

Systemy Logistyczne Wojsk
Zeszyt 59 (2023)
ISSN 1508-5430, s. 21-36
DOI: 10.37055/slw/186388

Institut Logistyki
Wydział Bezpieczeństwa, Logistyki i Zarządzania
Wojskowa Akademia Techniczna
w Warszawie

Military Logistics Systems
Volume 59 (2023)
ISSN 1508-5430, pp. 21-36
DOI: 10.37055/slw/186388

Institute of Logistics
Faculty of Security, Logistics and Management
Military University of Technology
in Warsaw

Information Management in Humanitarian Aid on the Example of the Humanitarian Emergency Telecommunications Cluster (ETC)

Zarządzanie informacją w pomocy humanitarnej na przykładzie klastra humanitarnego Emergency Telecommunications Cluster (ETC)

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Abstract. The topic of the article is information management in humanitarian aid on the example of the humanitarian Emergency Telecommunications Cluster (ETC). The research niche described in the article is the analysis of the principles, relationships and procedures of communications in the humanitarian cluster, taking into account the organizations cooperating in the Emergency Telecommunications Cluster (ETC). The aim of the considerations is to establish and explain the basic principles and solutions of information management that were adopted at the level of the humanitarian Emergency Telecommunications Cluster (ETC). The authors adopted the thesis that information management in ETC plays a key role in the perspective of improving humanitarian aid and strengthening coordination of humanitarian organizations. The research material consisted of source documents developed by partners cooperating at the ETC level, supplemented with statistical data and information from scientific literature. For the purposes of the article, research methods were used in the form of analysis of existing data (desk research), analysis of documents published on the activities of ETC, and, in auxiliary scope, logical inference based on the collected material. The analysis of the presented material allows us to conclude that various guidelines, principles, procedures and solutions in information management are used for the needs of ETC. They are adapted to carry out humanitarian tasks as part of preparation for threats (Preparedness) and response to crises (Emergency). ETC serves as a solution provider and service provider in the field of emergency telecommunications. The operation of the ETC is one of the ways to maintain information security when providing international humanitarian aid.

Keywords: ETC, information, cluster approach, emergency telecommunications, information security

Abstrakt. Tematem artykułu jest zarządzanie informacją w pomocy humanitarnej na przykładzie humanitarnego klastra Emergency Telecommunications Cluster (ETC). Niszę badawczą opisaną w artykule stanowi analiza zasad, relacji i procedur łączności w klastrze humanitarnym z uwzględnieniem organizacji tworzących system telekomunikacji kryzysowej na poziomie Emergency Telecommunications Cluster (ETC). Celem rozważań jest ustalenie i wyjaśnienie podstawowych zasad i rozwiązań w zakresie zarządzania informacją, które zostały przyjęte na poziomie humanitarnego klastra ETC. Autorzy stawiają tezę, że zarządzanie informacją w klastrze ETC odgrywa kluczową rolę w perspektywie usprawnienia pomocy humanitarnej i poprawy koordynacji działań organizacji humanitarnych. Materiał badawczy stanowiły dokumenty źródłowe opracowane przez partnerów współpracujących na poziomie ETC, uzupełnione o dane statystyczne, a także informacje z literatury naukowej.

Na potrzeby artykułu wykorzystano metody badawcze w postaci analizy danych zastanych (*desk research*), analizy dokumentów publikowanych na temat działalności ETC oraz, w zakresie pomocniczym, wnioskowania logicznego na podstawie zebranego materiału. Analiza przedstawionego materiału pozwala stwierdzić, że na potrzeby ETC wykorzystywane są różne wytyczne, zasady, procedury i rozwiązania z zakresu zarządzania informacją. Są one dostosowane do realizacji zadań humanitarnych w ramach przygotowania do zagrożeń (*Preparedness*) oraz reagowania na sytuacje kryzysowe (*Emergency*). ETC pełni rolę dostawcy rozwiązań i usług w zakresie telekomunikacji kryzysowej. Funkcjonowanie klastra jest jednym ze sposobów utrzymania bezpieczeństwa informacji podczas świadczenia międzynarodowej pomocy humanitarnej.

