ZRÍNYI MIKLÓS
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MILITARY COMMUNICATIONS NEEDS AND POSSIBILITIES IN THE SUPPORT OF PEACEKEEPING OPERATIONS

THESIS BOOKLET

extract

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1. Description of thesis research

The disintegration of the bipolar world as well as Hungary's accession to NATO and the EU has changed the basic concepts of world and defence policies and it has had a great influence on the tasks and structure of the Hungarian Defence Forces.

After the cold war the threat of a global war has ceased but new challenges have appeared, which, on the international level, can only be tackled with non-military operations.

The increased share of the Hungarian Defence Forces in these operations is shown by the fact that in the international peacekeeping operations there are more than 1000 Hungarian peacekeeper troops in the different mission areas. The operations conducted by the Hungarian Defence Forces are different regarding their type and tasks. The soldiers have to carry out not only their professional activity but they also have to adapt to the local conditions.

I consider that both peacekeeping and communications in this area are indispensable because of the current interest of the topic and the great importance of the Hungarian Defence Forces in this area. That is why I have examined this topic and the possibilities of development on the following motivations.

1. We have to basically deal with the topic because besides the strategic materials (decrees of the parliament) there are no rules or regulations regarding the principles of signals support that the Hungarian Defence Forces have to provide in its new role.
2. Several research workers have already said before me that the field communications systems of the Hungarian Defence Forces are not modern, either from general military or from technical aspects, and that means that they are not suitable for mission requirements. Referring to what I outlined in the first point it is obvious that there are new difficulties facing the Hungarian Defence Forces, which is the problem of technical solutions, which I am trying to find an answer to.

2. Research objectives

With my thesis I would like to give an overall picture of the military communications systems in peace support operations that can give guidelines to the signals troops for their successful activity.

In my research I am studying the possibilities of cooperation between the communications systems based on the different standards and national specific technical equipment of the multinational contingents. This is important because of the more reliable support of the command control.

I am giving an account of the development possibilities of the signals equipment used by the Hungarian Defence Forces from the point of view of signals activity in peace support missions, with the aim of improving the efficiency of communications. I am analyzing and recommending the use of IP platform in telecommunications.

As a result of the continuous development of the communications systems, signals experts are required to know and apply the latest technologies in military communications. the new processes and products developed in civilian life, although their aim is not military use, can be well applied also in military environment, certainly with some restrictions. In my thesis I have outlined the possible applications of civilian means of telecommunications in peace support operations.

Both in my present and my previous positions I have seen the growing gap between the Hungarian civilian and military telecommunications systems, which made me even more interested in this topic and that's why I gave priority to the examination of IP systems.

Through the system-based examination of peace support telecommunications I explore the suitable organisational and technical requirements, taking into account their environmental characteristics.

3. The applied research methods

In examining the questions of military communications in peacekeeping operations I have applied several methods to achieve the best results. The historical view supports not only

the analyses of peacekeeping as a form of activity but also the presentation of the development of several communications systems.

I have compared the analogue and digital (ISDN, IP) technical systems because it is important to see the differences between transfer lines concerning their economical and protected use in achieving the desired result.

These days we can say that peacekeeping is not a new activity, the UN has been conducting such activities for 60 years. They have great experience regarding these activities. There are successes and failures, which I want to take into consideration since there are more and more soldiers who have served in missions and they have much experience. Every peacekeeping activity is different (location, cultural background of the country, religion, political situation, etc.) and we can draw the experience from each of them. Collecting all the information and analyzing and systematizing the experience in a similar environment can offer great help in all these activities.

The best way to get to know new systems and their characteristics is by collecting personal experience, so I have used my personal experience as well in my thesis.

