect data that are stored in the ‘cloud.’<sup>6</sup>

Above the clouds, in outer space, are hundreds of satellites, ranging from communication and earth observation (E/O), to Global Positioning systems (GPS) that convey information to users on Earth. Many satellite systems are expanding their coverage areas, with increased services to the maritime and aircraft sectors and to remote areas. Iridium,<sup>7</sup> Globalstar,<sup>8</sup> and o3b,<sup>9</sup> *inter alia*, aim to provide communications via satellite to these sectors and areas.<sup>10</sup>

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techtargget.com/definition/Internet-of-Things-IoT. Another description of IoT: ‘ ... is the concept of basically connecting any device with an on and off switch to the Internet (and/or to each other). <https://www.forbes.com/.../simple-explanation-internet-things-that-anyone-can-understand...> May 13, 2014.

4 [www.microsoft.com/en-us/internet-of-things](http://www.microsoft.com/en-us/internet-of-things).

5 [www.pcmag.com/article2/0,2817,2372163,00.asp](http://www.pcmag.com/article2/0,2817,2372163,00.asp).

6 A “Google” search provided more than 780,000 references to hacking and the cloud. Only one article will be cited: David Midgley, “How cloud storage became a target for hackers – and what can be done about it.” 20 October 2016. [www.cloudcomputing-news.net/news/2016/oct/20/how-cloud-storage-became-target-hackers-and-what-can-be-done-about](http://www.cloudcomputing-news.net/news/2016/oct/20/how-cloud-storage-became-target-hackers-and-what-can-be-done-about).

7 <https://www.iridium.com/network/iridiumnext> offers good information on Iridium’s current capabilities and its expansion with the Iridium NEXT, and Iridium Prime constellation. With 66+satellites in Low Earth Orbit (LEO), Iridium claims it can provide services, or reach more than 100% of the Earth.

8 [www.globalcomsatphone.com/support6.html](http://www.globalcomsatphone.com/support6.html). Globalstar states that its services do not reach the whole world, and its coverage maps show where the signal is weakest, and strongest. Sub-Saharan Africa, large parts of western China and India are not covered by Globalstar’s 48 satellites.

9 <https://www.o3bnetworks.com/>. Present customers include Royal Caribbean Cruise Lines, and the telecom entities in a number of island countries (Palau, Madagascar, Solomon Islands, Easter Island, which is part of Chile, *inter alia*.) o3b provides Ka-band broadband services through its 12 satellites located in Medium Earth Orbit (MEO); it is now part of SES, based in Luxembourg.

10 Pricing of terminals and services is not included in the websites of these entities. However, “Network Innovations” website provides data on equipment rental and service costs for the Iridium, Thuraya and Inmarsat BGAN constellations. The least

Some new satellite systems, such as OneWeb<sup>11</sup> are in the planning or early production stages, aiming to reach remote areas or regions that are currently underserved. Although these non-geostationary satellite systems envision providing satellite communications in remote areas at affordable prices, it is difficult to assess whether their prices are or will be affordable for the masses of people that have no access to communication systems.<sup>12</sup>

In part, pricing of services depends on the entity providing the services on Earth, and whether existing national regulations allow for private parties to offer services, or if only a governmental body is authorized to provide them.<sup>13</sup>

OneWeb states that its terminals in rural areas will act as an extension of existing mobile operator networks, not as a replacement, and ‘will create affordable connectivity for all.’<sup>14</sup> Should OneWeb manufacture and launch fewer satellites, and invest the monies thus ‘saved’ in infrastructure, such as cheaper services and terminals or ‘smart’phones?

Will the new satellite systems face the same obstacles as the Disasters Charter members, and signatories of the Tampere Convention, such as obtaining the necessary permits from the telecoms or other official entity in a timely manner, or will they be exempt from these and other man-made regulatory barriers?<sup>15</sup>

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expensive Iridium equipment rentals cost US \$ 51.50/week, and service US \$ 7.15/day, and an additional \$ 1.75/minute. Inmarsat’s BGAN, using a Hughes 9202 terminal costs US \$ 79.95/week, while the latest Hughes 9211 BGAN terminal with streaming internet connection up to 650 kbps costs \$ 125/week, and service costs \$ 22.10/minute. For more prices /rental costs, *see* [www.networkinv.com/services/satellite-rentals/](http://www.networkinv.com/services/satellite-rentals/).