Słowa kluczowe: klastr, pomoc humanitarna, telekomunikacja kryzysowa, bezpieczeństwo informacyjne

Introduction – Methodological Provisions of the Article

The issue of information management for the purposes of carrying out tasks in the international humanitarian aid system is part of the broader context of security. One of the dimensions of the latter can be treated as information security understood as „the desired level of protection of the necessary information resources, the technology of their creation and use, as well as the rights of IT entities and ensuring their stable functioning in all international and social conditions” (Batorowska, 2019, p. 90-91). Information security is related to the development of an individual’s ability to function in an information and communication technology environment in which information is used as a protected good (Batorowska, 2018).

The aim of the considerations in the article was to determine and explain the basic principles and solutions in information management adopted at the level of the humanitarian Emergency Telecommunications Cluster (ETC). The ETC functions as one of the specific clusters of international humanitarian aid, based on the methodology of implementing humanitarian tasks developed by the World Food Program (WFP). The functioning of the ETC is in line with the program assumptions of international humanitarian aid under the auspices of the United Nations (UN).

The time range of the presented article covers the years 2016-2021. Since 2016, the role of the ETC in the area of preparedness for crises has become visible for the first time. Previously, the cluster focused on emergency response activities. The year 2021 was adopted as the final year due to the availability of statistical and qualitative data, with particular emphasis on annual reports on ETC activities.

The article uses research methods in the form of *desk research* (existing data analysis) and analysis of source documents. In the case of documents, the leading

role was assigned to annual reports on ETC activities, lists of organizational rules, operational guidelines and substantive annexes, and the Cluster Strategy, implemented in 2016-2020, updated for 2021-2025. In the auxiliary scope, the state of scientific literature was discussed, identifying the research gap in the selected topic.

Certain limitations were taken into account in the studies. The presented arguments and conclusions correspond to the introduction to the subject of information management in the context of the functioning of the ETC. They apply to the cluster as a whole, without characterizing the detailed solutions that have been developed in individual countries in response to specific humanitarian crises. One should remember about the specificity of responding and preparing for threats in different regions, and thus adapting the program and strategic assumptions resulting from the discussed ETC documents to the practice of field operations.

Another limitation in examining the role of the ETC is the significant diversity of regulations, standards and practices developed by organizations cooperating at the cluster level. The known solutions do not have to be fully applicable to every humanitarian operation carried out with the participation of the ETC.

The arguments concern a relatively narrow area of information management on the example of a single humanitarian cluster. The solutions developed at the ETC level are specific compared to the other ten clusters in the UN institutional system. This is especially true of the differences in information management in the humanitarian ETC and Logistics clusters.

Due to the wide research spectrum, it was decided to focus only on internal accountability standards and key principles affecting information management within the ETC.

Literature Review and Research Gap Identification

The issue of the functioning of the humanitarian cluster in the form of the Emergency Telecommunications Cluster (the ETC) has not received a separate study in Polish. It was mentioned in the English-language scientific literature when considering such detailed issues as the systemic interpretation of international crisis management (Haddow *et al.*, 2011), cost optimization and benefits in investing in emergency communication technologies (Gardner-Stephen, *et al.*, 2019) or determining the position of the ETC in the Humanitarian Supply Chain (Lewin *et al.*, 2018). The importance of the ETC was analysed in the context of recommending improvements in the field of telecommunications in solving security crises in the form of terrorist attacks (National Disaster Response Plan, 2018). Part of the discussion concerned sharing of good practices in the UN in response to humanitarian crises caused by natural forces in some African countries (Donven and Hall, 2013; Mubaraka *et al.*, 2013) or in the region of Oceania (Gardner-Stephen *et al.*, 2017).

The cooperation of the organizations forming the ETC with the International Telecommunications Union (ITU) was mentioned on the occasion of the response to the humanitarian crisis in Haiti in 2021 (Matracia *et al.*, 2022). A significant part of the listed items contained only fragmentary data and references to the subject of activity and procedures used in the ETC. This was accompanied by narrowing down the considerations to selected aspects and specifics of activities carried out in some countries and, less frequently, regions, which allows to identify a cognitive gap in the selected topic.