Elaborating the topic

- I have processed the technical literature connected to the topic (books, scientific magazines, PhD thesis, e-documents).
- I have used my own experience from participating in peacekeeping operations.
- I have studied the telecommunications of the Hungarian contingents in the present peacekeeping operations.
- I have examined the cooperation with other communications systems of other countries in international operations.
- I have compared the quality of the services provided by the tools of different technologies.
- I have consulted with signals experts in peace support operations
- I have outlined a recommendation for the provision of satellite channels operated and managed by the Hungarian Defence Forces, based on the available human and technical sources.
- I have systematized the collected data and based on that I have outlined signals support of the peacekeeping operations.

4. The description of the research

After the introduction, the thesis has the following three main pats:

The formation and specifics of peacekeeping operations, special conditions concerning signals

In this chapter I am presenting peacekeeping operations giving details about their formation, tasks and the mandates provided by the international organisations. I am outlining the characteristics of peacekeeping operations and I am presenting their characteristics from the point of view of signals support and the factors which influenced communications. I am analyzing NATO expectations for the modern technical systems.

The peacekeeping communications outside operational area

In this part I am approaching the communication needs of missions from the point of view of interconnection. I am presenting the interconnection between the allied troops, which results from the chain of command in the international operations. I am presenting the peculiarities of communications via satellite, NATO systems, GSM, radio communication and their use in the operational area. Because of the great distances it is necessary to provide network management and I am offering several possible solutions.

The peacekeeping communication inside operational area

In this chapter I am presenting peacekeeping communications inside operational area, with special regard to the transition to wired communication based IP based, fax messages through fax server instead of paper based faxes. In presenting wireless communication inside operational area I mention GSM, trunked radios, and TETRA systems.

Finally I summarize and draw the conclusions with outlining the scientific results.

5. Conclusions

Hungary's increased participation in peacekeeping operations emphasizes this area regarding the support of the command and control. Since 1988 peace support operations have gone through important changes, they have become more dangerous. The signals and informatics troops have taken part in considerable military training as well besides conducting their specific activity.

Peacekeeping operations have to be conducted in different geographical and climate conditions, which can be even extreme, most of the time in areas without telecommunications infrastructure on devastated areas. All this has a great influence not only on the soldiers but also on the technical equipment. Due to the great difference between days and nights in temperature, the heat, sand – and dust storms shorten the average lifetime of the devices.

On the basis of the above human physical and geopolitical factors I have stated that mission preparation and training plays a very important role in carrying out the tasks efficiently.

I have collected the factors influencing peacekeeping telecommunications. I have concluded that due to the extreme conditions, many times the devices have to meet higher requirements than usual. Their transport and maintenance needs serious supplies which must be carefully planned. I have recommended a method for extra spare parts supply, which can provide cost effective and quickly deployable service network in order to keep up the high standards of communications.

I have given special attention to planning devices UPS and to air-conditioning for maintaining the constant operation of the devices.

We must direct our developments towards network enabled capabilities defined by NC3TA to be able to join the NATO system and participate more effectively in allied operations. The leadership has already outlined the need for these capabilities.

I have showed that the contingent's need for communication with the homeland can be best satisfied with VSAT satellite system. The Hungarian Defence Forces can provide satellite broadband from its own resources cost effectively. After investing into the necessary tools, the well-trained experts, integrated into the network operation centre, are able to carry out these tasks on the basis of procuring the necessary devices, training the technical signals experts, establishing the service network and supplies and leasing the space segment. My

solution recommends a management system operated and integrated only by the Hungarian Defence Forces without service providers. This would be a safer solution.

If civilian technologies are present we must utilise these possibilities to enable multiple communication, like using GSM technologies. Besides the basic voice function, the GSM system has many other functions that can b used in the missions. Transferring images from a great distance can make evaluation easier in real time. I would like to point out that based on reception, GPS able devices, in case of certain software, by sending an SMS can sometimes define the present position of the mobile unit as a result if there is an accident or an attack even those soldiers who do not know the area in details can provide good coordinates for the operational duty so that they can see on the map, by the same software, the positions and are able to send immediate help. I have also pointed out the encryption possibilities of GSM telephones available in commerce and I have showed the importance of the development and authorization of similar capabilities in Hungary.