11 According to OneWeb’s website, OneWeb, plans to launch at least 684 satellites to provide affordable access, via ‘small low-cost user terminals [that] will talk to the satellites in the sky, and emit LTE, 3G and WiFi to the surrounding areas, providing high-speed access for everyone.’ <http://oneweb.world/>. According to the Federal Communications Commission (FCC), “...OneWeb [is] ‘a proposed constellation of 720 satellites authorized by the United Kingdom. The operations proposed will be in the 10.7-12.7 GHz, 14-14.5 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 27.5-29.1 GHz, and 29.5-30 GHz frequency bands.” The FCC issued an Order and Declaratory Ruling, granting OneWeb a license, with certain conditions attached, thereby granting access to the U.S. Market for the OneWeb NGSO FSS System. *See* FCC Order and Declaratory Ruling, Adopted 22 June 2017, Released 23 June 2017. IBFS File No. SAT-LOI-20160428-00041.

12 *See* note 10, *supra* for some of the costs of existing, operational systems.

13 *See* “Measuring the Information Society Report 2016.” [www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/MISR2016-w4.pdf](http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/MISR2016-w4.pdf).

14 <http://oneweb.world/#solution>. *See* note 11, *supra*, for the FCC’s Order allowing Oneweb to operate in certain frequency bands: 10.7-12.7 GHz, 14-14.5 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 27.5-29.1 GHz, and 29.5-30 GHz frequency bands.

15 The success of satellite constellations such as OneWeb has been questioned by satellite experts, who state that in some respects the new LEO systems are similar to LEO satellite systems proposed in the 1990s, among them Iridium and Globalstar.

The previous paragraphs have dealt primarily with the technologies available to provide humanitarian aid or assistance, many which did not exist at the time the Disasters Charter (2000)<sup>16</sup> and the Tampere Convention (2005)<sup>17</sup> were drafted and adopted. This author believes that, while the new improved technologies and satellite systems are a significant step forward, more emphasis should be placed on what is happening on Earth. Thus, the question arises whether providing access to satellite systems and to the internet, and investments in infrastructure have increased in the same manner in the last 5-10 years? A look at the International Telecommunication Union's (ITU) statistics might help.

According to the ITU's most recent report, issued in 2016, Brahima Sanou, Director of the Telecommunication Development Bureau (ITU-BDT) states: "New data show that while 84 per cent of the world's people live in an area where mobile-broadband services are offered, only 47 per cent are actually using the Internet. While infrastructure deployment is crucial, high prices and other barriers prevent people from entering the digital world. The price of the service (and of the device) remains a critical determinant for whether people make use of ICTs."<sup>18</sup> Thus, costs may act as deterrents, rather than as promoters of the use of mobile communications equipment in times of disaster.

The ITU presents detailed charts and comments on the advances made by its 190+ member Administrations, and highlights the fact that mobile-broadband accounts for much of the growth in developing countries, or 'emerging economies.'<sup>19</sup> The ITU statistics may be a bit misleading, as the size of the population, income per capita level, education, and other information which would help put the progress (or lack thereof) in a context do not seem to be taken into account in the data collected by the ITU.

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Both went bankrupt in 1999, but reemerged with new owners. The cost of using these satellite constellations (communications or earth observation) will influence their success. "Low Earth Orbit," pp. 12-21 VIA SATELLITE magazine, February 2017.

16 See note 1, *supra*. Many more remote sensing /earth observation satellites are available to the Disasters Charter members than in 2000.

17 See note 2, *supra*. The proliferation of 'smart phones' and other mobile devices facilitate communications and exchanges of information in a timelier manner than when this Convention entered into force (2005).

18 "Measuring the Information Society Report 2016," p.iii. [www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/MISR2016-w4.pdf](http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/MISR2016-w4.pdf). Charts and graphs are included in nearly every chapter of this lengthy Report.

19 The ITU's ICT's Facts and Figures for 2015 state that 'Mobile-broadband penetration levels are highest in Europe and the Americas, at around 78 active subscriptions per 100 inhabitants, while Africa is the only region where mobile broadband penetration remains below 20%.' The 2015 report further states that 'in developing countries, average monthly fixed broadband prices (in PPP\$ ) are 3 times higher than in developed countries; mobile broadband prices are twice as expensive as in developed countries.' [www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015](http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015).

In brief, according to the ITU, 4 billion people from developing countries remain offline, representing 2/3 of the population residing in developing countries- most of them in underserved areas in Sub-Saharan Africa, parts of Asia and South America.<sup>20</sup> Thus, in times of natural or man-made disasters, they are likely to remain without access to information or to first responders.