One of the more cross-sectional scientific views on the functioning of the ETC is the article by A. Serrano-Santoyo and V. Rojas-Mendizabal, published in 2017 in the “European Scientific Journal”. The authors propose to analyse the humanitarian telecommunications cluster in a broad sense, i.e. as a socio-technical system, and not only organizational and technical procedures and a set of technologies represented, for example, by ICT systems (Serrano-Santoyo and Rojas-Mendizabal, 2017). A lot of valuable information on the principles and activities implemented through the ETC was also included in the good practice manual prepared by the WFP (World Food Programme). The latest update of the manual was carried out in 2021 (WFP, 2021b; WFP, 2021c).

Emergency Telecommunications Cluster (ETC) as a Cluster of International Humanitarian Aid in the United Nations System

The abbreviation ETC translates as a telecommunications cluster (and in the extended sense as a communication and connectivity cluster). It is also sometimes referred to as emergency (crisis) telecommunications (Struzak, 2000). It is one of the institutionally and functionally separated areas of international humanitarian aid. Humanitarian activities of international organizations, cooperating states and other entities are part of the so-called cluster approach. Sectoral activities are assumed, with the relevant organizations being assigned a leading and coordinating role (Landmann, 2021; Landmann and Ślusarczyk, 2022). Currently, there are 11 clusters of international humanitarian aid, which include: health, victim protection, agriculture, damage repair, education, food security, logistics, water and sanitation, temporary shelter, camp management for the affected population, and emergency telecommunications (Landmann, 2021). The topic of the cluster approach has been exhaustively elaborated (Abaya *et al.*, 2020; Altay and Labonte, 2011; Fredriksen, 2012; Konyndyk *et al.*, 2020; Stumpfenhorst *et al.*, 2011), therefore it is only necessary to mention the concept for humanitarian practice.

The ETC is associated with the functioning of a cooperation network for the implementation of humanitarian tasks on the international arena. The functions of directing the activities and coordinating the cooperation of various entities were

entrusted to the World Food Program (WFP) as one of the agencies of the United Nations. The WFP has made a commitment to ensure that all humanitarian organizations are connected and communicated via Internet and telephone connections. Implementation of the commitment should take place no later than 48 hours after the start of the operation at the site of the humanitarian crisis. Telecommunications and information security requirements facilitate the achievement of the objectives foreseen for individual humanitarian operations. WFP is able to meet the requirements through cooperation with such non-governmental organizations that promote the development of telecommunications in crisis conditions, such as World Vision International, NET Hope and Telecoms Sans Frontieres, as well as additional partners maintaining readiness to deploy workers within 72 hours of the start of humanitarian operations. The sector has been developing since 2005, and its role is growing in the conditions of the need to organize communications and ensure communication using appropriate telecommunications systems as support for logistics processes (Dobrowolska-Polak, 2014). The solutions used can be analyzed as part of a technical subsystem in modern logistics implemented also for humanitarian purposes (Magiera, 2020).

Emergency Telecommunications activities can be considered in the logistical process of information management, which is essential for logistical decision-making (Ściborek and Borucka, 2022). The growing importance of ETC in the practice of providing international humanitarian aid results from the key role of information exchange during operations at the site of a humanitarian crisis. One of the tasks entrusted to the ETC is to ensure information security in the conditions of bilateral communication with the environment and in communication between humanitarian organizations. Decisions are made under conditions of risk and time pressure, and each delay translates into additional threats to the injured population and property. Emergency telecommunications, as an area of the ETC's activity, facilitates the conduct of humanitarian operations and translates into increased efficiency of coordination of activities of various organizations and countries. Efficient exchange of information is one of the conditions for meeting humanitarian needs. Through the ETC, universal rules and procedures regarding the exchange of reports, voice and fax messages, development and sharing of measurement results, high-resolution aerial and satellite photos or data processed in computer databases are shaped (Struzak, 2000).