I emphasized the great possibilities of VHF radio communication.

I have analyzed the possibilities of voice communications through NATO systems. The NCN can be used for information resulting from NATO subordination and also for communication to Hungary. The device installed on the NCN capable of voice transmission gives the possibility to encrypted voice. Besides authorised users can use the VoIP device of BICES of the system as well as the VTC system can be used for NATO encrypted information transfer, depending on the the available bandwidth.

The configuration, troubleshooting and the analyses of the faults of the telecommunications systems need high professional expertise. The signals soldier serving in the operational area does not have such a widespread knowledge because these systems are very varied. The network management can fill in this gap because they can detect and correct the mistake from the distance in many cases. The online and offline management possibility must be provided for continuous management.

I have given a solution for the efficient use of the available bandwidths and for the implementation of regulations.

I have outlined the possibility of replacing analogue fax devices with fax servers, when the users could get the fax message through the informatics system.

I have offered the installation of a local GSM network with the help of a GSM bridge as a cost effective solution.

In the operational area in the protection of the troops, certain national information needs higher level of clearance. The presently valid regulations allow the transfer of national information of confidential level, that is why it is important to accredit the NATO means or to develop our own national means.

I have shown the possible use of TETRA signal support of peacekeeping operations and I am giving details of the advantages for using it in peacekeeping operations.

6. The new scientific results of my thesis research

1. On the basis of the specific properties of peacekeeping missions I have defined the factors which influence communication and I have showed how communication can be used more effectively to increase the safety of the soldiers.

2. Based on my analyses I have defined the implementation of satellite communication inside the organisation, pointing out the cornerstones.

3. By analysing the TETRA system I have justified its usability in peacekeeping operations.

7. Recommendations and practical use

The thesis can be used during the training and preparation of the signal troops in peacekeeping missions.

The thesis can be a contribution to the training material of the commissioned officers and NCO's at the Zrínyi Miklós National Defence University.

The technical solutions presented in the thesis can be guidelines to the development of present and future mission tools.

The thesis gives suggestions about integrating the integrated satellite capabilities of the Hungarian Defence Forces into an organisational structure.

8. Scientific articles

Articles:

1. Magyar Sándor: Az IP-technológia felhasználási lehetősége a béketámogató műveletekben, Felderítő szemle, 2006/3. szám, 115-123. oldal, ISSN 1588-242.
2. Magyar Sándor – Kassai Károly: Híradó és informatikai rendszer csomópontjainak védelmi kérdései. Felderítő szemle, 2004/1. szám, 128-136. oldal, ISSN 1588-242.
3. Magyar Sándor – Kassai Károly: A zártcélú hálózat felügyeletének biztonsági kérdései. Új Honvédségi Szemle 2002/11. szám, 88-95.oldal, ISSN 1216-7436.
4. Magyar Sándor – Pándi Erik: Gondolatok a rendvédelmi ágazat kommunikációját biztosítószervezetek felépítéséről. Új Honvédségi Szemle 2001/05. szám, 73-83. oldal, ISSN 1585-4167.
5. Magyar Sándor: Műholdas távközlés és annak felhasználhatósága a békefenntartó műveletekben Felderítő szemle, 2008/3. szám, ISSN 1588-242.
6. Magyar Sándor: A távbeszélő központok felügyelete a MK Katonai Felderítő Hivatal távbeszélő hálózatában. Felderítő szemle, 2006/T, 64-74. oldal, ISSN 1588-242.
7. Magyar Sándor: Katonai felderítő Hivatal Műholdas távközlésének fejlesztési irányvonalai, Felderítő szemle, 2009/T, ISSN 1588-242.
8. Sándor MAGYAR: The specific characteristics of peacekeeping operations from the aspects of telecommunications, Hadmérnök, 2008/4, 139-145. oldal, ISSN 1788-1919 http://hadmernok.hu/2008_4_magyar.php
9. Magyar Sándor: Cellás rádiórendszerek alkalmazhatósága a béketámogató műveletekben, Felderítő szemle, 2008/4. ISSN 1588-242.
10. Katonai kommunikációs igények lehetőségek a békefenntartás vezetésének támogatásában Nemzetvédelmi Egyetemi Doktorandorum, 2002/02. szám, 145-152. oldal, ISSN 1588-2233.

