

## BASIC INFORMATION NEEDS IN DISASTER SITUATIONS (CAPABILITIES AND REQUIREMENTS)

### A KATASZTRÓFAHELYZETEK ALAPVETŐ INFORMÁCIÓS IGÉNYEI (KÉPESSÉGEK ÉS KÖVETELMÉNYEK)

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#### Abstract

The following paper would like to discuss the substantial communication requirements of command and control activities in different kinds of disaster and crisis situations. The key element of the success activity is the possessing of sufficient and valuable information, also the supply of information to the citizens. Thus, the organising and maintaining of an info-communication support system, which is capable to serve these requirements is inevitable. “This article was supported by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences.”

**Keywords:** disaster situation, communication, information, capabilities, requirements

#### Összefoglalás

Jelen közleményben a különböző típusú katasztrófa illetve válsághelyzetek felszámolására irányuló tevékenységek vezetés és irányításának alapvető kommunikációs igényeit kívánjuk bemutatni. A sikeres tevékenységek meghatározó eleme az elégséges és megbízható információk birtoklása, valamint a lakosság információkkal történő ellátása. Mindezekhez nélkülözhetetlen egy olyan infokommunikációs támogatás megszervezése és üzemeltetése, amely kiszolgálja ezen igényeket. „Jelen közlemény a Bolyai János Kutatási Ösztöndíj támogatásával készült”

**Kulcsszavak:** katasztrófahelyzet, kommunikáció, információ, képességek, követelmények

#### 1. Introduction

Nowadays it is light to see, that beyond the crisis situations threatening the international peace, which has been important in the past years (decades), ever growing focus has to be put on the maintaining of other, internal crises, the response to disaster situations as well. These can be of industrial, natural and other

nature. The so called “migrant situation”, affecting the EU largely, requires also a similar national, multinational problem solving from the countries’ leadership. To maintain these activities successfully, efficient command and control is needed, which is unable to fulfil its task completely without information in sufficient quantity and quality.

## 2. Characterization of the activities

In Hungary, to prevent disasters, and eliminate their consequences, first of all, professional defence forces (disaster management, police, military, etc.) are outfitted, civilian organizations and citizens provide only support during these activities. National disaster relief is a complex defence system, which comprises of three elements:

- subsystem of disaster relief tasks;
- organizational- and institutional subsystem;
- resource subsystem. [1]

Regarding our writing, the tasks of the disaster relief are more important, which give us a fundament for the description of information requirements occurring during the procedure. Of course, the organizational subsystem is also quite important, since communication systems have to be secured to support the work of organizations, but latter are always being created to fulfil certain tasks and activities. Tasks of the disaster relief inheres prevention, defence and relief activities, which determine three partial fields, such as:

- civil protection,
- fire protection,
- industrial safety.

In order to proceed successfully, other defence organizations have also to be involved, and only cooperation can bring sufficient result. It is naturally to be noted, that the partaking of each certain organization is dependent on the given situation.

One can lightly see, that each organization is able to fulfil their sub-tasks on their own, but united command and control is inevitable element of the cooperative activity, which secures efficient work regarding the period of prevention, defence and relief as well. Beyond command and control, the field of constant informing of the population, the realization

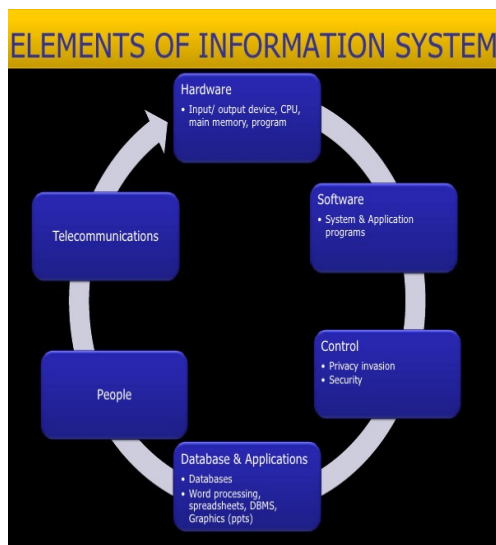
of public information subsystem, which is inevitable to the success, is also an important field of activity. Although constant supply of the citizens with reliable information is necessary, we have to proceed cautious during this; information security has to be kept in mind constantly.

From the beginning of the activity to the end of the relief, and the rebuilding work, constant cooperation and command is needed. Numerous kinds of staffs, operative groups and other organizations are created (for example in case of the red sludge disaster: Disaster Relief Operational Staff; Governmental Coordination Centre for Rebuilding; Rebuilding Disaster Relief Staff; Rebuilding Operative Group; and so on), in the coordination of which organizations, broadly planned and disposable communication and information network is a primary element.

This also shows that in such situations, collection, process, transmission and sharing of the information is of most importance during the organized work.