Selected Guidelines, Rules, Procedures and Solutions in Information Management within ETC

Information and communication management is one of the basic areas of activity of organizations cooperating within the ETC. It concerns the maintenance

of the information exchange system and the organization of communication at the global level and in relation to humanitarian operations in specific countries. The formulated guidelines and actions taken in the area of information and communication management contribute to improving the capacity of stakeholders in both analysing threats and making decisions when responding to humanitarian crises. Information is the foundation of decision-making for coordinated and effective preparedness and response to security threats. Information sharing also takes place during the recovery phase as a separate phase of international crisis management (Sakurai and Murayama, 2019).

The leading organization, which is the WFP, is responsible for information management on the example of the ETC. It was obliged to generate up-to-date information on the cluster and to engage in its exchange with strategic partners and all stakeholders. It has been given competence in the field of establishing a policy of confidentiality and data privacy in the ETC cluster (IASC, 2008). It can be stated that in information management at the ETC level, subjective competences in the process of management and coordination of activities have been clearly defined.

As for the general principles of information management and exchange during humanitarian operations, all humanitarian organizations involved in the ETC are guided by such criteria as: accessibility, inclusion in partnerships, interoperability, assessment of reliability and credibility of information, adequacy in terms of practical use of information or its verifiability. Other principles relate to objectivity, neutrality from political interests and pressures, timeliness, permanence of information records, and confidentiality with regard to information legally protected from public disclosure (IASC, 2008).

The aim of the ETC activities in the area of information management is to ensure the sharing, exchange, storage and availability of information for organizations in the cluster and for the wider humanitarian community. Information and communication management is operationally based on the adoption of standards, project implementation, dissemination of good practices, development of information policy, enabling and implementation of processes, exchange of experience, adoption of technical tools and creation of an information base for effective preparation, response and recovery during operations humanitarian. In addition, the ETC develops standards for common equipment and procedures for the use of information and communication technologies, including the creation of a list of GSM providers and the availability of data transmission services in the 2G, 3G and LTE standards. Other specific objectives relate to the creation of a service platform with contact information for individual actors involved in humanitarian action and the preparation of maps and data storage in the form of documents (ETC, 2023b). Information management at the ETC follows detailed guidelines developed by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) (IASC, 2008).

In the years 2016-2021, the strengthening of the role of the ETC as a provider of solutions and service providers for countries threatened by humanitarian crises or struggling with the negative effects of such threats became visible. The main areas of services provided included:

- mobile telephony, with the possibility of voice communication for humanitarian organisations, national and local authorities in the country affected by the crisis and the affected civilian population;
- internet connectivity;
- technological and infrastructural support for local radio broadcasters;
- Common Feedback Mechanism (CFM) as a tool to facilitate dialogue between local communities and aid providers;
- services in the field of guaranteeing the security of information and communication technologies and the security of information exchange, including the provision of protocols, algorithms and encryption technologies for the purposes of information management in various operational areas. Moreover, this involves ensuring the operation of two-way VHF radio networks;
- coordination of Unmanned Aircraft Systems (UAS), in particular taking into account the use of drones;
- customer service in the form of technical support for all users of ETC services (WFP, 2020).

ETC operates on the basis of an extensive network of cooperation at the institutional level, i.e. by maintaining strategic partnerships between individual humanitarian organizations. The number of strategic partners in the ETC changed over time, which translated into the potential in the field of information management and shaping information security in the cluster (Figure 1).