Presentations:

11. Sándor MAGYAR – Miklós SÁNDOR: The advantages and possibilities of the IP based telecommunication in peace support missions, 144-149. oldal „Kommunikáció 2006.” című nemzetközi szakmai tudományos konferencia, Budapest, 2006, ISBN 978-963-7060-18-2.
12. Magyar Sándor: A jelenlegi sávszélesség kihasználásának lehetőségei multiszolgáltatású kapcsolókkal a Magyar Honvédség katonai kommunikációs rendszerében, Kommunikáció 2004 című nemzetközi szakmai tudományos konferencia anyaga, 160-166. oldal, ZMNE, Budapest, 2004, ISBN 963 86441 5.
13. Magyar Sándor: Hálózatfelügyelet katonai kommunikációs oldalról történő megközelítése. „A katonai kommunikációs rendszerek fejlődési irányai – kihívások és trendek a XXI.században” című nemzetközi szakmai tudományos konferencia anyaga, 263-267. oldal, ZMNE, Budapest, 2001, ISBN 963 00 8819 3.
14. Magyar Sándor: A forgalomfelügyelet jelentősége a Magyar Honvédség hálózatfelügyeleti rendszerében. „Kommunikáció 2002.” című nemzetközi szakmai tudományos konferencia anyaga 301-304. oldal, ZMNE, Budapest, 2002, ISBN 963 86229 2.

Scientific Student Conference presentations:

15. Dányi Béla – Magyar Sándor, A TETRA kommunikációs rendszer és katonai alkalmazásának lehetőségei. OTDK pályamunka, 2001. Április 15. ZMNE, Eredmény: 1. helyezés és Különdíj.
16. Siemens Hicom 300E ISDN telefonközpont telepítése, katonai alkalmazásának lehetőségei. TDK pályamunka, 1998. december 03. ZMNE, Eredmény: 3. helyezés.
17. A híradó sorkatonák várható pszichés megterhelése háborús körülmények között. TDK pályamunka, 1994. december 22. BJKMF, Eredmény: 1. helyezés.

9. Professional background

I was born on 19 June 1972 in Kaposvár.

In 1995 I graduated from the Bolyai János Military Technical College Department of Electric Engineering. On 22 December 1994 I was awarded the firs prize on the National Scientific Student conference.

From September 1995 I was appointed to my first position in the Telecommunications Research and Supervision Institute of the Hungarian Defence Forces as a logistic support deputy head of company. During this time I was familiarized with the signals technology used in the Hungarian Defence Forces.

On 1 September 1996 the Telecommunications Research and Supervision Institute of the Hungarian Defence Forces was closed and it was integrated into the Military Intelligence Office of the Hungarian Republic. I was an expert at the Logistic Directorate.

Since 1997 I have been a member of the Scientific Association for Infocommunications.

Between 1998 and 2000 I graduated from the Zrínyi Miklós National Defence University.

In 2000 I went back to work to the Military Intelligence Office of the Hungarian Republic.

Since 2000 I have given expert opinion to several college and university students.

Between 2000 and 2003 I attended the correspondence course Zrínyi Miklós National Defence University Strategic Studies PhD Course.

Between 2004 and 2007 I took a degree in informatics engineering at the Neumann János Budapest Technical College Informatics Department.

Between 2005 and 2006 I participated in a peacekeeping operation.

After fulfilling several positions in the Military Intelligence Office of the Hungarian Republic now I am deputy head of department.

In different positions I participated in numerous courses and trainings.

In 2008 I completed the NATO Information Operation course in the NATO school of Oberammergau.

I have an intermediate C type language exam in German military language, and STANAG 3333 advanced level English exam.