## 3. General characterization of the info-communication system

In most disaster situations, during the rescue procedure the united control of more organizational units (fire department, police, military, etc...) is realized, as described above. A communication and information platform has to be created with consideration to this, which can support these operations aiming the elimination of crisis, and their command and control effectively. To determine a sufficient system model, all the occurring requirements and capabilities are to be examined, which can serve with the fundaments of the creation, and the basics of a general information system model are to be considered. **Figure 1.** shows the elements of the information system. [2]



**1. figure.** *The general elements of the basic information system*

Info-communication support has to meet the requirements of the civilian as well as military and other defence organizations. Regarding this, I see the military requirements as being the most practical to be followed, since in general these determine a higher level of capabilities. (configuration, protection against physical impact, co-operability, protection of information, technical tools, etc...)

Much more important is the speed of transmitting the information, which speeds up leader's decision and execution, and also to what extent the information under our control is.

Experiences show, that maintaining the report system (info-communication system) secures the constant providing of the command with valuable information, the estimation and report of the occurred situation, and the credible information of the media. This secures quick decision, which is one key element of the success. In every case, the leader (assigned disaster relief expert) decides beyond the execution of tasks, about the utilization of partaking

organizations and tools, requiring of central means and reserves, possible regrouping, and necessity of involving other organizations. [3]

The followings are to be precisely known during the creation of info-communication support:

- tasks to be executed;
- system of activity and deployment;
- number and nature of partakers, organizations;
- info-communication capabilities of professional control;
- tasks of the subordinate staff, system of activity;
- environment of the execution;
- available tools and infrastructure at hand.

One of the most important assumptions to the successful execution of info-communication tasks during the sound support activity is the constructive utilization of these principles, and the constant refreshing and using of new and efficient communication organizing methods, being most suitable to the created system of tasks. [4], [5] Naturally the differences of the civilian and defence organisations are affecting all these greatly.

To meet the expectations, the creation and constant maintenance of a complex emergency and disaster response information system is reasonable, based on the country-wide information networks of the involved organizations, the existing databases of the disaster relief department, the data secured by the different data collecting and inspection systems deployed and to be deployed, on the disaster relief-connected databases of partner organisations and institutes and on databases delivered by mutual data-service within international relationship and cooperation.

### 3.1. The service-based structure of the system

Service-based approach gives some help to define the structure of the system, and to select the technical elements of it. The info-communication system providing broad scale support secures the necessary information supply of the public service institutions (local government, Defence Committees), other leading organizations, and superior units, which is an element of information and report sub-system.

On the other hand, it provides the executing staff on the field (all of the involved organizations) with information infrastructure, communication modules and data bases required to their command and control procedure. Physically separated part of it can be the information module serving the population of the area being threaten or distressed, and the module providing information towards other organizations (media) obliged to inform.

Third, it secures data from different sensors, flying devices (camera-picture, sensor data, aerial picture, moving picture), and the transmitting of these as a part of the network securing the quick and real time information delivery in interest of the control of intervening forces (organizations, population). [6]

### 4. Conclusion

Summarized it can be said, that the prevention of crisis situations, and the responding to these are of a complex nature regarding the tasks and the organizational units as well. Key element of the execution success is the accurate command and control procedure, during which the decision support has to be supplemented

with adequate info-communication system. The foundation of the realization is the definition of the services, based on which the possibility to report towards the superior, the control of the executing forces, the information of the population and the media, and the collection of data are to be secured.

### References

- [1] Hornyacsek Júlia, Keszely László: *A katonai erők, képességek alkalmazása katasztrófák esetén.* Hadmérnök (ISSN 1788-1919) VIII. évfolyam 2. szám, Nemzeti Közszerológati Egyetem, Budapest, pp.191-209.(2013)
- [2] <http://www.slideshare.net/Subjectmaterial/chap-17-managing-information-systems-and-communication-technology> (downloaded 20.01.2016.)
- [3] Rajnai Zoltán-Sándor Miklós: *Út a digitális kommunikációs rendszer felé (II.), Nemzetvédelmi Egyetemi Közlemények* (ISSN: 1417-7323) 1. évf.: (2. szám) pp. 217-229. (1997)
- [4] Z. Rajnai – B. Puskas: *Requirements of the installation of the critical informational infrastructure and its management, interdisciplinary description of complex systems* (ISSN 1334-4684) (eISSN 1334-4676) 13: (1) pp. 48-56. (2015)
- [5] Tóth András, Jéri Tamás, Pándi Erik: *A kommunikációs infrastruktúrákkal szembeni rosszakaratú tevékenységek,* Hírvillám (Signal Badge) (ISSN 2061-9499) I. évfolyam 1. szám., Zrínyi Miklós Nemzetvédelmi Egyetem, Budapest, pp. 276-288. (2010)
- [6] Andras Toth: *Network centric communication systems to support signal military decision making process* In: Proceedings of the international conference New Trends in Signal Processing (ISSN: 1339-1445), Slovak Republic, pp. 112-115. (2014)