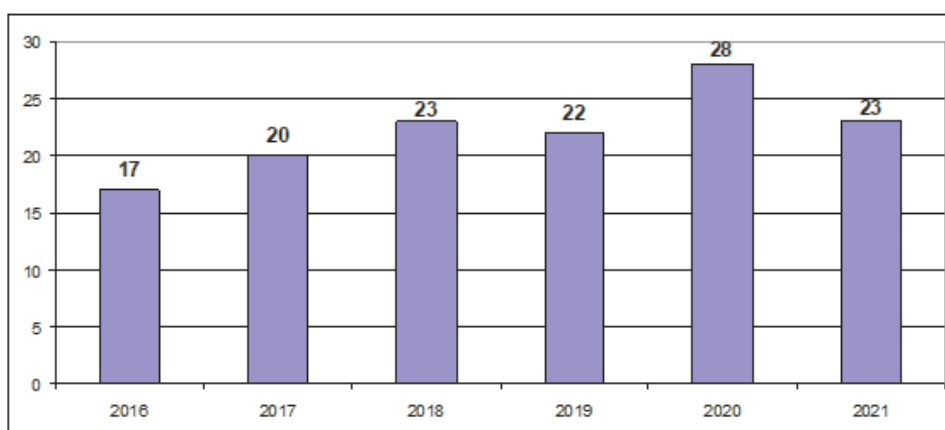


Fig. 1. Number of ETC strategic partners in 2016-2021

Source: ETC, 2023a

The analysis of the data presented in Figure 1 shows that the largest cooperation network was maintained in 2020 (28 organisations), while the smallest one concerned 2016 (17 strategic partners). The reduction in the number of organizations participating in the ETC in 2021 to 23 can be explained by the negative implications of the Covid-19 pandemic for governments and many non-governmental organizations. The willingness to participate in and finance tasks in the field of international humanitarian aid decreased for some organizations (Brown, 2021).

The types of operations carried out by humanitarian organizations cooperating at the ETC level in 2016-2021 are listed in Table 1.

Table 1. Number of operations and number of countries where tasks were carried out via ETC in 2016-2021

	2016	2017	2018	2019	2020	2021
Actions in crisis situations (Emergency)	8	10	9	9	8	10
Preparedness activities (Preparedness)	1	5	9	12	12	17
Number of countries	9	16	18	21	18	26

Source: ETC, 2023a

Table 1 shows that two types of operations were carried out under the ETC, i.e. *Emergency* actions and *Preparedness* actions. The former ones were a direct response to humanitarian crises caused by human activity or the impact of natural forces, while the latter ones were related to shaping the state's readiness in the event of similar threats in the future. Projects covered by the financing perspective outlined in the ETC 2020 Strategy were implemented through the ETC. After 2020, it was replaced by the ETC 2025 Strategy. In 2016-2021, 54 *Emergency* and 56 *Preparedness* operations were carried out, with the share of the latter steadily increasing in subsequent years. The importance of international cooperation was growing in the conditions of the need to provide emergency telecommunications. In turn, the number of countries where activities were carried out has changed over time, although an upward trend should be noted. While in 2016 it was only 9 countries, in 2021 there will already be a record 26 countries.

The first type of operations carried out with the participation of the ETC are response activities, i.e. *Emergency* as a direct response to a given humanitarian crisis. Crisis response has been made the first pillar of the ETC 2025 Strategy. It consists in preparing personnel, processes and technological solutions to support national emergency response capabilities. Specific tasks include enabling real-time connectivity for humanitarian organizations, establishing cooperation with local

telecommunications operators, and restoring communication services to the affected population (WFP, 2021a). Other tasks are related to ensuring the security of public and private communications and promoting innovation in the implementation of information and communication technologies during the recovery phase of emergency operations. The latter task is part of the innovation and sustainable technology pillar for 2020-2025 (WFP, 2021a).

The second type of operations carried out by ETC participants are *Preparedness* activities. In the field of information management and shaping information security, they rely on the support of the governments of the countries receiving assistance in the implementation of appropriate information and communication technologies. The ETC supports the exchange of information between governments, NGOs, international organizations, businesses, and the population itself. Among the leading areas within *Preparedness*, the following ones can be found:

- technical assistance for authorities at the central and local level, consisting of activities in the field of shaping the operational readiness of public authorities, a holistic assessment of the country in terms of the information and communication potential of the public and private sectors in the event of a crisis, and supporting national authorities in creating a coordination group in the field of information and communication technologies;
- increasing the capacity of technical infrastructure for communication in crisis conditions;
- a methodology for prioritizing humanitarian crisis preparedness for vulnerable countries, including assessing ICT capabilities to overcome crises. The methodology in question was published by WFP for the development of activities in ETC in the latest version in 2022. It is based on a combination of quantitative and qualitative assessments to establish a terminal value for countries most at risk of humanitarian crises and therefore showing projected emergency telecommunications needs (Lim *et al.*, 2022);
- conducting trainings and simulations of emergency actions for central and local authorities as an element of knowledge sharing in the field of information and communication technologies. Specific activities include the delivery of a training course called ICT Emergency Management for Governments and Partners (ICT4Gov) and simulations under the ETC-ITU Emergency Telecommunications Tabletop Simulations programme;
- monitoring of early warning forums and platforms, especially at the level of the Global Disaster Alert and Coordination System (GDACS);
- preparing and providing countries with their ICT profiles and connectivity maps;
- sharing with partners the ICT return on investment model developed for the ETC in the event of humanitarian crises;

- providing resources to support national preparedness in the area of information and communication technologies, including maintaining stocks of emergency equipment through deployment in UNHRD warehouses and partner countries (WFP, 2021c).

As part of preparing for crises, ETC promotes the provisions of the Tampere Convention, adopted on June 18, 1998, which regulates the provision of telecommunications resources in the prevention of disasters and removal of their effects. The Convention provides guidelines to facilitate the management of telecommunications resources, such as satellite navigation systems and mobile networks during crises. It involves breaking down regulatory barriers to travel for relief personnel, transit of equipment, flow of information, and use of telecommunications resources to achieve better emergency communications outcomes (Rahrig, 2010).

In the management of information at the level of building state preparedness for humanitarian crises, the risk assessment process should be of great importance. The organizations cooperating in the ETC use the methodology recommended by the Inter-Agency Standing Committee (IASC). A country profile is created for the risk of a specific type of humanitarian crisis and information is exchanged between stakeholders. Threats are divided into several categories, including natural disasters, armed conflicts and civil unrest, epidemics and pandemics, drastic changes in the socio-economic environment, serious violations of international human rights law and international humanitarian law, and environmental threats (including severe pollution and industrial failures). Each risk is recalculated in terms of probability of occurrence (scale 1-5) and perceived impact on the community (weight 1-3, meaning low, medium or high risk, respectively). Risk monitoring is based on the adoption of indicators and is carried out as part of a structured process, using ICT systems in humanitarian organizations. The systems facilitate information sharing and compilation of data that can be shared with crisis-prone governments (IASC, 2015).

An important mechanism in the area of information management within the ETC is *The Crisis Connectivity Charter*. It is a set of procedures that enables satellite operators to collaborate with government agencies and humanitarian organizations to improve communication during response to a humanitarian crisis (Pellegrino *et al.*, 2021). The charter was developed through the efforts of the Global VSAT Forum (GVF) and the Global Satellite Operators Association (GSOA), in collaboration with the ETC and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Satellite communications are an essential element of communication between various actors in humanitarian operations. The charter is intended to coordinate the information area and facilitate the allocation of satellite equipment to individual participants in humanitarian operations. Operators commit to making available satellite equipment and increasing the capacity of the satellite data transmission system to support humanitarian efforts. The mechanism assumes the

promotion of training of personnel involved in solving crises (ETC *et al.*, 2023). The essence of the solution is shown in Figure 2.