## II.

While the previous section focused on telecommunication technologies and statistics, the following section will emphasize other, more human, attempts to mitigate disasters and their consequences.

Humanitarian aid is defined as ‘concern with or seeking to promote human welfare.’<sup>21</sup> Humanitarian assistance is not new to mankind: one early example is the parable of the Good Samaritan who provides aid to a stranger that has been robbed.<sup>22</sup> In more recent times, humanitarian aid has become a tool of international diplomacy: “Foreign aid serves several purposes... the primary reason for aid allocations or aid restrictions, is to pursue foreign policy goals. Strategic and commercial interests of donor countries are the driving force behind many aid programs.”<sup>23</sup>

Perhaps the United Nations is less biased? The UN General Assembly adopted resolution 46/182 in 1991,<sup>24</sup> which led to the creation of the UN Office for the Coordination of Humanitarian Affairs (OCHA). OCHA’s purpose is to increase the effectiveness of humanitarian assistance, and to make humanitarian agencies more accountable (and less political?). Since 1991, the UN has passed several other resolutions related to the provision of humanitarian assistance in times of natural disasters, or of armed conflict, and more recently, for the safety and protection of aid workers in specific countries.<sup>25</sup>

Realizing the need for better coordination amongst the agencies engaged in humanitarian aid /assistance, in 1997 the Sphere Project was established as a

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20 *Ibid.*

21 One of many definitions may be found at <https://en.oxforddictionaries.com/definition/humanitarian>.

22 A ‘Good Samaritan’ is defined as a compassionate person who unselfishly helps others, especially strangers. [The phrase is derived from the Samaritan passerby in the New Testament parable who was the only person to aid a man who had been beaten and robbed (Luke 10:30-37).] [www.thefreedictionary.com/good+Samaritan](http://www.thefreedictionary.com/good+Samaritan).

23 Clair Apodaca, “Foreign Aid as Foreign Policy Tool.” Online Publication Date: Apr. 2017, <http://politics.oxfordre.com/view/10.1093/>.

24 UNGA A/RES/46/182, adopted 19 Dec. 1991, during the 78th UNGA plenary meeting. The UN’s Office for the Coordination of Humanitarian Affairs (OCHA) is based on the UN’s Humanitarian Charter, resolution 46/182 (1991).

25 See Adopting Six Resolutions, General Assembly...<https://www.un.org/press/en/2015/ga11738.doc.htm>.

voluntary effort that “brings a wide range of humanitarian agencies together around a common aim – to improve the quality of humanitarian assistance and the accountability of humanitarian actors to their constituents, donors and affected populations.”<sup>26</sup> The Sphere Project has been working on a Handbook, which is revised periodically, and states on its website that “[t]he Sphere Handbook is one of the most widely known and internationally recognized sets of common principles and universal minimum standards for the delivery of quality humanitarian response. Because it is not owned by any one organization, the Sphere Handbook [available in several languages] enjoys broad acceptance by the humanitarian sector as a whole.”<sup>27</sup>

The Handbook focuses on the [UN] Humanitarian Charter and the Minimum Standards, and is based on two core beliefs: first, that all possible steps should be taken to alleviate human suffering that arises out of conflict and calamity, and second, that those affected by a disaster have a right to life with dignity and therefore a right to assistance...<sup>28</sup> Humanitarian agencies committed to this Charter and to the Minimum Standards will aim to achieve defined levels of service for people affected by calamity or armed conflict, and to promote the observance of fundamental humanitarian principles.<sup>29</sup>

Interestingly, several of the relief organizations involved with or members of the Sphere Project are faith-based entities (the Swedish Lutheran Church, the Catholic Church, the Salvation Army), while the Sphere Project itself is based on the Humanitarian Charter, which in turn, is based on international law, refugee law, and the Code of Conduct for the International Red Cross and Red Crescent Movement and (NGOs) in Disaster Relief. As stated in the Handbook’s publications page, “[t]he Humanitarian Charter and Minimum Standards in Disaster Response are the product of the collective experience of many people and agencies. They should not ...be seen as representing the views of any one agency.”<sup>30</sup>

The Sphere Project, like the Disasters Charter, depends on voluntary efforts to accomplish its mission: to bring humanitarian aid to areas or regions affected by a natural disaster, such as the Nepal earthquake in 2015 or the Haiti earthquake in 2010. In both cases thousands of people lost their lives, and thousands more were left homeless. While aid has been given to these two countries, it has not been sufficient to provide shelter, let alone rebuild homes for all those affected. Years later, many are still homeless, living in

26 [www.sphereproject.org/about/](http://www.sphereproject.org/about/). In 2016, the Sphere Project became a non-profit association under Swiss Law.