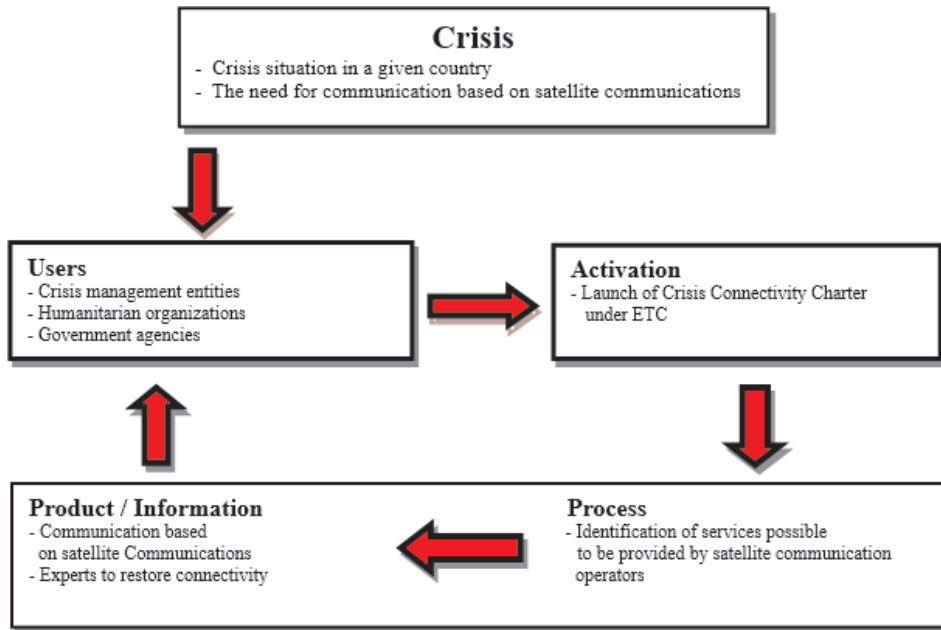


Fig. 2. Crisis Communication Card as a mechanism in the area of information management on the example of ETC

Source: Office for Outer Space Affairs UN-SPIDER Knowledge Portal, 2023

Figure 2 shows that the use of the Satellite Communication Card is part of the process approach. First, the specific nature of the humanitarian crisis is determined and the needs for the use of satellite communications in the process of communication by humanitarian organizations are defined. Then, the circle of participants in the communication process based on satellite communication is defined. The next step is to launch the Charter within the ETC. Thanks to this, it is possible to carry out activities, which is accompanied by the preparation of expert opinions. The last stage is the exchange of information between humanitarian organizations and satellite operators, with the precise determination of the catalog of services that operators can provide to the indicated organizations. The Humanitarian Communications Charter is a mechanism for a fuller integration of the commercial satellite industry and humanitarian actors during security crises in different parts of the world.

The Crisis Communications Card is not the only standard in information management to ensure efficient ETC operations. Other mechanisms can be identified in the state-building process (*Preparedness* area). An example is The ETC-ITU

Emergency Telecommunications Preparedness Checklist. The list allows you to develop a country profile in terms of readiness to maintain communication and crisis communication. It also identifies areas that may need improvement. These include national government telecommunications readiness, external coordination with key stakeholders, capacity development through simulation exercises and training, and infrastructure and technology, including requirements, planning and maintenance (WFP, 2021c). ETC partners are ready to constantly update the developed solutions and look for ways to optimize them to increase information security.

Conclusions

The development of the ETC humanitarian cluster demonstrates the common tasks of organizations and actors in managing information and providing information and communication technologies during crises. The role of communication processes and technologies in survival, response to threats and post-crisis recovery is recognized as crucial. Information management in the practice of the ETC operation requires a network of cooperation among the humanitarian organizations themselves, and additionally among them and state governments, NGOs and the private sector.

ETC is an institutional model of cooperation that guarantees the affected population access to voice communication and Wi-Fi networks as well as solutions for charging mobile devices. What is more, through the provided technological solutions, the work of entities that participate in life and health saving operations and in restoring critical infrastructure is enabled and accelerated. Maintaining an emergency telecommunications cluster seems to be a useful solution in providing international humanitarian aid. It translates into results in terms of information security when preparing and solving humanitarian crises.

Learning about selected procedures, rules and mechanisms of information management at the ETC level allows for a better understanding of the efforts of humanitarian organizations in the face of the challenges of the turn of the second and third decades of the 21st century. It also shows where to look for sources on the subject and how to interpret the importance of emergency telecommunications in the framework of international humanitarian aid in a cluster approach. A research recommendation may be the need to conduct future research on the usefulness of the presented organizational standards on the example of solving a specific crisis in a selected country affected by a disaster. It is a way to learn about the specifics of the activities of organizations cooperating at the ETC level in the face of a defined threat, which also poses challenges in the area of information security.

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