27 *Ibid.*

28 The Sphere Project: Humanitarian Charter and Minimum Standards in Disaster Response. [www.unhcr.org/en-us/partners/guides/3b9cc1144/humanitarian-charter-minimum-standards-disaster-response-courtesy-sphere.html](http://www.unhcr.org/en-us/partners/guides/3b9cc1144/humanitarian-charter-minimum-standards-disaster-response-courtesy-sphere.html).

29 *Ibid.*, Part 1, p. 2. [www.sphereproject.org/handbook/the-humanitarian-charter/](http://www.sphereproject.org/handbook/the-humanitarian-charter/).

30 *Ibid.*, p. iii.

make-shift shelters, and facing many bureaucratic obstacles in order to obtain some aid.<sup>31</sup>

Some observers note that corruption and government ineptitude complicate getting the assistance needed to rebuild homes, or just even getting information on how to access the aid. The author of one opinion piece set up an “Accountability Lab” in Nepal, to help people navigate through the ‘red tape’, and get the needed information. He states that ‘the lack of information has been a major challenge for many Nepalis, especially the poor and the disadvantaged.’<sup>32</sup> The Accountability Lab set up the “Citizen Helpdesks” to gather and disseminate details to close information gaps between the government, the media, donor organizations and communities.

The Helpdesks have become a platform for feedback from citizens on a range of issues such as migration, government services and education. The feedback provided by and from the Helpdesks and other groups working in Nepal, have begun to hold the government more responsive (and accountable?), while citizens can better understand their role in recovery.<sup>33</sup> As the author notes, “In times of crisis, international aid is essential to help alleviate suffering. But the international community can bring about more lasting change by directing their support towards citizens and local organizations committed to solving the root problems of corruption and lack of information.”<sup>34</sup>

The 2015 earthquake in Nepal gave rise not only to the Helpdesks, but to several community-based, ‘grass roots’ organizations that worked, and continue working to overcome some of the after-effects of the disaster. These include building greenhouses for growing vegetables, setting up cooperatives for women with disabilities, and even having laws passed to favor them.<sup>35</sup> While there has been some progress in rebuilding shelter for those affected by the earthquakes in Nepal, it has been slow, and many Nepalis are still homeless. Can Nepal’s ‘grass roots’ efforts serve as examples to other organizations in other countries?

In another area of the world, the Middle East, one of the starkest examples of the need for humanitarian aid is Yemen. The United Nations’ Office for the Coordination of Humanitarian Affairs (OCHA) states in its August 2017 report that children in that country face a triple threat: cholera, hunger (famine?) and violence. It also states that its original budget, which has not been entirely funded, has been increased, with the hopes of providing the

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31 Narayan Adhikari, 25 April 2017. [www.aljazeera.com/indepth/opinion/2017/04/nepal-earthquake-disaster-years-41bn-170412110550808.html](http://www.aljazeera.com/indepth/opinion/2017/04/nepal-earthquake-disaster-years-41bn-170412110550808.html).

32 *Ibid.*

33 *Ibid.*

34 *Ibid.*

35 American Jewish World Service, ‘Recovering from Nepal’s – Earthquakes Two Years Later.’ [www.ajws.org/](http://www.ajws.org/).



humanitarian aid needed in Yemen.<sup>36</sup> The armed conflicts and efforts to mitigate disasters in the Middle East seem to bear out the view that “the granting and the denial of foreign assistance can be a valuable mechanism designed to modify a recipient state’s behavior. ... The use of multilateral forums has its advantages. Multilateral aid is cheaper, it disperses accountability, and it is often viewed as less politically biased.”<sup>37</sup>

The OCHA is now working to establish “cluster” groups, as it realizes that coordination amongst all the humanitarian aid givers- governmental and non-governmental entities – ‘is vital in emergencies. Good coordination means less [sic] gaps and overlaps in humanitarian organizations’ work. It strives for a needs-based, rather than capacity-driven, response. It aims to ensure a coherent and complementary approach, identifying ways to work together for better collective results.’ The OCHA, like the Disasters Charter, and the Tampere Convention, also defers to a country’s sovereign rights:

“Sovereignty, territorial integrity and national unity of States shall be fully respected in accordance with the Charter of the United Nations. In this context, humanitarian assistance should be provided with the consent of the affected country and in principle on the basis of a request by the affected country.”<sup>38</sup>

Similarly, the Sphere Project Handbook states that “[I]n all contexts, disaster response should support and/or complement existing government services in terms of structure, design and long-term sustainability.”<sup>39</sup>

Humanitarian aid agencies, whether governmental or non-governmental, whether members or signatories of the UN Humanitarian Charter, the Sphere Project, the Disasters Charter or the Tampere Convention, face the same challenge: the need to respect the affected country’s sovereign rights, and respect that country’s regulations, such as laws and policies related to the importation of communications equipment, securing the proper license(s) to use the equipment in times of emergencies or disasters.

In addition, many of the aid-givers seem to face government ineptitude and even corruption. Are they able to provide the kind of aid that is really needed, when the government itself might be contributing to the crisis, and when the politicians create bureaucratic barriers, impeding the aid from reaching the people most in need? The situation in Yemen and in Syria are cases in point.

As the Sphere Project Handbook notes, “Assistance and protection are the two indivisible pillars of humanitarian action. Humanitarian agencies are frequently faced with situations where human acts or obstruction threaten the fundamental well-being or security of whole communities or sections of a

36 See note 24, RE: UNOCHA, [www.unocha.org](http://www.unocha.org).

37 Apodaca, note 23, *supra*.

38 [www.unocha.org/legacy/what-we-do/coordination-tools/cluster-coordination](http://www.unocha.org/legacy/what-we-do/coordination-tools/cluster-coordination).

39 [www.sphereproject.org](http://www.sphereproject.org), p. 7.

population, such as to constitute violations of the population's rights as recognised by international law... In the context of armed conflict, the paramount humanitarian concern is to protect people against such threats."<sup>40</sup> Whether the UNOCHA or the Sphere Project participants will be able to provide the humanitarian aid needed, and mitigate the effects of the crises in the Middle East remains to be seen. A superficial, let alone an in-depth analysis of this situation are beyond the scope of this paper.

While the social media are sometimes chastised for focusing on superficial issues (e.g., "body-shaming"), they have quickly become a means of communicating the need for humanitarian aid and to circumventing official policies: in some instances, mobile phones can take pictures and disseminate the images even while the government tries to prevent the news from coming in, or going out beyond the country's borders. In other cases, mobile phones have been crucial in the rescue attempts by volunteers, good Samaritans in Texas during Hurricane Harvey in August 2017.

Cooperation amongst the population, focusing on building resilience, is one approach that seems to be working in some places, thanks to using mobile phones to disseminate information.<sup>41</sup> According to one source, in 1998 there were approximately 4 million cell phone subscribers in Africa and it estimated that by 2013 there would be 735 million subscribers.<sup>42</sup> According to this same source, mobile phones are used from banking to keeping track of wildlife, for ensuring that food and medicines reach the intended people, as cell phones streamline the delivery process, enabling aid workers to bypass the red-tape and corruptibility of bureaucracies.<sup>43</sup>

At another level, according to the ITU, international Internet bandwidth grew worldwide by 32% between 2015 and 2016. Africa experienced an increase of 72% during this period, the highest of all regions. The ITU also found that mobile broadband is more affordable than fixed broadband: the steepest decrease occurred in least developed countries (LDCs), where prices fell from 32.4 to 14.1% of GNI p.c.<sup>44</sup>

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40 [www.sphereproject.org](http://www.sphereproject.org), p. 12.

41 Several articles by Peter Ford and Scott Peterson in the Christian Science Monitor describe crisis situations in different African countries, and underscore the need for cooperative action to stave off famine and migration due to droughts. See [www.csmonitor.com/World/Africa/2017/0730/Can-famine-be-checked-as-Africa-faces-its-worst-crisis-since-the-1980s](http://www.csmonitor.com/World/Africa/2017/0730/Can-famine-be-checked-as-Africa-faces-its-worst-crisis-since-the-1980s). In Houston, Texas, mobile phones have helped find people trapped in their homes due to the flooding brought about by Hurricane Harvey in August 2017. In some instances, the mobile phone users were able to respond more quickly than calls to the local emergency (911) number.

42 <http://brighterbrains.org/articles/entry/we-can-hear-you-now-12-ways-cell-phones-accelerate-africa>.

43 *Ibid.*

44 [www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures201](http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures201), pp. 5, 7.

Greater accessibility to mobile phones and services at reduced costs are changing how we communicate, and how humanitarian assistance and disaster relief can be provided in a timely, more personal way. This trend seems to be a good example of emphasizing the ‘human’ aspects of humanitarian communications.

### III. Conclusion and Recommendations

Remote sensing /earth observation and communication satellites, mobile telephony and the social media play important roles in bringing the world’s attention to crisis situations, and in disseminating this information in a timelier manner than waiting for official government pronouncements. Mobile phone penetration has increased exponentially, particularly in developing countries. The national regulation of satellite communications and of mobile telephony, however, has not kept pace with these changes, so that governments still act as major ‘gate-keepers’ in accessing timely information and assistance.

Some common themes appear in the provision of disaster relief /humanitarian aid:

- The providers of services and information depend on national and local regulations, as well as on the good will of the government(s) in order to deliver aid or services, lest they infringe on the sovereignty of the nation.
- Participation in the Disasters Charter is voluntary and free of charge. According to Art.3.1 of the Disasters Charter, there is no exchange of funds in order to provide or receive data from remote sensing /earth observation satellites.<sup>45</sup> Moreover, since providing assistance under the Disasters Charter is not legally binding, no liability attaches for providing erroneous information.<sup>46</sup>
- The Sphere Project, like with the Disasters Charter, is based on voluntary initiatives, and there is no international law compelling members to act or desist from acting in times of crisis. While the OCHA is assigned the coordination of operations, this coordination is limited to activities of an international nature. The Sphere Project Handbook is available online, and in several languages.<sup>47</sup>

In 2006, the UN passed resolution 61/110, establishing the “United Nations Platform for Disaster Management and Emergency Response- UN-SPIDER”, whose mission is to “ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of

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<sup>45</sup> Disasters Charter, note 1, Art. 3.1.

<sup>46</sup> Art. V (5.4), Disasters Charter, note 1.

<sup>47</sup> The Sphere Project, notes 26, 28.

space-based information to support the full disaster management cycle”.<sup>48</sup> UN-SPIDER, through its regional offices and in cooperation with the national government(s), provides training in the use of remote sensing information, thus enhancing the usefulness of the Disasters Charter.

Signatories to the Tampere Convention, however, are bound by treaty to their obligations and other legal underpinnings, such as the ITU’s Constitution, Convention and Radio Regulations. Under the Tampere Convention, agreements regarding payment or reimbursement for telecoms services in times of crisis shall specify terms and conditions, restrictions and costs related to such assistance.<sup>49</sup> This Convention simplifies the use of life-saving telecommunication equipment, but states that no telecom assistance will be provided without the prior consent of the requesting State Party, i.e., the government of that country.<sup>50</sup>

The International Amateur Radio Union (IARU) drafted a 2-part Handbook, issued by the ITU as the Handbook on Disaster Communications, with the aim of reducing the regulatory barriers that impede the rapid deployment of telecom resources for disaster relief operations.<sup>51</sup> Thus, while humanitarian aid organizations or entities still have to receive the governments’ permission or license in order to provide remote sensing information, or to import telecom equipment to assist in times of disasters, new technologies, particularly the social media and mobile telephony, are more difficult to shut down, and can be used to bypass certain government restrictions.

With the proliferation of ‘smart’ phones, individuals, rather than organizations can respond more quickly, and help mitigate the effects of natural or man-made disasters. The organizations involved in providing humanitarian aid would do well to take notice of this fact, and perhaps team up with the providers of mobile telecommunications equipment and services. In turn, the telecom service providers could donate some free air time to the users in times of crisis or disaster. The Good Samaritan of the 21<sup>st</sup> century may well be a volunteer, the person with a ‘smart’ phone, ready and willing to use it on behalf of someone in distress at no cost.

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48 United Nations General Assembly resolution 61/110, 14 December 2006. [www.un-spider.org/sites/default/files/AC105\\_1093E.pdf](http://www.un-spider.org/sites/default/files/AC105_1093E.pdf).

49 Tampere Convention, note 2, Art.2, Art. 4.1-4.3.

50 *Ibid.*, Art. 4.5.

51 *Ibid.*, Art. 9. The ITU Handbook on Disaster Communications is available at [www.itu.int/ITU-D/SG-D/DSG02/100/167VE.DOC](http://www.itu.int/ITU-D/SG-D/DSG02/100/167VE.DOC).